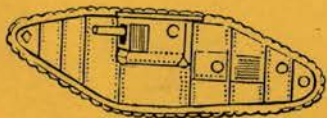


# ARMORED CAVALRY

## JOURNAL

F.B.

Eleventh Armored Division soldiers run through a smoke filled street at the height of battle in Wernberg, Germany. The units pictured here are the 55th Armored Infantry Battalion and the 22nd Tank Battalion.

Signal Corps Photo

JANUARY-FEBRUARY, 1947



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# COMBAT FUTURAMA

By Leonard J. Grassman

PEACE CONFERENCE STALEMATED—PEACE MOVE VETOED—MILITARISTS PREDICT DEVASTATING PUSH-BUTTON WARFARE—GENERAL CLAIMS MOON FLIGHT IN NEAR FUTURE and PRESIDENT URGES UNIFICATION OF ARMED FORCES.

Headlines glared and blared. The Colonel thrust the paper from him, snorted, and removed his glasses.

He snorted again, rubbed his aching eyes, and glanced over at his wife busily working on a piece of embroidery. He decided not to interrupt the nice quietude of the room.

Colonel McSwain was tired—tired from the long day, tired of the confusion of the current news, and tired as any sixty-year-old man with an active past can be. The Colonel's old bones felt the effects of the experiences of three wars, equally active interims of military planning and preparation, and, in retirement, much political maneuvering to aid in maintaining a strong national security.

The Colonel stretched himself and relaxed into the comfortable bulkiness of his favorite chair. He began to doze and the jumbled news of the day proceeded to race through his mind. Soon the heavy sleeper's breathing could be heard, and his wife glanced over at him and smiled.

Peace efforts had failed. Greed for power had won again, and push-button warfare was an actuality. Colonel Joseph R. McSwain, Cavalry (Ret.), had earned his wings, and he watched with interest the strange battle developing on the World field below.

There had been no surprise attack to start World War III. Our Central Intelligence Group, drawing information from cooperative government agencies with personnel abroad, from every industry with representatives in enemy territory, and from its own trained staffs infiltrated throughout the world, had known the intentions of the enemy for a long time. Diplomats had used this information almost successfully to maintain peace but the enemy had been too intensely aggressive to accept either the appeal to reason or the threat of destruction; he went ahead, planned, and attacked. Even now his enormous installations are launching heavenward great projectiles toward their targets, the major American cities. Legions of atomic-powered planes are taking off from his many bases and his fleet is already under full propulsion toward the United States.

No, it wouldn't be a surprise. Our forces are informed and ready. Far out at sea, our first line of defense—our Navy of gigantic, speedy, and highly maneuverable battle craft—is stretched in a two-thousand-mile-long line, deployed with the task of interception and destruction.

Fully equipped with aerial missile detectors and electronically controlled interceptor and pursuit rockets, the cordon of ships presents a formidable obstacle to the enemy. It is almost impossible to detect in its position. Each craft is made invisible, camouflaged perfectly through means of vacuum-blasted chrome transforming it into a reflector. Streamlining and scientifically placed reflectors diffuse the reflection of the sea back onto the superstructure and hull and modify sun glare. The reduced glare is suffused over the surface of the ship adding a natural sparkle to the reflected water. This camouflage fuses the ship with the sea in a near-perfect blend and detector-frustrating elements in the special chrome coating foil enemy radar.

Already the Naval defense is accounting for much of the great armada of jet-propelled missiles and ships dashing at terrific speeds toward the destruction of our coastal cities and plants, the first target of the etherial invasion.

Collaterally, the Navy is accounting for the surface elements thrust against it to clear the seas of all obstacles and to carry power units, reinforcements and personnel for the close-up action planned to follow the speedy disruption of our defenses and society.

Depths below the surface craft, their sisters of the deep, huge, arrow-shaped submarines, wage another unique war. Patrolling aquatic areas, they clear the way for other undersea elements moving forward to attack oncoming surface forces and to bombard with guided missiles enemy shore fortifications.

Despite the strong Naval defense, a great proportion of the assault, roaring high beyond the clouds, is arching toward the stars to slant, short-powered, down again toward the United States. The Naval units relay their radar bearings back to shore installations where a rapid assembly of information—bearings, altitudes, estimate target numbers—is being passed on to alerted repellant forces which stand ready to frustrate the thrust.

Dotting the seas are floating bases from which radio-controlled interceptor planes rise far beyond the clouds to do battle with guided missiles threatening our country. Similar bases, radar stations, are contacting the



space elements.

A second wave of enemy surface, subsurface, and aerial forces is now engaging the Navy, which is holding out, but sustaining much damage. The small sea outposts for detection and interception are being knocked out methodically by the enemy, whose tactics indicate an imminent grand scale thrust at the continent.

High over this battlefield of the sea, Colonel McSwain notes an interesting aspect of the battle. Apparently controlled clouds sweep closer and closer to enemy country. More of these clouds can be seen over the sea, and still more are sighted moving rapidly away from the U. S. coast line. The Colonel, possessing an Angel's sight, is able to peer through the cloudy vapor and note with immense satisfaction the formation of ground-controlled missiles set to break from the synthetic cumulus and attack at the proper time. He smiles with pleasure as he notes all this and ponders on the surprise due the enemy. He has become ardently air-minded since achieving his heavenly wings and often remarks to Gabriel, "It took death to convince me it was a necessity to be airborne; it is quite an asset."

The Navy, sustaining the onslaught, is now busy repelling its attackers, and interceptor planes are busy knocking out nonatomic missiles. Obviously, and fortunately for us, the enemy is withholding his atomic force, hopeful of a quick victory without destroying anticipated booty. The sea is dotted with splashes from fallen projectiles and is churning from the fury of the battle. The sky darkens from the concussion, the haze of battle drifts toward America, and it is beginning to rain in torrents.

The initial projectiles which evaded aerial and naval interception are now coming into range of the Coastal Defense Command, and the United States Artillery Batteries open fire, demolishing missiles galore.

This coastal defense is superb, thinks the Colonel, and from his celestial perspective, he has good reason to think so. Its beauty and intricacy intrigue him; it encircles the nation with an iron ring of defense.

Every twenty-five miles lies a quarter of a mile square concrete block beneath which is the complete control system, storage spaces, ammunition dump, and maintenance facilities for the weapon mounted on the concrete base. There, too, is the housing necessary for personnel.

Atop the base, facing the sea or border, is a quarter-circle arc constructed of cylindrical steel. Upon this rides the quad-duty piece (anti-surface, anti-aerial, detector, and launching ramp). It sweeps with magical movement, its ball-bearing base riding along the tubular arc. Upon detection of missiles, detectors relay automatic calculations of range, speed, bearing, and the piece tracks to the proper degree, rises to the correct angle, and fires forth a huge projectile which speeds with twice the speed of sound to the neighborhood of the target. When proper proximity is reached, this

shell breaks open, releasing a hundred smaller radar-fused proximity projectiles which scamper about among the targets, exploding and destroying. In an attack, this same unit is capable of launching enormous projectiles which soar high into the stratosphere across the sea to targets on enemy soil.

The Colonel adjusts himself for a more comfortable position on the heavenly cloud and relaxes to enjoy the show. This cloud is the nearest thing to his beloved mundane chair.

Heavier concentrations of missiles are tearing up from the enemy hinterlands and roaring into the general direction of the Moon. They will arc high and descend toward the center of the United States. The Coastal Defense Command suffers three casualties. Three units are destroyed and the neighboring units are covering the break caused by the casualties. Intelligence reports even heavier attacks on the way. The enemy is now pressing its whole weight into the first day's onslaught.

Smaller but similar mobile units of the Artillery are rushing in to fill the gaps in the coastal defense caused by the destruction of the three installations. One of the replacements is quickly knocked out and a mechanized armored unit, a large, fast, rocket-firing tank, near by, ready for airborne delivery to enemy soil is pulled out from formation and rushed in to fill the latest gap.

Combined Operations is busy in the stratosphere activating the mines floating high above the coast. These enormous gloves, filled with atomic explosive and anti-gravitational gases are radar proximity fused. They burst when an approaching missile comes within range of the antennas, and are effective in destroying many of the missiles out of ground range. As the minutes pass, some high altituded missiles sweep into the mined range and the heaven is rent by an indescribable explosion. Colonel McSwain feels himself thrust from his cloud and as he settles back into its coziness, remarks: "Almost like the Western Front!"

Evading coastal interception, a number of missiles and televised radio-controlled craft move behind the wall of explosion and proceed to their targets, inland cities, installations and industries. Quickly, armored divisions of the Home Defense, mobile artillery and light armored tanks, speed to combat them. Antiair defense units knock down many, but there is much destruction. Troop and artillery carrying ships of the enemy dash in quickly in an attempt to grasp a desperate toehold near Detroit, but are quickly smothered by the fire of the light units of the mechanized armor. The little person-to-person combat is conducted by home reserve personnel and the enemy's airborne troops are quickly overcome.

In the meantime, the initial thrusts of the enemy made ineffectual through destruction, the National Supreme Command, on information from Central In-



telligence, surmises the enemy is about to use its atomic weapons and orders the attack.

Colonel McSwain leaves his comfortable cloud and takes wing to Mars for a better view of the devastation ahead.

Over enemy territory, guided missiles break from their aerosol antidetector camouflage, speeding from the misty clouds to a crushing bombardment of enemy offensive and defensive installations—their launching ranges and land defense artillery.

They are quickly followed by the fighter planes which pour a deadly fire into their airfields, while along the coast, great torpedoes break through the surface and rise heavenward, level off and speed toward the enemy coast artillery.

The U. S. submarines themselves move in closer to finish off shore-line resistance and the Navy drops its defensive action entirely and assumes the offensive, firing great jet projectiles against the enemy coastal installations.

Following the devastation of our guided missiles are gigantic rockets filled with city-busting explosives which paralyze the enemy. A short time passes and our airborne artillery and troops land to secure the now tottering enemy territory. Huge jet-thrust gliders swoop into subdued areas and disgorge tanks, guns, and men. Ahead of them, earth and sky reverberate from explosion, and they advance, killing off recalcitrants and capturing the defeated. Soon our light armor and infantry units will be rapidly patrolling a ruined aggressor nation. . . .

Colonel McSwain, accustomed to the sounds of the war below, was stunned by the new quietude in the smoking world. He stared in disbelief at the destruction. It was unbelievable. Even for an Angel. He gasped, moved and lost his seat on the mouth of the dead volcano upon which he had been sitting and fell back into it, plunging down and down, crying out to St. Peter as he tumbled.

"Charles! Charles! What is wrong with you?" he heard his wife complain, and realized he was not as air-minded as he had dreamed. He knew he would always prefer the ground. Colonel McSwain muttered, "Nothing," to his wife's query, and growled to himself, "Of all the damned fool notions!" Glancing about him to note the reassuring protectiveness of the familiar pattern of the wallpaper and the furniture placed about the comfortable room, he cast from his being the shaky reaction extended from the dream. He picked up a copy of his favorite reading, the "Pickwick Papers" and began to read. He had no desire to retire for the night; afraid he would dream again.....

Colonel McSwain's dream in the light of contemporary and immediately potential achievement is, of course, fantastic. What he saw in his dream might be possible in an unforeseeable future should plans for world peace fail and might even make for good argu-

ment why world peace must not fail. However, even in the far distant future, the claims about "push-button" warfare are less probable than possible, and it behooves any thinking man to be extremely wary of those who currently make claims on a par with the Colonel's dream.

Still, despite the fantasy of the Colonel's slumber of prophecy, it is interesting to consider closely the combat elements of the dream. Immediately, one is aware that there is a definite place for the specializations of every branch and unit of the services as we now know them. It is a safe assumption that that place will be there always in any war of the future if wars there must be.

Plans for military reorganization—those concerning merger of our armed forces and other alternatives—have uniformly for their goal greater effectiveness of, greater protection by, and a maximum of strength, economy, and coordination in our military forces. All of which are essential for the preservation of our national security.

Of these virtues, the latter—coordination—is the most immediately important. We learned much about it in the late war, have preserved it somewhat currently, but have a long way to go before reaching the perfect coordination shown in Colonel McSwain's war.

So, in striving for such perfection, those on whose shoulders fall the tasks of planning our military organization of the future should pause long in consideration of any element of our present military set-up labelled obsolete or ineffectual in view of modern futuristic warfare before casting such an element aside. Such planners must remember that no matter what type of warfare may occur in the future, it is and will remain simple logic that it will be costly to our national security to do away with completely any unit or force of the present which might be of value later on.

A unit may seem obsolete in the present or immediately apparent scheme of things, but its organization and tradition will always be an asset to our nation in times of emergency. Weapons and organizations never become completely obsolete; *they develop and/or support newer implements of warfare.*

Whether a weapon destroys by pushing a button or by any other means, it takes men—skilled men, trained men—to push the buttons, plan the proper time and circumstances when the pushing is to be done, and to maintain the intricate pieces operated by such buttons. *We need trained manpower more with the advent of scientific warfare than ever we did before.*

Colonel McSwain's dream, its destruction, horror and devastation, may well be considered in the light of the idea of *preparedness* for the security of our nation and the necessity of strength, which should be emphasized constantly in our effort to bring about lasting world peace. We must create that lasting universal peace, but, if failing, we must be PREPARED for any eventuality, and we must be the best prepared.



# ARMOR IN EUROPE<sup>★</sup>

Military Science and Tactics are learned from the practical lessons of war. Each new campaign follows principles of combat that were discovered and used earlier. After the campaign is over it is studied thoroughly so that succeeding battles may be fought more efficiently and successfully. Reprinted here are three articles taken from the Royal Armored Corps Journal that discuss many lessons learned with the use of Armor in Europe during World War II.

## I—THE 4th COUNTY OF LONDON YEOMANRY AT VILLERS BOCAGE

*by the Late Major J. B. Aird, D.S.O.*

ON the afternoon of 12th June, 1944, the Cromwells of the Fourth County of London Yeomanry were dispersed in the open fields to the north of Tilly-sur-Seulles, one squadron keeping a lookout, the others resting after the bitter fighting before that village. It was very hot and comparatively quiet. The Colonel, Lord Cranley, was away and there was vague speculation among the squadron leaders as to what fresh orders he would bring back with him. They did not have long to wonder, for he was soon back and jumping out of his scout car, with orders to move immediately. We were in for a long march along a complicated route and an attack which the Regiment was to lead, and in which surprise was to be the most important factor. The objective

was the township of Villers Bocage. Maps were marked and orders given, and in a short time the tanks were marshalled, the men glad to leave the uncomfortable and unpromising area north of Tilly, though a little dubious of the advance along a center line so tenuous and thin on the map with so much at stake at its end.

### AXIS OF THE ADVANCE

The axis of the advance was a narrow road along the extreme western flank of the British Army running parallel to the Americans. After 15 miles of jolting and dust the head of the column reached the main lateral road from Caumont to Caen and away to the right could be seen the fires and smoke where the American First Infantry Division were fighting to hold the ground they had made in their rapid advance of the last few

<sup>★</sup>Royal Armored Corps Journal.



days. On the left the Eighth Hussars had had a tank "bazooka'd" and the leading Honey of the Regiment had been fired on by an antitank gun from the east. As it was now dusk it was decided not to push on and the Regiment leaguered for the night in a field to the north of the crossroads.

Early the next morning the advance continued, "A" squadron leading, followed by some Honeys of the Recce troop and "A" company of the 1st Battalion, The Rifle Brigade. Then came R.H.Q., followed by "B" and "C" squadrons, followed by Tac. Brigade. The orders were to push on as fast as possible, there being no further opposition from the crossroads area. The country was very close, the road wandering over switchback hills, gradually swinging east towards Villers. Within a few hours, the leading elements, moving fast, were in sight of the small town. From Brigade came the information that the place was clear of the enemy and the cheering villagers on the side of the road seemed to confirm it. In consequence, "A" squadron galloped through the town, seeing no signs of Germans, and reached their objective on the farther side, a hill which commanded the road to Caen. True, before that a troop leader had reported a German armored car observing from a hill north of the town, but others had disputed this and the sign was disregarded. With "A" squadron on the objective and all seemingly quiet, R.H.Q. moved over the River Seulles and into the main square of the town. Recce sent a patrol to the south on the road to Aunay, perhaps the deepest penetration into France that had been made up to that time. The patrol shot up a German car and captured the occupants, which included an officer who volunteered the information that he was billeting!

Colonel Cranley now decided to go in his scout car to see how "A" squadron and the infantry company were getting on and he left his headquarters with all its appendages covered by a troop of the Recce and some Greenjackets, instructing them to move into the main

street towards the eastern exits.

### THE TIGER

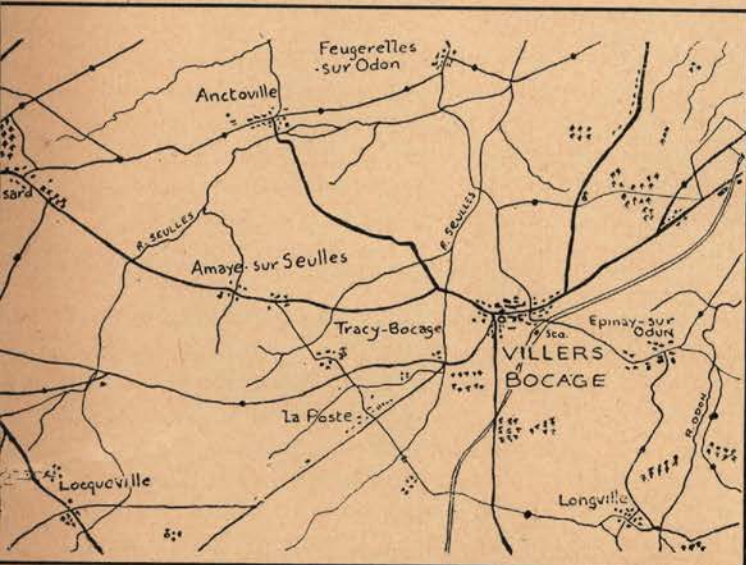
For a short time all seemed quiet, and then the most indescribable confusion broke out. Up the street in front, Lieutenant Ingram's Honeys and a dozen half-tracks of the Rifle Brigade were burning. The R.H.Q. tanks started to move backwards down the narrow street. As they did so, spandaus opened up from the windows above and the street began to fill with smoke and the noise of falling slates, punctuated by the sharp crack of an 88-mm. Out of the smoke trundled slowly a German Tiger tank. Major Carr, the Second-in-Command, fired at it with his 75-mm. but, heartbreaking and frightening, the shots failed to penetrate the side armor even at this ridiculous range. Almost immediately his tank was on fire, he himself seriously wounded and other members of the crew killed or wounded also.

### HEAVY EXECUTION

The Tiger went on to shoot up the Shermans of the O.P.s with their poor wooden guns, the I.O.'s scout car and the M.O.'s half-track. The other three tanks of R.H.Q. managed to shuffle into various turnings, but soon the troop leader's tank was on fire and also the R.S.M.'s. Captain Dyas, Assistant Adjutant, commanding the remaining Cromwell, watched the Tiger pass him and began to trail it in his tank, hoping to get it from the rear, but by now it had encountered the more formidable obstacle of "B" squadron and decided to beat a retreat. Therefore once more it was head on and there was no escape. The last remaining tank was set on fire.

Captain Dyas managed to escape and, finding the R.S.M.'s tank which, although on fire, still contained a functioning wireless with a microphone hanging out of the turret, spoke to Major Aird, commanding "B" squadron, telling him of what had befallen the troops in the eastern end of the town. As communication still existed between "B" and "A" squadrons, Major Aird decided to take over control. He appreciated that the German tanks must have come in behind the tail of "A," along the road from Evrecy, and that they now stood firmly between "A" and the rest of the Regiment. "A" squadron with some of the Rifle Brigade's half-tracks and antitank guns, therefore, was cut off. The Colonel, who was with them, decided to make a reconnaissance down towards the railway with a view to sorting out the situation and possibly finding a way back.

As Brigadier Hinde had been up in his scout car and had said that the town must be held at all costs, Major Aird set about reorganizing the defence. Some of the Queen's infantry had arrived with antitank guns and these, with tank troops, were dispersed round the roads leading into the Square. To the south Lieutenant Simons, in charge of a troop of Honeys, had had his tank knocked out by a mortar, so his patrol was drawn in.





Simons himself had had his wounds dressed by French peasants, who looked after him until he was recovered enough to escape, but he had little fresh information to give on his return. "C" squadron remained on the high ground to the east of the town.

This was the position in the afternoon when "A" squadron were attacked by Tiger tanks and infantry. The squadron leader, Major P.M.R. Scott, M.C., and his officers were conferring in a ditch with Major Wright of the Rifle Brigade when the attack was launched. The Tigers swept up the road from Villers in their rear, "brewing" a few Cromwells on the way: the German infantry attacked from prepared positions to the east. Major Scott was killed almost immediately, most of the Cromwells were knocked out, and the officers and men trying to escape were killed or taken prisoner by the infantry. At that time, too, Colonel Cranley went off the air and it was presumed that he had been killed or taken prisoner. One survivor alone from among the troops on Hill 213, Captain Milner of the Rifle Brigade, succeeded in getting back under cover of darkness.

#### A CURIOUS BATTLE

The Germans must have been heartened by their successes and they prepared to attack the town. During the next four hours a curious battle developed in there, a battle which became a duel between Lieutenant Cotton, M.M., commanding a troop of three Cromwells and a Firefly, with some infantry and antitank guns from the Queen's, on one side and three Tigers and a Mark IV on the other. Cotton's own tank was a 95-mm., not much use against armor, so he put it in a garage and conducted most of the battle on his feet, merely using its wireless to give occasional orders. At intervals there was torrential rain, so he carried an umbrella as well as a blanket, soaked in petrol, with which to burn any tanks knocked out.

The first Tiger was "killed" by a 6-pdr. which Cotton directed on it. Sergeant Brammall had a duel with another and eventually finished it off by drilling a hole through the side of a house with 17-pdr. H.E. until he could see it, then administering the *coup de grace* with A.P. Sergeant Lockwood and Corporal Horne played hide and seek with the last Tiger and the Mark IV, until they had set both on fire. The French fire brigade was an additional and surprising enemy, who could only with the greatest difficulty be prevented from putting out the fires in the burning tanks. This minor victory was something paid back of the heavy score which the Panzers had run up against the Regiment, and it put new heart into the survivors.

After this reverse, the Germans must have given up the idea of a further attack with tanks, for they now started to shell all they could see and the infantry in the houses and hedges became more active. A few hours before dark the order came to withdraw from the town

to the village of Amaye-sur-Seulles, some 4,000 yards to the west along the main axis, where Tac. Brigade had been for most of the day. This was not easy, as part of the road was exposed to antitank and machine-gun fire, while the sunken portions of the road were too narrow to allow a Cromwell to turn. Eventually, under a heavy barrage of smoke and H.E. by the American 155-mm.'s and British 25-pdrs. laid just before dark, the Queen's infantry and the two surviving squadrons were extricated to leaguer in the village of Amaye. Tanks of the Eighth Hussars were there, helping to remove an uncomfortable feeling of loneliness, and the L. of C. was being protected by First Royal Tanks. Fortunately the night was quiet, as there was much reorganization for Major Aird and his new Adjutant. The Regiment had lost its R.H.Q. and one squadron complete—fourteen officers and a hundred men. The Rifle Brigade and the 5th R.H.A. had also suffered severely.

#### A JITTERY SORT OF DAY

Next day, June 14th, was a nervous, jittery sort of day. The Regiment, with the Eighth Hussars and some antitank guns, were disposed in hedgehog defense of the scattered houses of Amaye, among which also lay Tac. Brigade. On the right, First Royal Tanks were building up and attacking and Fifth Royal Tanks were along the very sketchy center line, some of them on the way up too.

On June 15th, the shelling increased, but down towards Villers the R.A.F. had started. It was the first time that the men had seen the rocket-firing Typhoons and it was a grandstand view, very heartening. In the early afternoon the attack came in from the north and northeast, this time through the orchards. The attack was by infantry, closely packed, with tanks supporting. A full weight of artillery was brought down and the tanks opened up with Besas. The slaughter was intense, widespread and gratifying. Two German tanks were knocked out and the Regiment had lost none. The attack failed.

#### FULL AND MERCILESS SUPPORT

Later the Germans again attacked strongly, this time from the southeast. The First Royal Tanks took the brunt of it, but "C" squadron, assisting the Queen's, were fairly heavily involved. The artillery gave full and merciless support, and eventually the attack failed as the other had failed, with many killed, more tanks knocked out, and nothing to show for it. Spirits rose, but the L. of C. was still too precarious and eventually the orders were to withdraw at sundown. The artillery were laying a concentration in the direction of Villers and as it grew dark, Lancasters came over to drop their bombs, the noise of their engines drowning the sounds of the withdrawal which went like clockwork. The Fourth City of London Yeomanry were in leaguer at 0400 hrs. and everybody, dead tired, was asleep within a few minutes.



# II—THE 44th ROYAL TANK REGIMENT AT THE RHINE

*by Lieutenant Colonel G. C. Hopkins, D.S.O., M.C.*

The battle of the Rhine crossing, so far as the 44th Royal Tank Regiment was concerned, started on March 7th, when we were suddenly pulled out of the Hochwald battle. Puzzled and mystified, the tank drivers and commanders were whipped off their tanks and told to drive them to Nijmegen. The horrors of battle were nothing compared with the horrors that were let loose on "Diamond" or "Ruby" that night.

Dawn broke and the first crews climbed out of their trucks to have a look-see—"brownd-off" but ready for the worst. Hm! Not a bad looking joint, no civvies about though. Surrounded by water: what's that smoke screen for? And look at that twelve-foot-high screen on the other side—miles of it! What is this place anyway, a blanking Zoo?

Just then a string of things looking like mobile hip-baths went clattering by, plunged in the water and proceeded to swim across. This was too much and there was a mad dash for breakfast, for no man can stand seeing things like that on an empty stomach!

## TO SAIL ACROSS THE RHINE

Yes, it was all too true—we, the 44th Royal Tank Regiment, had joined the Wavy Navy and were to sail our way across the Rhine.

There commenced a furious period of training, lasting 10 days from morning till night. Luckily the training gave full scope for humor and never a day passed without somebody qualifying to receive the concentrated quips of the Regiment. Nautical terms were used freely, often with no regard to their meaning—but they sounded good.

Nevertheless, a tremendous amount of work was got through. Tanks had to be serviced and loaded with ammunition, drivers and commanders trained, the former in Davis escape apparatus, and the latter in what to do with the tiller. Very difficult this was indeed, as the D.D. always did the opposite to what was expected.

Meantime, R.H.Q. was going slightly cross-eyed looking at air photos and trying to spot the winners in the way of an entry and exit on the Rhine. Early on it was decided, though not after a struggle, that we couldn't be expected to do a night crossing in view of the limited time available for training. So all final crossing practices

and dress rehearsals were carried out at first light. All squadrons did one of these final schemes and timings for "The Day" were worked out from them.

From 19th March onwards, final adjustments were made and everything tied up as far as could be done. Liberty trucks took off every evening for the old haunts across the Maas; a final pep talk was given by the Brigade Commander, who told us that we were to cross over behind 15th Scottish on the XII Corps front. On March 22nd the tanks made their final crossing of the Maas and lined up ready to be loaded on transporters that night.

The next day we motored off at dawn and the whole party concentrated in a forest just south of Xanten, the tanks getting in at about midnight on the 22nd. On arrival, all vehicles were leapt at by an enthusiastic platoon of an American camouflage company who, in a very brief space of time, had everything, from the latrines upwards, looking like fir trees.

## A NIGHT CROSSING

March 23rd was a lovely sunny day but at 1100 hrs. R.H.Q. was struck a smart blow when they were told that the crossing was to be that night. Gone were the plans for a peaceful two days of reconnaissance and briefing. People had to get moving. The Intelligence Officer's staff got down to their model-making in double-quick time, pausing only to snatch a mouthful of food, before the scale model of the crossings was completed at 1430 hrs. Briefing started at 1500 hrs. for all officers and tank commanders and went on for the rest of the afternoon. Meantime the near bank and inflation area reconnaissance parties were peeping over the bund to see what they could see in daylight. Comparative peace reigned from then till the guns opened up, and that was that. We, of course, were in the middle of three A.G.R.A.s with a couple of heavy regiments at our back door, just to help matters on. Luckily nothing very much came back in the "in-tray," though one or two landed pretty close to one squadron.

## THE BARRAGE

At 2000 hrs., the near bank reconnaissance parties went off, now able to put out their tape and lights. 2200



hrs. came and the barrage touched a new height as 51st Division went in on the left. Then came the R.A.F. to sort out Wesel for the Commandos and at midnight they went in to a full accompaniment and finally at 0230 hrs. on the 24th, in went 15(S).

From then on, as one might say, we were "on the air," as our far bank reconnaissance and working parties accompanied them. Their task was to prepare two exits from the river, mark them, and exercise traffic control during the crossing. Then followed the squadron reconnaissance officers in their Weasels. That, at least, was the programme, but in fact all but one decided that it was safer to go over in a Buffalo. At any rate, only one voice was heard, plaintively wailing in midstream from his Weasel, for somebody to show him a something light!

Meantime, in the leaguer, all tanks had been pulled out on to the road at last light and all pointed in the right direction. Tea and rum was served at 0330 hrs. and at 0400 hrs. the party moved off, winding its way through the gun lines, some of which had to be silenced whilst we passed so as not to blow tank commanders' heads off. Slowly the column moved on down the hill through Xanten towards the inflation area to the east of it.

Meantime, the far bank reconnaissance parties had met with varying success. The right-hand one was going according to plan, but the left-hand party had had a bit of trouble and several casualties. They had been span-dau'd, mortared and shelled, but they reported that they would be ready to receive the tanks on time. The Weasels were also gradually coming in to roost and reporting their crossing in rather shaken voices.

By 0515 hrs., the Regiment was complete in the inflation area and that very tricky operation began. Luckily the enemy shelling was sporadic and also not very accurate so far as we were concerned. Not that it had to be, when all that is required is for one exhausted splinter to tear one's canvas. However, only two tanks were punctured and, as dawn broke, the Regiment started to move down to the water's edge. The crossing was made on a two-squadron front: "A" squadron right, "C" squadron left; R.H.Q. following "A" squadron and "B" squadron being held back ready to cross by either route, depending on which had proved the best.

#### FULL OF TANKS

Both exits had by then been completed and soon the river was full of tanks, looking rather like floating baths drifting downstream. Over half of "A" squadron was waterborne when the enemy started shelling the tanks as they were entering the water. One tank was hit as it left the shore and sank like a stone, the crew luckily all abandoning ship and making the shore safely. (They now have a swastika flag with, emblazoned on it, "First to the bottom of the Rhine, 2 Baker.") The last tank of "A" squadron was hit as it was going down the runway into the water, but it managed to reverse out and retired

for patching. R.H.Q. nipped in while the enemy was adjusting for range and, except for a few splashes in mid-stream, had no trouble.

#### ALTERNATIVE EXIT

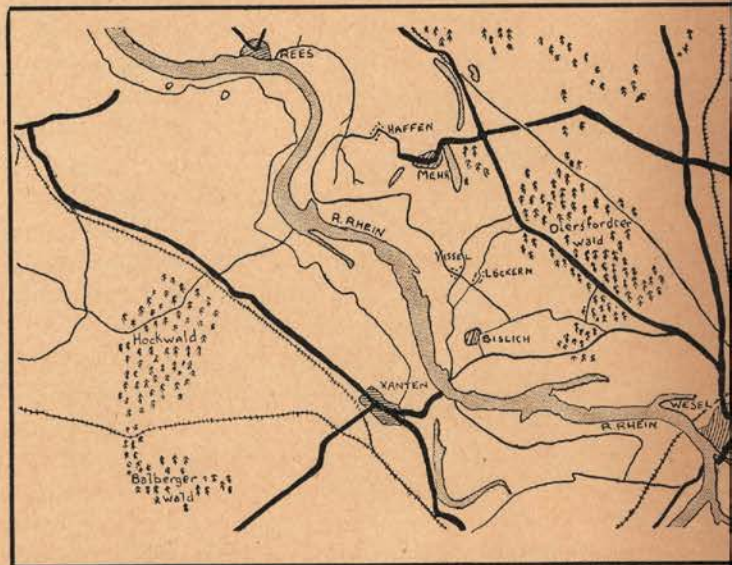
Meantime, "C" squadron had got nine tanks waterborne when the exit and entrance started to collapse so the rest of the squadron were ordered to about-face and to follow on behind "B" squadron who were now using the right-hand crossing. Tanks were now scrambling out of the exits in fine style, an alternative having been found for the left-hand exit. Reconnaissance officers had started to lead tanks away to the concentration area inland under the bund. Here a certain amount of bogging took place in the thick clay belt on the far bank. How we wished at that stage that our A.R.V.s had also been D.D.'d! As it was, five valuable tanks remained bogged on the bank for nearly three days until the A.R.V.s came over by bridge and ferry.

However, a very imposing array of tanks was collected in the concentration area. In fact we only had one more casualty, one of "B" squadron's tanks being hit in mid-stream, the commander and driver being wounded. They were evacuated on to a passing Buffalo and the operator continued to drift on downstream, giving us a running commentary as he went. It speaks well for the invention, as it was a considerable time before, over the air, came "Am abandoning ship now, out."

By 0815 hrs., the whole Regiment was across and concentrated. It had taken only half an hour above our estimate, and contact had been established with an infantry battalion, the 7th Cameronians, and we were ready to go.

#### OBSCURE SITUATION

The ground situation at this stage was obscure. Of the assaulting Brigades, the 44th on the right were firm





in Bislich, but no farther. We were in their left rear, and the enemy were on our left and in front of us, between us and 227th Brigade who were some three to four miles away on our left. 7th Cameronians had not "A" squadron waded in with 44th Brigade to enlarge their bridgehead. This was done successfully and just yet completed their concentration, so to fill in time before 1000 hrs. the villages of Vissel and Jockern were in the bag with a suitable array of depressed prisoners streaming back to the cages.

At this stage, an unnatural hush had fallen all over the battle front. Not a gun was fired and an air of expectancy and waiting was everywhere discernible. Suddenly they came! With a roar of engines, thousands of aircraft poured across the sky and disappeared into the mists beyond. For the next hour the air seemed full and it was only with the greatest difficulty that one was able to concentrate on the job in hand.

#### LINKING THE BRIDGEHEADS

Anyway, just after 1000 hrs., we got definite orders

that we and 7th Cameronians were to move north and link up the two bridgeheads. With "B" squadron in the lead, we were soon in Vah on the right, where the bridge over the dyke was blown, and also in Wolffskath on the left, near the Rhine bank. The enemy was still about and needed digging out of every building. As he displayed his usual reluctance to surrender to tanks alone, we kept our infantry on our backs as long as possible in order to quicken things up. "B" squadron now turned east and, after "brassing up" Riswickshof and its surroundings, went in there and joined up with 227th Brigade. "C" squadron now took up the chase and headed for Mehr and, apart from the bad going and a few snipers, no trouble was experienced in getting there. "A" squadron in the meantime had moved up on the left and got into Haffen, where they had a lot of fun with some good targets.

On the whole, it had been easier than we expected and it gave us a kick when, after the day's work, we found ourselves not only safely over the Rhine but firmly established in a sizable bridgehead.

## III—THE ROYAL SCOTS GREYS FROM THE ELBE TO WISMAR

*by Lieutenant Colonel D. N. Stewart, D.S.O., M.C.*

On April 29th, 1945, the Royal Scots Greys came under command of the Sixth Airborne Division for an operation which was to be, for them, their last before VE Day. They moved from Puttensen, just northeast of Bremen, a distance of 70 miles into a concentration area southwest of Luneburg.

The bridgehead over the Elbe had already been made with little opposition and bridges were being constructed, hindered somewhat by spasmodic, unobserved but accurate shellfire, and by enemy bombing after dark. A Class Nine bridge and a Class 40 were under construction just west of Lauenburg and, farther southeast, the Americans were building a Class 40 near Bleckede.

On April 30th, one squadron moved forward and, after being strafed by enemy fighters—a fairly rare occasion at this stage in the war, crossed the British Class 40 bridge and reached Boizenburg in the evening. Meanwhile the Sixth Airborne were crossing by the Class Nine bridge and by the evening had got rather

more than two brigades concentrated in the Boizenburg area. The remainder of the Regiment also moved forward just north of Luneburg but were allowed no farther as all priorities over the bridges were now given to 11th Armored Division and Fifth British Division. The road from the Elbe back and through Luneburg was packed with their transport, nose to tail, waiting to cross both bridges.

#### THE USE OF CAMOUFLAGE

Early on the morning of May 1st, however, by dint of splitting down to pairs of vehicles and camouflaging themselves as 11th Armored Division, the Recce troop managed to pass the Military Police unobserved and join up with "C" squadron. A small echelon was allowed across and, under command of the R.S.M., also joined this party at 0300 hrs. The Commanding Officer in a Honey tank and one scout car had crossed earlier that night, but it appeared that this was all that was going to



be allowed across for some thirty-six hours.

However, at 0100 hrs., the Regiment was told that the American bridge was allotted to it at 0600 hrs. on May 2nd. The "air" was extremely bad just at this time and in any case the distance between the forward and rear parties was excessive, so the only thing to do was to send a message back in a Weasel. The Recce troop leader was, therefore, sent back in a Weasel to cross the river and give the two remaining squadrons their orders. He started at about 0115 hrs. As all bridges of the river were one-way forward, he swam the river in his Weasel and reached the two squadrons at about 0330 hrs. Having delivered the orders, he set out on his return journey, but did not catch up with his troop again till about 0930 hrs. as the advance had already started and was going very fast.

Meanwhile, at 0530 hrs. on May 2d, the squadron already across the river picked up the leading company of infantry and the advance began at 0600 hrs. The route was northeast, with the eventual objective Wismar, but it was not expected that they would get farther than Wittenburg, or possibly Gadebusch on the first day. The order of march was one section of Recce on the center line, with a further two sections working up subsidiary roads on each side. Then followed the leading troop of Shermans with no infantry on board. Then the remainder of the squadron, carrying a company of infantry, and finally the remainder of the brigade in motor transport.

#### WITHOUT INCIDENT

The advance started off fairly slowly and carefully and the first and second bounds were reached without incident. The Recce sections were therefore told to increase speed slightly. Soon all three of them were meeting odd Germans; some singly and some in truckloads, all of whom seemed only too pleased to see them and quite unwilling to fight. All these prisoners were instructed to get on to the center line and join the down traffic. As the main northwest to southeast road through Wittenburg was reached, each Recce section came up on the "air" to say that they were surrounded by several hundred Germans and required help. But by now, it was evident that speed was of paramount importance. The Recce sections were once again ordered to push all prisoners in towards the center line. Many of these drove themselves in and joined the down traffic, which was still entirely composed of Germans. The Recce sections showed some reluctance in doing this, as seldom had they had so many prisoners in their hands before, and it seemed a pity to let them go before seeing what was what!

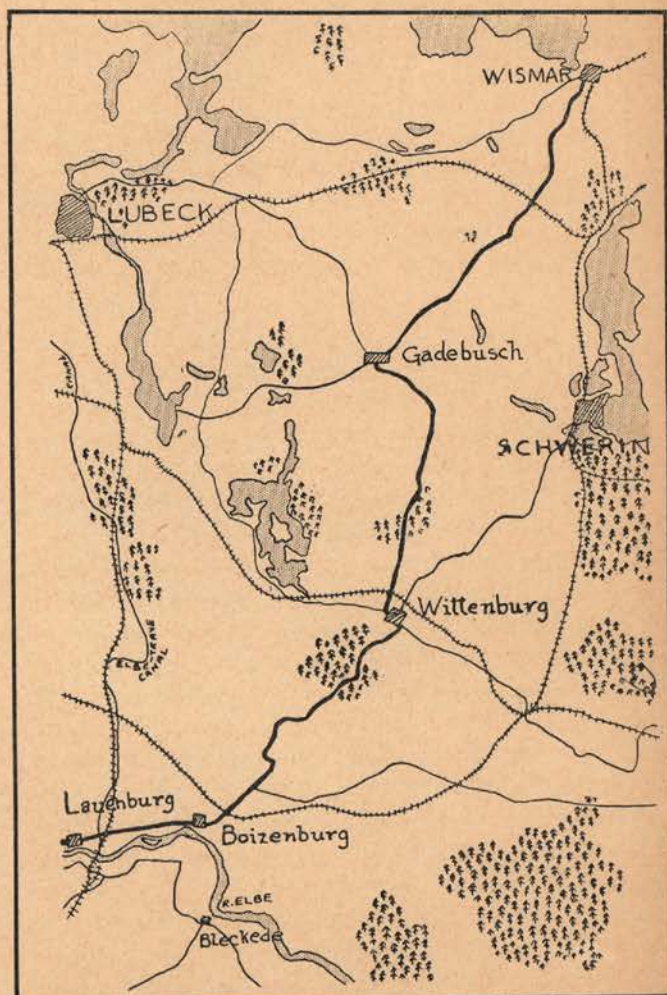
#### FLANK SECTIONS CALLED IN

The advance continued, and as speed was gradually increasing, the flank sections were called in as they were getting left behind. This meant that the whole of the

Recce troop were now on the main axis, followed by the Sherman squadron at the best speed it could make. Odd Germans and parties of Germans were being picked up the whole time, many driving themselves in their own vehicles. These vehicles included 88-mm. guns on tow, with German soldiers sitting all along the barrel, and even one Mark III tank with a white sheet carefully tied over the gun. In the woods just off the road north of Renzow a heavy workshop was discovered with much valuable equipment, including an absolutely new Royal Tiger A.R.V. But no time could be spared and the chase continued.

At Lutzow the leading Honeys halted and it was soon seen that the cause was a German traffic jam. German vehicles were milling about in all directions and the Shermans were quickly brought up and fired a few rounds of H.E. to keep them still. After about 20 minutes the traffic was sorted out, but as the Honeys were by now getting low in petrol, the opportunity was taken to refill.

On towards Gadebusch the town and woods beyond were full of Germans, but none seemed inclined to fight. At one point a German D.R. chipped in behind the C.O.'s scout car and was with the greatest difficulty persuaded that it was best for him also to join the down





traffic and travel the other way. There was no shooting in the town when the tanks went through, but later in the day, as Sixth Airborne Divisional Headquarters were passing, two policemen on point duty were sniped and killed. Luckily this incident coincided with the belated arrival of the remainder of the regiment, who had by now crossed the river and were doing their best to catch up. The Second-in-Command quickly had a troop in action and dealt with the offending area.

#### STREAM OF PRISONERS

By now the leading Honeys were well on their way to Wismar. They had long since run out of all small-scale maps, but all the roads were well and accurately signposted and a steady speed of about twenty-five miles per hour was being maintained. Germans in all types of vehicles, walking, on horseback, and riding bicycles, continued to stream southwards against our advance. Some were in batches; some singly. It was humorous to watch their different reactions on seeing an Allied tank. Obviously they had no idea of the close proximity of their enemy. Some, on seeing a Honey come round the corner, would leap into the nearest ditch, and were still lying there as the column passed with a puzzled expression on their faces, wondering why they had not been shot. Others had already recovered themselves and were standing by the roadside, with a bewildered grin on their faces. Others again seemed totally oblivious of the fact that these were British tanks, and as the tanks went up one side of the road, they were busy pedalling down the other, their rifles slung over their backs, with never a glance to the other side of the road!

#### A LEVEL CROSSING HOLD-UP

About eight miles short of Wismar, the leading tank came up on the "air" to say that it had reached a level crossing, but could not get across as there was a train going over. Sure enough there was the train loaded with German soldiers and equipment, including three S.P. guns on flats. The train could not be stopped other than by shooting at it, so it was allowed to go on unmolested, in case it "brewed up" on the level crossing and blocked the road. At this time also several German fighters flew down the road very low. They did not attack and no one quite knew what they were trying to do. Possibly they realized they could not do much as, it must be remembered, there was about as much German traffic going one way as there was British traffic going the other.

The leading Honeys reached the outskirts of Wismar at about 1300 hrs., while the Shermans were still some twenty minutes away coming along at the best speed they could make. A few bazooka men appeared amongst the outlying houses but, after having a look, appeared to change their minds and go away. The problem now was whether to attack a large town with eleven Honeys or to wait till the Shermans and infantry arrived. As

there were two important bridges on the northeast of the town, carrying the road which ran east and west along the coast, it was decided to try to reach these and then wait for the remainder of the force to come up.

Getting through the town was a difficulty, as there were no large-scale maps, but by trial and error and the help of an obliging English-speaking German officer, the Honeys eventually found their way through to the eastern outskirts, where a road block was found to be down. The road beyond the block was packed for miles with civilian refugees, mostly in carts, while inside the town was a seething mass of German soldiers, each with his rifle or bazooka under his arm. However, there were no incidents apart from the fact that someone had dropped the road block on the southern outskirts of the town behind the Honeys, thereby holding up the Sherman squadron for a short time when it arrived. But with the help of some German soldiers, the road was soon clear again. The Shermans rejoined the Honeys and the Airborne infantry having dismounted, arrived at the double and took up various positions all around the town. The work of collecting and marshalling the German soldiery began.

Odd German aircraft still continued to fly low over the housetops and it was obvious that there was an aerodrome close at hand, though none was marked on any of the maps. The Honey troop, therefore, with one Sherman troop set off in search and soon discovered it to the northeast of the town close to the seashore.

#### BUSINESSLIKE MANNER

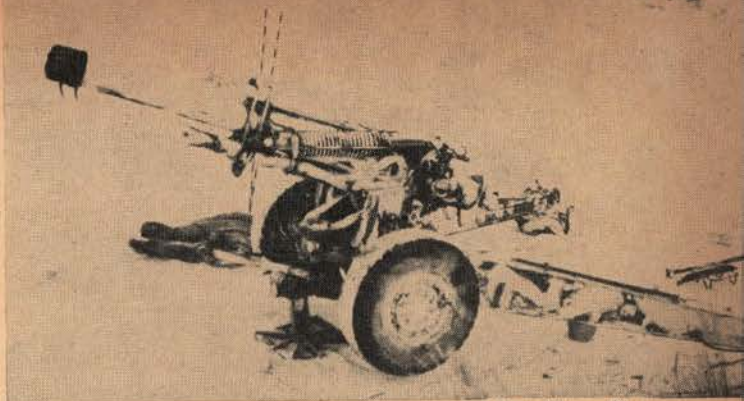
A large number of men were observed running about in the hangars and buildings in rather a businesslike manner and some shooting on both sides took place. Eventually, however, a German came up to say they were very sorry; they had not realized that these were British tanks; and if the firing would cease for a few minutes, they would come out and surrender. Sure enough, five minutes later, two hundred Germans marched out in threes and in perfect step. They were told to go back and fetch their transport, which they did, and the whole convoy set off back for the town.

So ended the war for the Regiment. On that last day they had covered sixty miles in approximately eight hours and the two rear squadrons had covered at least twenty miles more. Not a single tank of the leading squadron broke down, though two of them were almost out of petrol by the time they had reached Wismar. The speed toward the end was the best speed the tanks could do and some of the troop-carrying vehicles farther down the column were doing 60 miles per hour to keep up. As one of the Airborne troops remarked: "I never realized a Sherman could do sixty!"

Towards evening the remainder of the Regiment arrived and all squadrons found themselves billets in various large farms a few miles southwest of the town.



# FORTRESS OF THE NORTH



Signal Corps Photo

Partly camouflaged with both white paint and snow a 155mm Howitzer stands ready for action near Ladd Field, Alaska. This gun belongs to Task Force Frigid.

*by Leonard J. Grassman\**

**Much has been written about the Arctic Regions as the potential fortress of the North. But, no one seems to have considered the negative aspect that the Arctic is militarily impractical both offensively and defensively in warfare as we now know it. Leonard J. Grassman discusses the Arctic's drawback in this article.**

CURRENT speculations on the United States' intention in the Arctic regions have us shivering. American writers have gone all out on conjecture, seizing that "writer's opportunity" to write authoritatively on a subject in which no one possesses contradictory truth. Military persons laud possible wartime utilization of the area, and the air minded shout about the Polar Air Route which places everyone and every place within air striking range.

All these conjectures are based on the rather routine experiments of our armed forces, and everyone but informed persons is portraying or forecasting. Even the partially informed, anxious to unload what little unclassified information he possesses, blows his little knowledge into a mass of positive error.

An explorer, long happy with the task of writing about his feats in the tropics two decades ago, writes an expert thesis on the military value of the "Northern Wastes," while a kid pilot who did all his wartime flying over the Hump, tells vividly of the possibilities in Polar Air Routes and atomic war. And, ironically, a magazine writer who fought his war in Washington, D. C., handing out press releases, now verbally girds Alaska in

strong armor, while his former assistant who spent three war years in Alaska and on Attu now sits in D.C. turning out press releases.

These stories run from sincere attempts to estimate the military activity to the fantastic on atomic war of the future. All of them brew suspicion and confusion which tend to frustrate sincere cooperation at the Peace Tables of the World, and are providing, in part, the possibility of another war in the future. Their effect on people, especially the uninformed or imaginative, is wrecking and tantamount to a midwinter nightmare with the covers kicked off. More of it will bring shuddering delirium of gigantic jet-propelled icicles, atomic snowballs and amphibious icebergs. The "future minded" militarist, fresh off terminal leave will have our Cavalry mounted on Seals and Polar Bears, and our Armor supplemented by a U. S. Reindeer Patrol.

All of it would be extremely humorous, worthy of the artistry of that hoard of comic books overrunning newspaper stands if it were not for the tragic effect on national thinking and the breeding of international distrust.

In all of it, the basis for the foolish conjecture and the inexperienced analysis is the past and current frigid activities of the U. S. Army and Navy, all of which are for the purpose of testing equipment.

\*Military Analyst and frequent ARMORED CAVALRY JOURNAL contributor.



Without a doubt, there is much to be gained from these experiments. Equipment and man's ability to cope with the northern elements will be tested. Shortcomings will be demonstrated, along with many unfeasible theories about military activity in the Arctic. Much valuable information for peaceable endeavors is indicted. The source of weather and vast natural resources are apparent along with a tremendous store of knowledge for man and about man.

However, in considering the Arctic as the potential fortress of the North, none of the writers seem to have considered the negative aspect that the Arctic is militarily impractical both offensively and defensively in warfare as we now know it, and, if the predictions about warfare of the future are true, a military system of defense in the Arctic wastelands will be absolutely unnecessary. Atomic-Bomb-carrying rockets will glibly skip the thousands of miles of icebound space and strike their targets direct.

The statement that the Arctic is militarily impractical is not hard to substantiate. The natural elements are limiting to personnel and ordnance. Men cannot operate to even a fair degree of combat efficiency in sub-zero temperatures. This was proven by both Napoleonic and Hitlerian armies, which sustained all the casualties of cold, just as many of our own personnel in the Ardennes offensive.

Combat in the Arctic is a war with natural elements more formidable than any human enemy could hope to be. Cold expands steel and "soups" powder, making it mandatory for improvement in our present artillery and small caliber weapons—if such improvement can be attained. Wearing apparel much more substantial than any we have will be necessary for any sustained operation in the Polar Area. The treachery of the terrain limits ordnance and the vast spaces necessitate long lines of supply which must in turn combat treacherous and natural hazards. Moving steel parts fuze and metal can crystallize in sub-zero temperatures and a whole new set of lubricants and fuels would have to be developed to keep equipment operating.

Progress in physical advancement through the frozen North must necessarily be slow—not at all good in combat wherein speed and fire power are winning features, and, in it all, seasonal limitations are there—even for planes which are purportedly capable of providing swift transportation for both men and supplies. These facts also limit the enemy and curtail the utilization of surprise in attack.

Elaboration on difficulties on this subject can go on without end. Arguments sustaining the belief that our nation can overcome these difficulties can go on infinitely, too, and are both logical and true. We have overcome practically all other natural obstacles in the past and there is great reason to believe we can in the case of the Arctic Giant. So can a potential enemy, but why should he?

There are too many avenues to the United States open to attack. Although longer, they are much more easily achieved than an attack across the Northern Regions. Why then would anyone attempt attack and invasion through a terrain of difficulty, which would entail special equipment—equipment which would be cast aside upon achievement of warmer clime? Such a sacrifice, of course, necessitates duplication in quantity of weapons, equipment and supply.

Attack through the Arctic Wastes, by virtue of the nature of the area and the seasonal limitations, would have to be rapid and almost immediately successful, for a sustained fight would mean defeat. Therefore, the Arctic equipment would be in use but for a short period and it would be necessary to carry along the equipment essential to combat in a milder climate.

This course is too expensive to be militarily practical, and too risky an endeavor when a nation is gambling its very existence on the successful operation of an aggressive war.

Of course, aerial attack may be a different thing. Despite the unknown storms of the Arctic skies, it is reasonable that the United States could be attacked, but it would require a terrific air force to conduct such an operation and such a force could easily be detected in its preparation. There, too, again is the risk which might prove too expensive.

On the score of defense, the Arctic Regions provide poor footing. It is only logical that a ring of defense projected into the Arctic would be much bigger than one hugging the boundaries of our nation and would compel a long and weak line of supply.

A snug ring of defense behind naval buffer forces at sea and detector and interceptor elements based north and/or away from the Continental United States would be provided with maximum uninterrupted supply and support; would have smaller areas toward which concentrated might could be thrown, and would always be a sound base upon which to build and develop in the future.

There is no doubt, should war strike in the future, the United States proper will be subject to attack, and the best method of preparation is to be strong enough at our borders to intercept and repulse any element attacking—preventing a thrust at our interior source of strength and our national morale.

Against such a defense an enemy would expend its attacking power, weaken itself to a point at which U.S. aggressive forces could attack and win.

A smaller ring of defense, on size alone, can be close-knit, near perfection. Perfection of such a ring around the United States is a necessity. Lack of that ring was our biggest fright during the last war. The debacle at Pearl Harbor and the loss of our fleet, although saddening and a terrific military blow, were not the cause of fright, but the condition which made a far-flung Pacific aggressive war a must was the sheer indefensibility



of our west coast—a long line, a great part of our ring—miles and miles of undefended beach, most of which was extremely vulnerable to any attack.

The idea of a "Fortress of the North" is not new. It developed in the minds of many men, either militarily or politically, aware or simply informed. Often in the late nineteenth and early twentieth century in U.S. history, men came forth with warnings concerning the vulnerability of the northern side of our nation, and some even cautioned it might be the spot first attacked in the then next war, the war which struck at Pearl Harbor first. A cartoonist on a metropolitan newspaper who had spent his youth prospecting in the northern clime warned against our Alaskan weakness time and again and went as far as to draw up a set of defenses and fortresses for Alaska, but watched his plans pigeonholed by statesmen's influence on their contention that such fortification or protection would be an insult—a gesture of ill will toward our friends, the Japanese.

General Billy Mitchell noted the value of the Northern Fortress from the Air standpoint, and many other generals, familiar with the military value of Alaska have stood firm on their contention that Alaska must be protected, but none have gone overboard on the idea of selecting the glacial areas as the warground of the future.

Consequently, it is evident that if the nation's militarists cannot consider the frozen North as a "Northern Fortress" there must be reason for all this activity in the frosty expanses. There is.

Those men, given humility and wisdom by the past war, entrusted with the security of our nation, are not overlooking one single bet, no matter how inconsequential, which might even remotely affect our National Security. Driven by the desire for the achievement of two positive goals—lasting universal peace and absolute protection for our country—they are alert to everything and anything which might foster advancement to either or both goals.

The last, teaching, war provided United States forces testing grounds for our equipment fully in every other theater to a maximum degree. However, because of the geographical aspects of the war, we were not provided with an adequate test in severe cold.

The other testing grounds displayed all the handicaps they had to offer and showed us our every shortcoming in training, equipment and medicine. We learned much and our military experimenters plan to gain equivalent knowledge from the Arctic maneuvers.

Testing and experimentation concerning American equipment has been the avowed purpose, the announced purpose of these maneuvers, but few have been inclined to accept the apparent purpose or the announcement. Relatively came the conjectures and foolish prophecies, which, if one is to ascertain the strength and wisdom of our security planning, must be disregarded as nonsense.

The tests will, beyond a doubt, prove extremely fruitful. The U.S. Military will learn a lot about the inadequacies of our arms and equipment in the North; also their limitations. Paralleling that knowledge will come valuable information on the Arctic to add to our great store already accumulated by our adventurers, Father Hubbard, the "Arctic Priest," and other American explorers of the Ice Country. Along with it will come foundations for outpost planning and other valuable data.

However, great as all this knowledge is, it is but a fragment of the over-all scope of knowledge being assembled by the nation's military protectors. It is extremely important, but it is only part of the whole, which, of course, is the over-all plan of defense for our nation—National Security.

In this plan, the North is of no greater importance than the Florida or California coast, the Panama Canal or the Hudson River. Each is part of the nation, any could be a beachhead of the future. So, it is unwise to accentuate any one spot on our borders—borders, which in the future will be around and above us.

Reading and digesting a half-dozen of the essays recently put forth on U.S. activity in the Far North has us wondering if the military mind has forsworn regulations and basic combat tactics for the ingenuity of imagination, deciding there should be a radical change in battlefields as well as in the type of warfare, saying, "Let us have no more muddy battlefields; a change is needed; let there be ice and slush instead."

Much to the contrary of this nonsensical gibberish is the intent. The prime purpose of every major military act since the end of the war has been to enhance the little advancement we have made toward a lasting peace, and to provide to the highest possible human degree a strong national defense which will deter future aggression and, if failing that, provide our country with a fighting chance.

Some of these acts, it is true, have been somewhat ineffectual—just as many acts in the future will also prove, but they have been executed with that noble goal in view, and, in the future, over the long road of trial and error, ingenuity and inventiveness, and fortitude and sincerity, may provide our country with the achievement of both peace and security.

In the meantime, it behooves every thinking man, especially those associated with our effort toward absolute national security and those who came to know firsthand the horror of war, to disregard the nonsense produced by the fictioneers and so-called "analysts," and heed the words and acts of those responsible to us for the security of our nation.

It is mandatory that each and every American support these leaders wherein they are right; replace them when they are continually in error, but, above all, be not informed by the uninformed, blinded by the stupid, nor confused by the confused.



# American Occupation — The Destiny Of 200 Million People

*by Daniel C. Fahey, Jr.\**

**Our objective is to make peaceful, responsible citizens out of the 200 million persons in American Occupation Zones and to make peaceful, responsible governments out of the existing shambles. Colonel Fahey of the War Department Civil Affairs Division discusses the problem at length.**

**T**ODAY the armed forces of this country have the mission, in Germany, Austria, two provinces of Italy, Japan, Korea and certain Pacific islands formerly mandated to, or controlled by Japan, of administering or supervising the affairs of approximately 200 million foreign nationals overseas.

This team, the Army and the Navy, and they are still a team, despite the controversy over unification, together with a third member, the State Department, are attempting in these areas where we have so effectively demonstrated our combat superiority, to reorient the political, economic and cultural aspects of the lives of the 200 million persons—to the end that the festers that caused the last war may be removed and cauterized, and that effective therapeutics be applied which will insure a permanent peace.

## WHAT THE MISSION ENTAILS

Basically, our objective is to make peaceful, responsible citizens out of the 200 million and to make peaceful, responsible governments out of the existing shambles. We have won the war—now we want to win the peace.

In the language of diplomatic protocol—

**(The Potsdam Declaration—on Japan)**

"The occupying forces of the Allies shall be withdrawn from Japan as soon as our objectives have been accomplished and there has been established, in accordance with the freely expressed will of the Japanese people, a peacefully inclined and responsible government."

**(The Byrnes Stuttgart Speech, 6 Sept. 46  
—on Germany)**

"We have learned whether we like it or not that we live in one world from which we cannot isolate ourselves. We have learned that peace and well-being are indivisible and that our peace and well-being cannot be purchased at the price of the peace or well-being of any other country."

"We intend to continue our interest in the affairs of Europe and of the world . . . we intend to support the U.N. Organization with all the power and resources we possess."

"It is the view of the American government that the German people throughout Germany, under proper safeguards should now be given the primary responsibility for running of their own affairs."

**(The Cairo Declaration, 1 December 1943  
—on Korea)**

" . . . in due course Korea shall become free and independent."

**(Statement of Foreign Secys. US, UK, USSR,  
1 Nov. 43—on Italy)**

" . . . the Italian people shall be given every opportunity to establish governmental and other institutions based upon democratic principles."

**(Statement of Govts. of US, UK, & USSR,  
1 Nov. 43—on Austria)**

" . . . to open the way for the Austrian people themselves . . . to find that political and economic security which is the only basis for lasting peace."

How do we translate this language of diplomatic protocol? What is our procedure on the ground? What does a member of our occupation forces, in any of the several areas, do when he learns that the Schmidt family in Stuttgart is starving; that Yamamoto is beginning the construction of an airplane factory, near

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Osaka; that 75 new Jewish refugees have turned up in Wiesbaden; that 100,000 bales of raw silk are available for export from Kyoto; that an electric light bulb plant in Korea could begin to turn out badly needed bulbs—if coal to run the plant and copper for the bulb base were available; that one of the reopened schools in Vienna was using prewar textbooks—because it could not obtain revised and approved books? What does Lieutenant John Jones or Major Bill Brown or Mr. Tom Smith (we now have a number of civilians working right along with our soldiers in these occupied areas) do about the preparation of proclamations and regulations for civilian controls; about the trial and punishment of war criminals; about the supervision of local courts, police systems and prisons; about the normal civilian economy—local, regional, national and even international; about the level of civilian supplies to meet minimum requirements; about the reactivation and supervision of normal functions of civil government such as—finance, industry and commerce, food and agriculture, education, labor, public safety, public health and welfare and religion. Jones, Brown and Smith are also responsible for the reorientation of the thinking of these 200 million persons and supervise the many outlets of public information, including the press, radio, moving pictures, theaters and instructional programs. They are further concerned with property control, transportation, communications, censorship, salvage of materials for civilian use, the control of archives and arts and monuments, reparations claims of Allied governments and the return of looted property.

Obviously many of the above matters are not settled on the spot, nor on the level of Lieutenant Jones, Major Brown and Mr. Smith. For the United States, some are resolved on an interdepartmental or even Presi-

dential level, from whence they require agreement on a governmental level. Intergovernmental agreements are neither resolved promptly, nor too easily.

Visualize the complex civilian relationships that exist today in any large city in this country. Go a bit further and think about how that city fits into the affairs of a state or region—politically and economically. Then consider the place of this State in the U.S. as a whole, and the position of the U.S. in the world.

Add to all of these complexities the fact that we are dealing with people we've just defeated (history has yet to record the fact that a conquered people are particularly grateful to the conqueror); that we are dealing through the medium of a different language, different customs, different standards—and you have at least an indication of the scope of our occupational missions in Europe and in the Far East today. These analogies, at least, suggest the scope of our occupational problems on a local, regional, national and international level.

This is a tremendous undertaking, particularly for us with our previous isolationist attitude. In these occupied areas, we together with some of our Allies are the government, until a new government may be constituted; or, as is the case in Japan, we supervise and direct an existing, purged, Japanese government.

#### WHAT HAVE WE ACCOMPLISHED?

We have been in this occupation business now a little over a year.

Have we done a perfect job? No.

Have we done a poor job? No.

Have we completed our job? No.

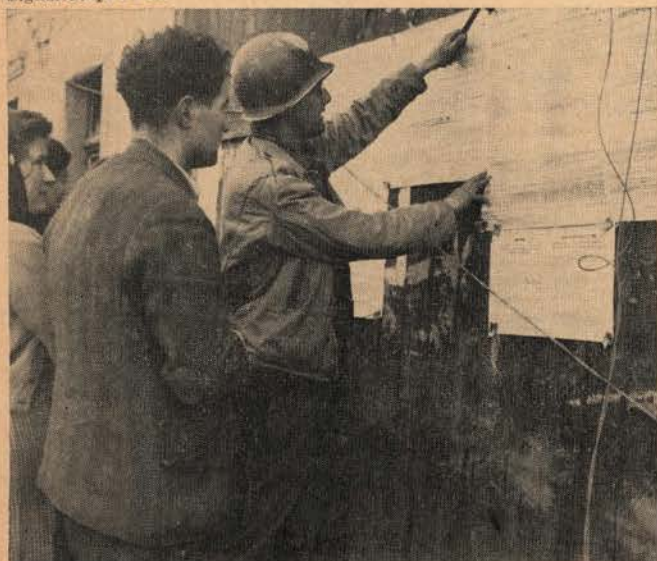
Have we done a reasonable job thus far? Yes. In connection with this affirmative answer, the fact remains that on matters of foreign policy, there is sometimes disagreement between responsible officials in this government. You have undoubtedly seen, and may continue to see, some shocking accounts of the personal misconduct of Generals, Privates and Civilian experts—all a part of our occupation forces. There can be no defense of such misconduct. However, do not overlook the much greater part of the picture and realize that the normal, conscientious and effective efforts of thousands of occupational personnel do not make headline news. In these overseas areas, just as in the United States, it is the two-headed baby and the rotten apple that you are most apt to hear about.

Let us examine some of these things we have actually done thus far since V-E and V-J day.

The military machines of our European and Far Eastern enemies have been destroyed. Approximately 15 million members of these armed forces have been demobilized and sent to their homes. Ninety per cent of the task of repatriating some 10 million displaced civilians is completed. Six million displaced persons have been repatriated from Germany alone, of which two and a half million were from the U. S. zone. Eight

An American sergeant posts laws for German civilians to read and comply with. This photograph was taken in Lahr, Germany.

Signal Corps Photo





hundred thousand German civilians have been repatriated from the Sudetenland, Czechoslovakia and elsewhere in Europe. Two million Japanese civilians have been sent home to the four main islands of Japan from Korea, China, and elsewhere in the Far East. One million Koreans have been returned to Korea from Japan. The Axis had, through varying degrees of coercion, imported millions of enforced laborers, and had sent out almost as many of their own to exploit the areas they had overrun.

The ardent Nazis and the Japanese ultra-nationalists and War Lords have been removed from positions of authority. The party members of Germany, the secret societies of Japan, together with the collaborators, the jingoists, the chauvinists and expansionists are in the process of receiving the type and degree of retribution due them. Forty-nine major war criminals have been indicted and are being tried before international tribunals in Nuremberg and Tokyo. We have arrested over 16,000 suspects or material witnesses in war crimes for trial. Five hundred and four such trials have been conducted resulting in 457 convictions and 47 acquittals.

In Germany, of the 1,457,000 persons screened in our own area, 374,000 have been disqualified from holding any position higher than laborer. In the early summer, de-Nazification in the U. S. zone was so far advanced as to permit, under our supervision, the delegation of this to the Germans themselves.

In Japan, where we had an existing government, willing to carry out General MacArthur's orders, the

**A Philippine Civil Affairs Unit (PCAU) distributes food to hungry Filipino civilians at Pozzurubbion on the island of Luzon.**

Signal Corps Photo



purging of bad Japanese was from the outset a Japanese responsibility, under our supervision. To date 186,000 Japanese have been dismissed from positions of authority.

The destruction of the economic war potential of our enemies is a less tangible business and is immediately related to the peaceful levels of industry which we will allow to remain, and the reparations in kind, which we together with our Allies have agreed will be extracted from these enemy nations in partial payment of the damage they have caused. A solution to this problem is contingent upon three fundamental points; fact, judgment, and the division of spoils.

First; fact, how many steel plants, nitrogen fixing plants, machine tool dies, etc., are there, and what condition are they in? Second; judgment, up to what level, for the normal peaceful needs of these 200 million, should they be permitted to make steel, extract nitrogen, turn out machine tools, and all the many other products that are as useful in peace as in war? And third; the division of spoils, the disposition of all assets, plants and facilities that will produce beyond the normal level of peaceful requirements.

After the facts are established, the remaining two of these three points require agreement with our Allies.

For Germany, the facts are now reasonably well established. At Potsdam, the formula was agreed upon. However, it was a formula capable of dual interpretations. Once this hurdle of interpretations is over, orderly deliveries of reparations will proceed. Some reparations deliveries have already been made.

For Japan, the facts have not yet been clearly established and Allied discussions are just getting under way to determine the levels of industry to remain, and the division of the spoils.

The removals of those persons responsible for the war, and the return home of the millions of displaced persons have been one of the many steps taken toward the establishment of democratic governments for these 200 million people.

Italy and Austria have reconstituted their own newly elected governments. They are both still under Allied supervision, subject to agreement on their peace treaties—currently under discussion in Paris.

In Japan, political parties have been formed; a national election has been held, in which women participated for the first time; and a new constitution is in the last throes of being established.

A comparison of some of the salient points of difference between the old and the new Japanese Constitution is fantastic.

On the point of sovereignty, in the old constitution, the Emperor combines in himself the right of sovereignty. In the new constitution, sovereignty rests with the people.

The Emperor, in the old constitution, is sacred and inviolable—has supreme command over the Army and



Navy—sanctions laws. In the new constitution, the Emperor is the symbol of the State deriving his position from the people's sovereign will and having no powers related to government.

In the old constitution, the Judiciary was under the Cabinet, which in turn was responsible to the Emperor. In the new constitution, there is an independent Judiciary.

The old Diet, including a House of Representatives and the semihereditary House of Peers, lacked full control of expenditures and an adequate check on the Emperor. The new Diet will have full law-making authority as well as control over governmental expenditures.

The old Cabinet was responsible to the Emperor. The new Cabinet is responsible to the Diet.

The above are significant changes in the directions of our concept of democracy.

In Germany, while Allied disagreement has delayed the establishment of certain centralized administrative agencies as specifically provided for in the Potsdam Declaration, political parties have been organized and are active. In the U. S. zone, democratic developments have progressed further than in the other zones. Elections have been held and local government is now administered by freely chosen officials. Government of the three Laender (states), comprising the U. S. zone is now headed by German minister presidents, each with their own ministries, who also sit as a council of three, responsible to the German people and under the supervision of General McNarney.

In Korea, the Japanese influence has been removed, but northern and southern Korea are not together politically or economically, nor has a new and representative government been established. During the 35 years that Korea was under Japanese rule, the Japanese in their policy of exploitation, had filled all responsible positions with Japanese and had prevented the training of Koreans unless they demonstrated affection for Japanese control and no inclination toward an independent Korea. Thus, in southern Korea, a year ago, other than puppets, we found but few Koreans who were really able to administer their own affairs. Today, in the U. S. zone, there are Koreans in every governmental department, to whom is delegated all possible authority. The 70,000 Japanese who were running Korea have been returned to Japan. The huge Japanese holding companies designed to exploit Korea have been broken up. The Koreans are being encouraged in every possible way to prepare themselves for that which they have been promised under the Cairo Declaration—a free and independent Korea.

#### MILITARY'S PLACE IN OCCUPATION

You may well wonder how the War Department and the Army fit into this political, economic and cultural program in these occupied areas. In this business the

Army is the administrator for the U. S., on the ground, in all occupied areas except for a number of small Pacific Islands, administered by the Navy.

In Washington, the War Department, together with the State and Navy Departments are the triumvirate now formally banded together in a committee, known as SWNCC (State-War-Navy Coordinating Committee), who provide the policy, direction and guidance for our military occupational commanders in Europe and in the Far East. Also the War Department, through its daily cable contact with its field commanders, reflects the practicalities and administrative limitations of our Occupation Forces, and brings this point of view to SWNCC wherein the political and economic views are secured from the State Department.

During the past two years, I have been in almost daily contact with my opposite numbers in the State and Navy Departments. I know their first names; how many children they have; whether or not they have a home garden; whether they prefer Ponderosa tomatoes to the Rutgers variety and generally their over-all points of view, in so far as they reflect their respective Departments. My opposite numbers in the State and Navy Departments know the same things about me, and we still speak, we are pretty good friends. This same confidence and mutual understanding that exists on my level, also exists above me, on the secretarial level and below me on the working party level.

Thus on a policy level in Washington, we have, in fact, a successful marriage of the political and economic philosophy of our State Department with the operational realities of administering U. S. interests in these various occupational areas. This marriage has not been nearly as turbulent as you might suspect and it has produced realistic, workable policy very much in the best interests of the U. S.

The Army would prefer to revert as soon as possible to its more traditional role, and to pass on to some other agency of this government the responsibility of administering U. S. interests in these occupied areas. At the present time, there are no enthusiastic applicants eager to assume this administrative responsibility.

The awesome spectre of devastation and destruction that I, personally, have seen in Europe and the Far East, together with the accompanying poverty, starvation and unrest completely stagger the imagination. Miles upon miles of bomb craters, twisted steel, gutted homes and demolished factories, roads and bridges are a most tangible aftermath of the impact of total war.

The problems in these occupied areas are certainly not the only external problems we face in our world relations, but their proper solution will go a long way toward the peace and stability we so badly want. Certainly the fate of these 200 million, probably, the fate of the world, is contingent upon how well we do our job—how well we cauterize the existing raw infected wound, and proceed with the program of therapy.



# Russian Cavalry In Mass

## SOVIET DOCTRINE FOR EMPLOYING HORSE-MOUNTED TROOPS

**Horse cavalry, like an insurance policy, is expensive but nice to have around when you really need it. In Russia, where horsemanship is part of the everyday life of many thousands of people, the Red Army is able to maintain one of the finest horse-mounted components in the world. Here is the doctrine with which Soviet cavalrymen rode to victory in World War II.**

THE Red Army, unlike the rest of the Allied powers, did not relegate the horse cavalry into the discard during World War II. Instead, Soviet Russia made effective use of its cavalry components, and even increased the number of horse cavalry units. The U.S.S.R. proved that the employment of horse cavalry as an independent striking force, and as a component of a cavalry-tank team, is clearly justified. The results obtained by Red Army cavalry units have proven the right of the almost legendary Cossack to remain part of the armed forces of the U.S.S.R. The lessons learned may well be studied by other countries.

Horse cavalry has always played a large part in Russian military campaigns. Russian cavalry forces have been known in every war in which Russia's troops have fought. During the reign of Czar Ivan the Terrible, a relatively small Cossack force under Ermak achieved the conquest and annexation of Siberia. The great distances, unmarked by roads, and the difficult terrain of that area were tailor-made for a cavalry operation.

Even to this day there are large areas of flat plains and steppes in the U.S.S.R. that have only a limited network of roads. Easy traverse of these areas is feasible only to horses. Climatic conditions in Eastern Europe, especially during the spring thaws, place a very stringent limitation on all movement, except over first-class highways. Each spring the Ukraine, White Russia, and Eastern Poland become veritable seas of almost unbelievably deep mud. In consequence, cavalry has been an indispensable arm of the Red Army, even in this war of mechanized and motorized forces.

Since 1917, when the Red Army took over the forces of the Czar, the cavalry units of the Red Army have undergone many changes. Among other things, the over-all strength of the cavalry arm has been increased. During World War II, the Red Army had approximately 10 cavalry corps. Other changes have increased

the fire power of cavalry units by adding mortars; more and heavier artillery, including self-propelled; more automatic weapons, including submachine guns; and by making tank regiments an integral part of cavalry corps.

Further emphasis is placed on the Red Army evaluation of horse cavalry as a fighting arm by the establishment, since 1934, of 74 stud farms, geographically located to breed horses best suited to the locality. The farms are operated by the Red Army Remount Service.

Red Army cavalry organization differs considerably from the organization of U. S. cavalry units. Numerically, Red Army units are the smaller. A Soviet cavalry corps is roughly equal numerically to a reinforced U. S. horse cavalry division. Within the Red Army cavalry corps, also, are from two to four tank regiments as organic elements of the corps. The U.S.S.R. cavalry regiment is so designed as to provide a small and mobile striking force, heavily reinforced by supporting weapons. Numerically equal to less than half a Red Army infantry regiment, the U.S.S.R. cavalry regiment has almost as much fire power in supporting weapons.

In the cavalry corps, the artillery elements play no small part. The corps artillery commander has at his disposal five artillery regiments, armed with a variety of weapons. The type and relative numbers of artillery weapons are selected to achieve maximum flexibility and shock power without impairing the mobility of the corps. Including mortars and artillery of the cavalry divisions, the cavalry corps has nearly 350 pieces of artillery, plus several multiple rocket launchers. This is sufficient to throw, in a single salvo, a metal weight of more than 6 tons.

### CAVALRY IN THE OFFENSE

Red Army doctrine stresses that cavalry should be used as an independent striking force; that cavalry is



not a substitute for mechanized forces, but is a powerful force for operations where motorized units are handicapped by impassable terrain. By Red Army definition, cavalry is capable of taking part in every kind of engagement, and of carrying out actions of every type in cooperation with other arms, in addition to being able to operate independently.

Operating apart from other troops, horse cavalry attempts to strike the enemy flank or rear, to encircle and destroy the main body, and to cooperate generally with air forces, armored units, airborne units, and frontal assault groups. Other cavalry missions are large-scale raids, screening of troop movements of other arms, and counterattacks against the enemy flanks and rear from concealed areas in the rear of a defensive position.

Cavalry can operate in very severe climatic conditions and over severely cut-up terrain. Over extremely difficult terrain, Red Army cavalry can average 5 miles per hour. Small units are unable to maintain continuous movement for long periods under combat conditions due to lack of organic transport and difficulty of resupply. Large units, however, with a sizable supply train and an established resupply system, can operate for much longer periods and over long distances. One reinforced cavalry corps was given the mission of penetrating behind German lines and advancing for 60 miles, parallel to the front and across the enemy lines of communication, thus effecting a junction with another cavalry corps in the area. The movement was entirely through forests and cross country in 2 feet of snow, with temperatures as low as 30 degrees below zero. In 6 days, the corps traveled 55 miles and captured large supplies of enemy matériel.

Red Army conception of cavalry raids extends to larger operations, over a longer period of time, and with a larger body of troops than is normally considered as a raid by U. S. doctrine. One raid made during World

War II included a whole corps and lasted for 135 days, much of the fighting being behind the enemy lines.

In the breakthrough, Red Army cavalry was a valuable asset to the pursuit. When an enemy rear guard attempted to hold up the pursuit the cavalry was able to make wide flanking movements through swamps and other difficult terrain to strike the retreating enemy in the flanks and to set up road blocks. In addition, the Soviets believe cavalry is useful in attacking enemy artillery and salient terrain features to protect highways along which armor and self-propelled artillery can then advance more easily.

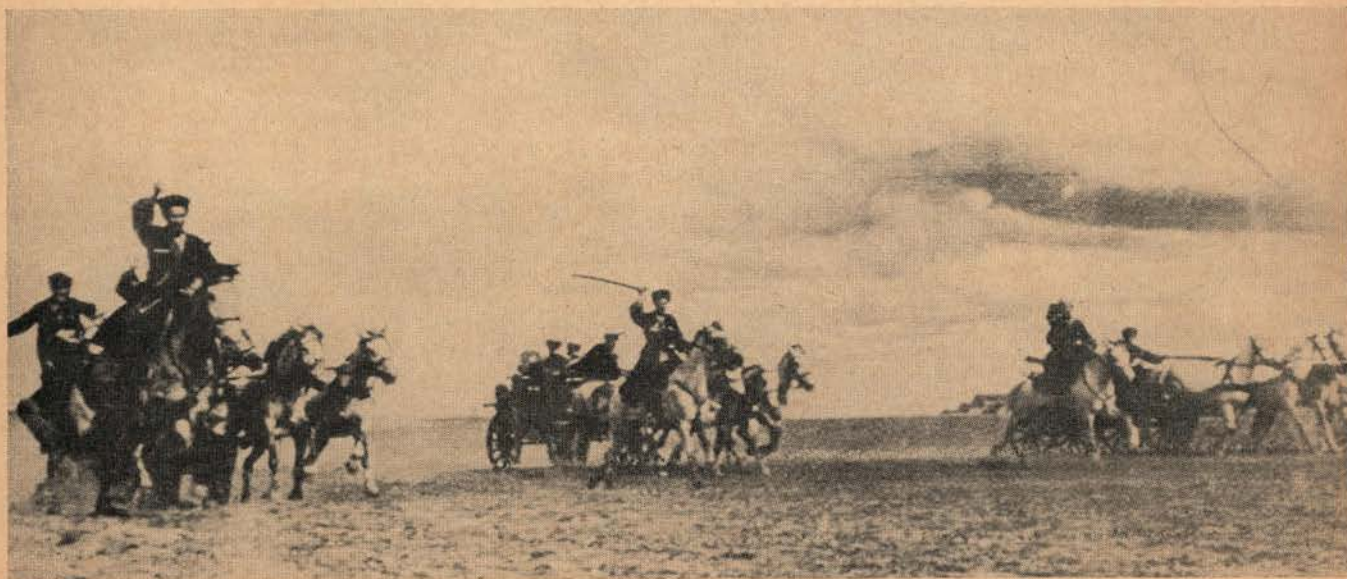
It is a Red Army practice to detach small cavalry units from the main body to reduce by-passed strongpoints. Here the cavalry attacks dismounted from all sides, supported by their mortars and machine guns. Generally these detached units are of sufficient strength to reduce the strongpoint quickly so that they can rejoin the main body of cavalry troops.

Cavalry is used by the U.S.S.R., in conjunction with other arms, in the same manner in which it is used by other armies. Cavalry is used for reconnaissance, counterreconnaissance, screening, and patrol missions. The Soviets make extensive use of night cavalry reconnaissance and raids, particularly during winter weather.

With infantry, Red Army cavalry is used to great advantage. While the infantry holds the enemy with a frontal attack, the entire mass of cavalry and tanks are thrown in on the enemy flank and rear.

The best time to commit a cavalry force, the Red Army believes, is when an initial penetration of enemy defenses has been made by a frontal or enveloping attack. At that time, when the enemy is bringing up his reserves and his defenses are in a fluid state, the enemy has not had time to consolidate and organize any strong defensive position, and cavalry will encounter conditions that are conducive to success.

Cossack Machine-Gun Carriages Advance to New Positions in Crimea.





## CAVALRY IN DEFENSE

In defense, Red Army cavalry is used to cover the withdrawal and to protect the flanks and gaps between units. In extreme conditions, the cavalry troopers dismount and engage in defensive combat as infantry. Care is always taken to conceal horses in a defiladed area for safety and to facilitate withdrawal. In the defense of road blocks or tactically important terrain, the organic artillery and mortars are the basic defensive weapons upon which the Soviet cavalry relies.

## TRAINING

Immediately after the Russian Civil War, the cavalry forces were led mostly by ex-Czarist officers who joined the Red Army. Then an officer cavalry school was established to develop cavalry officers of proletarian origin. This school later became the Buddennyi Red Army Cavalry Academy of Moscow, and is now the highest cavalry institute in the U.S.S.R. During the war there were nine cavalry officer training schools in operation.

Enlisted men and NCO's were trained in replacement cavalry regiments. There were 34 of these regiments during the war.

The cavalry courses at officer schools have ranged from 3 years in peacetime, prior to 1937, to 12 months during the war. Enlisted men serve 2 years in the cavalry army in peacetime. During the war, basic training for enlisted personnel lasted 8 months. During this time the enlisted man was trained in field tactics, individual weapons, elementary topography, care of horses and equipment.

## CONCLUSION

The U.S.S.R., with vast distances and few roads,

A Cossack machine-gun unit in the attack. These are called "tachankas" and a popular Russian song has been composed about them and their drivers.



When a horseman is likely to be seen by the enemy, Cossack scouts dismount and cross dangerous open ground on foot at the double.

and with severe climatic conditions during much of the year, has used horse cavalry to great advantage during World War II.

By the results achieved, the Soviets have justified the use of cavalry, not as a substitute for armor and mechanized forces, but as an independent arm and as a supplement to armor and mechanized might in operations over severe terrain.

Russian cavalry has great power in supporting weapons. The organization is so designed as to provide a small and mobile striking force with adequate support of artillery, mortars, and automatic weapons. Cavalry and tanks have been combined into a smooth-working and effective organization.

In World War II, as in most all of their other wars, the Russians were able to use large masses of horse cavalry, since much of the fighting took place within the borders or countries adjacent to their homeland. But over long distances, cavalry is not as economical. Transport of horses and equipment, especially ocean transport such as would have been necessary for the United States in the Pacific War, requires a large allotment of transportation facilities. In fact, the U. S. did maintain one horse cavalry regiment briefly in New Caledonia early in the war, but this unit was mounted on horses shipped from Australia. The unit existed as a horse-mounted organization only briefly, for it was eventually dismounted and sent into infantry action elsewhere in the Southwest Pacific. The only U. S. horse-mounted cavalry regiment to see action in World War II was the 26th Cavalry, a regiment of Philippine Scouts who covered the withdrawal of U. S. and Philippine forces to Bataan peninsula. This unit fought a classic cavalry rear-guard action from Lingayan to Bataan. Its mission was accomplished, although the regiment was virtually annihilated.





# The Importance of Cavalry\*

WHEN motors came into wide use in military organizations, and mechanization was becoming general in all armies which regarded themselves as modern, many of the military profession believed that the cavalry had fulfilled its mission and was becoming a thing of the past. Actually, it has not been so, and we saw cavalry employed with great success in World War I, even after the appearance of tanks in the year 1917. In the Spanish War the rôle of the cavalry was a most outstanding one, then in Poland it performed tasks of the greatest importance and finally, in Russia the Cossacks demonstrated to the world the capabilities of a well-equipped and organized cavalry.

Of all military questions debated since the termination of World War I, none has been the subject of more study and controversy than that of the mission of cavalry in modern battle. It was practically agreed during the first three years of that war that cavalry was doomed to disappear, since its rôle in combat and the rapid and overwhelming decisions its employment produced were made impossible by the destructive action of automatic weapons. There were those who said that: "A part of the classic functions of cavalry will fall to the air forces; and another to the squadrons of tanks." The majority of the regiments of the French Army, for example, were dismounted, the troopers converted into infantrymen, and their officers placed in command of infantry formations. One of the Verdun forts was commanded for several months by a cavalry officer. Nevertheless, it is to be observed that the French General Staff did not proceed to disband all cavalry units as the war continued, but, on the contrary, maintained several of the very powerful ones at the disposal of the high command.

The Spanish War served as a testing ground for all arms, and especially for the cavalry. The first appearance in the Spanish War of considerable elements of this arm was in the hills and plains of the Jarama river valley, where a few squadrons were the first forces to reach the enemy bank and dominated the entire Jarama salient. That event began a demonstration of the ability of the cavalry to fulfill missions of great importance. In the battle of Alfambra the results achieved by the cavalry were magnificent. It was here that by means of a surprise charge, and in less than a half hour, all the enemy positions were taken, causing confusion and capturing the greatest number of prisoners recorded in any single battle of the entire Spanish War. The tactical surprise produced by the employment of cavalry had been complete. So many successes were obtained with this arm, that from five squadrons at the beginning of the war, the number was increased to more than fifty by the time the war had ended.

Poland, when invaded by Germany, had forty regiments of cavalry, which indicates the importance which had been attached to this arm, but this cavalry, armed only with carbines and lances, was powerless to oppose the German armored divisions effectively, in spite of its courage. This shows us that the important thing is, not to have a large force of cavalry, but to have one which is well equipped. If the Polish cavalry had been equipped with modern weapons, its resistance to the enemy would have been considerable.

In Russia we have seen that the spring thaws turn the roads into a sea of mud, making them impassable for vehicles. This makes the large-scale employment of cavalry imperative on this front, and the great success that attended its use is well known.

The Germans in the recent war, not only employed cavalry in its characteristic missions, but assigned another mission to it, consisting of the following:

After the armored units had broken the enemy positions and opened a breach in depth, there remained small centers of enemy resistance which it was impossible to annihilate because the speed of the attack did not permit the diversion of tanks for action against objectives other than the assigned one. Cavalry units were therefore sent into action and rapidly cleared the terrain of all enemy forces which remained, and opened the way for operations of the other arms.

If cavalry has been of such great importance in Europe where most nations produce their own motors, where highways cross the country in every direction, and where the terrain is not so difficult to negotiate, that is, where the possibility of employment of mechanized forces is almost unlimited, what may we expect in these countries that are so poor and which are obliged to import not only their motors but even the smallest replacements? Their degree of industrialization is far from being able to provide us with the necessary elements for the mechanization of our troops, possible theaters of operation are many, and manpower extremely scanty. There are only second-class roads, and their number is extremely small in comparison with the extent of the country, and the terrain renders even the movements of infantry forces difficult at times. We must then be convinced of the fact that the mechanization of our forces cannot be justified. Their motorization, however, is indispensable, especially in some regions of the country where the road net is better.

There remains then, sufficient evidence of the need for a well-equipped and organized horse cavalry in our army, capable of efficiently meeting the demands which are made upon it. It would be foolish to think at present, or for a long time hence, of the mechanization of this arm in our case, but this without denying that experimentation along this line can be started.

\*Translated and digested at the Command and Staff College from a Spanish article by Captain Camilo González in "Memorial del Estado Mayor" (Republic of Colombia), March-April, 1946.



# The Russo-German Battles—1941-1945\*

by Captain Fergus N. Fitzgerald

## CONCLUSION

(EDITOR'S NOTE: In this, the concluding portion of Captain Fitzgerald's study of the Russo-German battles, the author deals with Malinovsky's advance across the plains of Transylvania, and the Battle of Berlin.)

### CAMPAIGN IN TRANSYLVANIA—OCTOBER, 1944.

THE defection of Rumania from the Axis team left the Transylvanian frontier of Hungary undefended. By September 12th, 1944, Marshal Malinovsky's Second Ukrainian Front had established a bridgehead in the valley of the River Maros and was advancing in two directions, northward towards Cluj and westward along the bank of the river towards Szeged and Budapest. General Petrov's Fourth Ukrainian Front was engaged in crossing the Carpathian Mountains from southern Poland and it was essential that the two armies should make contact before the Germans in northern Hungary could react. At the same time Marshal Tolbukhin's Third Ukrainian Front was operating along the Danube valley in Yugoslavia and the Russians did not wish a re-entrant to be created between Malinovsky and the Red forces south of him. In his efforts to maintain contact with Tolbukhin and at the same time to effect a junction with Petrov, Malinovsky directed his two columns to diverge. As a result a smaller but serious re-entrant developed between the two parts of Malinovsky's Front west of the Bihar mountains.

Malinovsky endeavored to fill this gap with Kuban Cossack cavalry supported by tanks, but their numbers were too few for the task. On October 9th, 1944, Russian tank-cavalry forces met German panzer formations south of Debreczen. The result was an armored battle which lasted 12 days. The Red troops finally took Debreczen, but the loss in tanks to both sides had been extremely heavy.

While farther to the east Malinovsky's northern column reached Cluj, the victors of the Debreczen battle entered the town of Nyiregyhaza in northeastern Hungary on October 22nd. Two days later the Germans counterattacked and compelled the Cossacks to retire. Want of infantry and artillery support was being felt.

On October 30th the town of Cop, which the troops of Petrov's Fourth Ukrainian Front had occupied a few days earlier, was also recaptured by German units. A 45-mile-wide gap had been created between the two Russian Army Groups. The position was a dangerous one for the Red forces.

In the meantime, Malinovsky's southern column

reached Szeged almost as soon as the northern wing of the Army Group entered Cluj. Elements of Tolbukhin's Third Ukrainian Front made contact with Malinovsky's troops at Szeged while other formations crossed the Danube and approached Lake Balaton from the south.

This fresh threat to their communications with the Hungarian capital obliged the Germans to abandon their salient between the Carpathians and the Bihar Mountains. Petrov and Malinovsky were saved from possible further defeats by action far from their own area of operations, but it had been clearly shown that even at this late stage in the war the Germans were ready to exploit any errors in command or strategy made by their opponents.

Relieved of hostile pressure, the Cossacks retook Nyiregyhaza on October 31st. Petrov was less rapid in reacting to the improved situation, and after reorganization he entered Cop for the second time on November 23rd. By then Malinovsky had far outpassed him and on December 9th united his two columns for the assault on Budapest.

The near-disaster to the Russians at Nyiregyhaza and Cop was the result of the disorganization caused by too rapid an advance, and by the change in the direction of attack brought about by the widening of the front. The Russian Command consistently showed itself unable to make rapid adjustments in plan, and once troops or formations were committed to any course of action it was not easy to alter the direction of operations. This weakness applies to any army, for it is no easy matter to make a major change with units already in the process of advancing, but the Russian leaders particularly appeared to lack the vision needed in such cases. At all events, Marshal Malinovsky made a second error, in addition to that already made by the Supreme Command, in permitting the two elements of his Second Ukrainian Front to advance on divergent lines. The screen of Cossack cavalry, even though supported by armor, was insufficient to mask the gap, and the German commander rapidly perceived and exploited it.

### OPERATIONS AROUND BERLIN—APRIL-MAY, 1945

If one compares the long struggle for Budapest with the comparatively speedy capture of Berlin one is struck by the difference in the time taken to reduce the two cities. The battle in Budapest lasted over two months, whereas from the time the Russians gained their first footholds in the German capital until the city's surrender only 12 days elapsed. It is not correct to say that

\*An Cosantóir, Irish Defense Journal.



in the latter case the Germans fought less well because they knew that they were defeated—probably most Germans had realized this fact even before the Budapest siege. At all events, Berlin was defended with quite as much vigor and sacrifice as the Hungarian city.

The real cause of the difference lay in the Soviet conduct of operations. The Rumanian and Bulgarian surrenders, followed by the rapid occupation of those countries, disorganized the Russian armies. In particular, the lines of communication of the Second and Third Ukrainian Fronts became long and winding, while the advance of the Fourth Ukrainian Front farther north was slowed up by difficult mountain country. As a result Malinovsky and Tolbukhin arrived before Budapest with unexpected speed and without the strategic and logistic support necessary for the rapid reduction of the city.

On the other hand, there was a comparatively long period of preparation before the Red Army Groups on the Oder-Neisse line launched their offensive against Berlin. By the end of January, 1945, the First Ukrainian Front and the First and Second White Russian Fronts had reached the River Oder, and during the first 10 days of February the First Ukrainian Front advanced across the Upper Oder to the Neisse while the First White Russian Front gained bridgeheads north and south of Frankfurt. Here the two armies destined to assault Berlin waited for two months, building up and organizing for the final battle.

By the middle of April the situation in eastern Germany was as follows: Marshal Konev's First Ukrainian Front was on the River Neisse from Forst to Rothenburg, with its left wing stretching back along the northern slopes of the Riesen Mountains. The city of Breslau held out in rear and formed a road block on the supply route. Marshal Zhukov's First White Russian Front lay along the Oder, with bridgeheads west of the river above and below Frankfurt. Marshal Rokossovsky's Second White Russian Front had made further crossings near Stettin.

On the opposite perimeter the Western Allies were nearing the River Elbe, beyond which, by arrangement with the Soviet Government, they could not penetrate. The 21st Army Group was attacking Bremen and Hamburg. The 12th Army Group was almost up to the Elbe at Magdeburg and had reached Leipzig and Bayreuth. The Sixth Army Group was moving southeastward on Nuremberg. Although the Americans were at some points within fifty miles of Berlin, since they dared not cross the Elbe in force *under any circumstances* they cannot be considered to have influenced the battle in any way.<sup>1</sup>

<sup>1</sup>As early as April 12th, U. S. Ninth Army troops crossed the Elbe south of Magdeburg, where they held a small bridgehead for some days. The First and Ninth U. S. Armies could have continued their advance to Berlin, but the Soviet Supreme Command was determined that they should not, and as this had been agreed at the Yalta Conference the bridgehead was withdrawn. The Soviet desire on this point is significant.

About their capital the Germans had three armies—the Second Panzer and Ninth Armies facing the Russians, the Twelfth Army watching the Elbe upon which the U.S. troops were already closing. In the area of the Riesen Mountains stood another army, in a position to menace the open left flank of Konev's First Ukrainian Front.

The campaign about Berlin divides into three phases, which will be dealt with in sequence. The first phase lasted from April 16th to 26th, and comprised the Soviet strategic moves to surround the city. The second, from April 27th to May 1st, contained the German counter-offensive action. The final phase, May 2nd to 8th, consisted of the withdrawal of the German armies, the surrender of the Berlin garrison, and the capitulation of the entire *Wehrmacht*.

The mission of attacking Berlin was allotted to Zhukov's First White Russian Front, which was to approach the city from east and north. The Second White Russian Front (Rokossovsky) was to clear the Stettin-Neustrelitz area and cover Zhukov's strategic right flank.<sup>2</sup> Konev's First Ukrainian Front covered Zhukov's strategic left flank and to this end was given three difficult tasks; to advance to the Elbe, to assault Berlin from the south, and to cover the long southern flank stretching back from Rothenburg along the Riesen Mountains. Konev was thus given three separate missions, involving movement west, north and south.

As the line of the attacking forces was not continuous each Front was responsible for its own operational flanks.

The first phase of the battle opened on April 16th. Under cover of a heavy artillery barrage, Zhukov's troops crossed the Oder on a 65-mile front. For the first 24 hours the fighting was extremely heavy and the First White Russian Front gained only a few miles, but by April 17th the main defenses were pierced and the Red forces had reached the Wriezen-Seelow area. Frankfurt was by-passed.

In the south Konev pushed his armor across the Neisse and by evening of 17th was before Spremberg. While Zhukov fought his way slowly forward, the armor of the First Ukrainian Front divided into two columns, one making for Bautzen and the other for Berlin. By April 20th Konev's northern tank column was at Jüterbog while the southern reached Kamenz and Bautzen.

On April 21st Zhukov's left wing entered the north-

<sup>2</sup>The *strategic flank* is that which marks the limit of the operational zone. Thus, although the *Fronts* involved in this campaign were commanded independently, they were acting towards a single objective, and accordingly had no strategic flanks between them. On the other hand, the *Fourth Ukrainian Front*, to the left rear of Konev's Army Group, was engaged in crossing from Poland into Czechoslovakia, and its operations were not connected with the Berlin campaign; both its flanks were strategic.

The *operational flank* is, of course, the immediate flank of any unit or formation. In this case, for instance, Zhukov's operational flanks were at Zehden (north) and the confluence of the Neisse and Oder (south), and he was responsible for their protection from local attack.



eastern suburbs of Berlin. His right was already north of the city. On his line of communications Frankfurt still held out against attack. Two days later the fighting in the suburbs had spread all along eastern Berlin, and the northern arm of the Army Group entered Oranienburg to the northwest of the city. On the 22nd the German General Staff broke up, most of the members leaving Berlin. Colonel-General Jodl took command of the German forces west of the city. Frankfurt fell on the 23rd, thus clearing the supply route and releasing further Russian troops for the main battle.

In the south Konev continued to make rapid progress, his right taking Bautzen on April 21st, his left at Jüterbog being reinforced by the arrival of infantry units. To the left rear, however, the Germans initiated a counter-offensive movement against the line Görlitz-Bautzen. This movement continued for almost the whole of the battle, but the Germans lacked the strength necessary to make any serious impression on the Red forces holding this flank.

Rokossovsky's Second White Russian Front began its attack across the Lower Oder south of Stettin on April 21st, almost a week after Zhukov's attack began. By the next day the leading elements were eighteen miles west of the Oder. For the following four days there were no more spectacular advances here, but on the 25th the offensive against the Second Panzer Army was recommenced.

On April 24th Zhukov's forces in the eastern suburbs of Berlin joined hands with those of Marshal Konev moving up from the south. A considerable portion of the Ninth German Army was thus cut off from the city in the Beeskow area. Northwest of Berlin the First White Russian Front reached Kremmen, severing direct communication between the Second Panzer Army facing Rokossovsky and the garrison in the capital. During the next day the spearhead of the First White Russian Front arrived west of Berlin, while Konev's armor was before Potsdam, had entered Brandenburg, and advanced units almost captured Rathenow, 50 miles west of Berlin, before a local counterattack drove them back. Other units of Konev's Front made contact with the First U.S. Army on the River Elbe, near Torgau.

On April 26th—the last day of this phase—German resistance was stiffened, and at the same time the Red forces slowed down to reorganize. Few Russian gains were made. In Berlin itself the fighting was growing daily fiercer.

The position at the end of the first phase of the battle was not favorable to the Germans. In the north the Second Panzer Army was fully occupied in dealing with the Russian salients west of Stettin. It was now completely cut off from Berlin. The main body of the Ninth German Army was in a pocket southeast of the capital, also cut off from the garrison. The defenses within the city were being battered by Soviet shells and armor. The German troops assaulting Konev's flank on the

Görlitz-Bautzen-Kamenz line could make only slow progress and had no hope of achieving the required breakthrough. Had they been able to do so, and cut a corridor either to Beeskow—where the Ninth German Army was—or to Breslau—which still held out—the First Ukrainian Front would itself have been encircled. But the Russians were fighting regardless of losses in men, in material, while the Germans were short of both. In particular the *Wehrmacht* lacked transport and transport fuel.

The second phase of the battle commenced on April 27th. Colonel-General Jodl was now convinced that the Americans would not cross the Elbe,<sup>3</sup> and he accordingly ordered the Twelfth German Army to face about and march to the relief of Berlin. At the same time the Ninth German Army was instructed to break out of its pocket southeast of the city and move westward towards the Twelfth. Some reserves reached Berlin on the same day and the remnants of the Luftwaffe that were still airborne made assaults on Soviet ground forces and armor.

By the next day the Twelfth German Army had reached Beelitz and Treuenbrietzen. The Ninth was moving westwards, but suffered heavily from Russian attacks on all sides. On the south flank of the First Ukrainian Front the German offensive continued to make minor gains north and east of Dresden. In the northern sector the Second Panzer Army was forced back and Rokossovsky reached the line Anklam-Tempelin.

During the succeeding days the two German Armies struggled towards one another, suffering heavy attacks from the First White Russian and First Ukrainian Fronts. On May 1st the Ninth German Army made a gain of 20 miles and reached Luckenwalde. The Twelfth Army was less than 25 miles away to the west. Some troops from the Berlin area broke out and reached Beelitz. In the northern sector Rokossovsky's offensive continued beyond Griefswald, Neubrandenburg and Neustrelitz and the Second Panzer Army was falling back and being split up into small groups.

On May 1st Hitler's death was announced and the Berlin C.P. closed down. All offensive efforts by the Germans were abandoned. The Berlin garrison still held out, fighting as a rear guard to cover the withdrawal of the Twelfth and Ninth Armies, which were now retracing their steps doggedly to the American zone to surrender. In the south all attempts to break through the wing of the First Ukrainian Front ceased. The final phase of the Berlin battle was reached.

The remnants of the Ninth German Army joined the troops of the Twelfth on May 2nd. During the night they fell back from the line they were holding and on

<sup>3</sup>There is reason to believe that General Jodl was not depending on "deduction" alone for his arrival at this conviction. At all events, practically any American soldier captured on the Elbe line could have given him sufficient information to show how matters stood.



the following two days about 500,000 gave themselves up to the First and Ninth U.S. Armies. In a single day 300,000 German soldiers surrendered to one U.S. Corps alone. Berlin held out until 1500 hours on May 2nd, when the garrison had completed its task of covering the withdrawal, and accordingly the city was then surrendered to the Soviet forces. About 135,000 men were taken in Berlin. On the Baltic coast the Second White Russian Front captured Rostock on May 2nd. Part of the Second Panzer Army managed to reach the British zone to the west; the rest were taken prisoners by the Russians. On May 3rd the Russian troops and the British of the 21st Army Group met. The Red Army and U.S. forces were already facing each other across the Elbe farther to the south.

Breslau continued to hold out on the line of communications of the First Ukrainian Front until May 7th, when the defenders surrendered to Konev's investing force.

By May 5th all German units facing the 21st Army Group (including the Third Panzer, elements of the Twelfth, and the Twenty-first Armies) had surrendered to the British. On May 7th a general surrender was signed at Reims in France, to take effect from 2301 hours on May 8th. This was ratified by a second *Act of Military Surrender* drawn up and signed at Karlhorst, east of Berlin, on May 9th.

The real honors for the success of the Berlin campaign are due to Marshal Konev and his First Ukrainian Front. His was by far the most difficult task, needing very nice judgment to organize and control three different forces on three different missions. He dared to drive a long narrow corridor between two German groups, both of which were still able and willing to fight. He dared to turn the direction of his main effort from westward to northward, at the very moment when his rear was being threatened by an unknown number of hostile units. He balanced the needs of defense in the south with the requirements for attack in the north. He handled armor many miles away from its bases. His winding salient was over 200 miles long and a bare twenty wide. Marshal Zhukov's Army, on the other hand, had a more straightforward task. The frontal assault on Berlin was a costly and tedious operation, but tactically it was a simple one. Superior numbers in men and equipment gained the victory east of the German capital.

The Berlin operations, taken in conjunction with the efforts of the German armies in Czechoslovakia and the Reisen Gebirge, form a dramatic saga. One is reminded of the last years of the *Seven Years War*, when Frederick the Great, fighting on interior lines upon the very same battlefields, successfully held his enemies until one by one they withdrew their forces from the field or turned their attention elsewhere. But the modern successors of the Prussian monarch were not able to do

as he had done, and the Russians were not to be diverted from final victory as they had been almost two centuries earlier.

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In so brief a space it has not been possible even to give mention to many of the major campaigns and operations of the Russian war. Those selected owe their position in some cases to their varied interest rather than to any special importance attaching to the results achieved. They may serve, however, as a critical basis upon which to appraise the Russian method in war, either by examination of the qualities and deficiencies of the Red Army, or by comparison with the better-known campaigns of the British and U.S. armies in North Africa, Italy and Western Europe.

The Soviet forces remain something of a mystery. Even the British and American troops in Berlin who have had daily contact with them cannot agree in their judgment upon them. Throughout the four years of war on the Eastern Front the Soviet Union showed itself to have no great trust in its allies. At no time were the British and American *Military Missions* in Moscow given any encouragement to study the Red Army methods or results. What little information was released was first carefully sifted, to ensure that it gave no details about the Russian war effort.

The Red Army that was victorious in 1945 was not the same Red Army that faced the German onslaught in 1941 and 1942. The commanders and men had learned much; the technique of war had been tried and proved. In matters of command and staff efficiency there had been the greatest advance, for in this field the Soviet Army originally felt its greatest want. There may still be a long way to go, and many features may still require attention, but on the whole the Russian Supreme Command can feel justifiable confidence in the excellence of its organizational abilities. Errors there will be in any operation, but the incompetence so often spoken of in the Red Army would appear to have been in the main eradicated.

The U.S.S.R. is also in a completely changed position as regards equipment. Not only had Russian factories got under way on a large scale by 1945, but the Russians now possess specimens of most of the German, British and U.S. war equipment that was used during the last six years. Furthermore the war showed the Soviet Supreme Command where it should concentrate in future—and in this connection it is probable that transport and signal material will be the first items on the new Red Army's supply programme.

The U.S.S.R. holds an enviable position today, from the point of view of a state which might be involved in a third World War. Practically speaking, all European territory east of the fifteenth meridian, with the exception of Greece, is in Russian hands or under Russian influence.



# The Mules of Mars<sup>★</sup>

*by 1st Lt. Dan L. Thrapp, 2.M.C.*

## CONCLUSION

### TO CUT THE BURMA ROAD

THINGS got tougher fast. Gone were the more or less pleasant hikes over the dusty flatlands; from here on it was either up or down, and one was as exhausting as the other. Burma's mountains through the Northern Shan States are not overly high—the greatest altitude we reached was something over 7,000 feet—but they are rugged. They somewhat resemble the southern Appalachians in texture. They are clay-covered, and when one scratches through the leafmold and forest debris to the soil, one finds it as red as Alabama clay. It made for easy foxhole digging, but it didn't take much rain or even dew to transform mountain trails to chutes of grease.

The British, during their sixty years' tenure in Burma, have carved some excellent military pack trails through otherwise near-impassable forests and mountains, and when we could follow these trails our difficulties were minimized. However, the troubles of any military operation multiply as the terrain becomes more difficult.

We modified our equipment somewhat to meet new problems. For instance, we added a breast collar to the cargo saddle, and found it invaluable. The pack artillery thought breast collars unnecessary until after the first day in the mountains, when they sent in an emergency requisition for them. We lightened our loads whenever possible, and even used some of the medical evacuation riding mules as pack animals to lessen the burden on the others. At this point we could have used to good advantage some of the little Japanese ponies, which can carry a payload of 150 pounds without difficulty.

Chinese engineers preceded us to the Schweli River, where they built a bridge of bamboo across the wide, swirling, and dangerous waters. The Schweli is comparable to our own Colorado River in many respects, and crossing it is a pretty serious operation. K Company was first over, and a leader let his mule get excited and fall off the bridge with a full load. The animal was immediately swept out of sight and his valuable cargo lost. For a time thereafter we unsaddled the mules and hand-packed the loads and saddles across, repacking on the

other side. That slowed operations too much so we fastened the front latigo by pulling it through the cinch ring, then running it back through so that just a fold in the latigo leather held the cinch tight. By this method a leader could hold the halter shank in one hand and the end of the latigo in the other; should the animal fall, the leader could jerk the latigo, letting the saddle slide off, and the freed animal could then easily swim ashore. That system speeded the crossing, and by nightfall everyone was over. We pushed on up into the mountains.

These days were hard on everyone, but weighed most heavily on our packmaster and horseshoers. We had no trained packmaster when we left Myitkyina, and many of our saddles needed "working." The Army pack-saddle is based on two pads, one to ride on either side of the mule. The pads are stuffed with curled hair and shaped to conform to the animal's body. Sometimes a mule has irregular conformation and the pads then have to be "worked" by adding or withdrawing stuffing to change their shape. Sometimes, too, an animal develops a sore, and the pad must be "chambered," by removing the stuffing from the spot over the sore, so that no pressure is exerted thereon and the mule can still be employed. For the first weeks down the trail I did what saddle working I could, while training a packmaster and saddler. Once in the mountains we were on the move longer hours to cover the allotted day's distance, so we had less time to work saddles and equipment when bivouac was reached, and again everyone who knew how was called upon to help.

The horseshoers, too, put in fantastic hours. Horseshoeing is tough work, even in a shop where a forge is available along with assistants and the proper establishment. But when one must hike all day over the cruelest of terrain, carrying a heavy pack and leading or dragging a sometimes obstinate donkey, and then put in a couple of hours shoeing hard-kicking mules before establishing one's own bivouac, then, indeed, war becomes hell. Quite often, too, it was necessary for the horseshoers to arise early and shoe some mules before starting on the trail in the morning. Because we could not carry a forge or coal, we used light British mule shoes, which could be cut and shaped cold on a light anvil.

We had two shoers and they were good ones, dependable and enthusiastic. Our T/O called for one of

<sup>★</sup>The Quartermaster Review.



them to be a T/4 and the other a T/5, which was little enough, but what browned us off more than anything was the inability to have them confirmed in even those low ratings, for reasons best known to rear echelon headquarters. One rating finally came in when the campaign was about finished, and the other was confirmed months after we left Burma.

The most important thing in packing a mule is to get his load properly balanced; next in importance is to tie it on so it will stay both balanced and on the mule. For this latter requirement, packers through hundreds of years have developed dozens of "hitches" and variations to hitches. In brief, any hitch is good which will accomplish the end desired, but some are easier to tie, or faster to "throw" and therefore preferable.

Most famous hitches, known to everyone who ever read a western story or hunted big game in the West, are the diamond, the double diamond, and the squaw. Two old Army packmasters developed improved lash ropes to increase the speed and ease with which these hitches can be thrown, and these lash ropes now are issued by the names of their inventors; thus a Nagle rope is used for a speedy squaw hitch, and an adjustable Sweeten rope is issued for use in throwing a fast double diamond. Another invaluable tie for certain occasions is the basket hitch.

Whenever possible I insisted upon the packers learning to tie each important hitch, and learning to tie it fast. Since most ordinary loads can be held by a simple squaw, the men failed for a time to see the importance of learning added hitches, but their efforts paid off when we got into the mountains. A load that would ride satisfactorily over the flat bottomlands with a squaw or a Nagle, would fall off in ten minutes in the mountains, unless tied with a Sweeten or a double diamond. The fact that all animals were led at the slow Infantry gait permitted us to "get away" with simple hitches on many occasions. The attached pack troop, which had relatively simple loads, never used anything but a squaw or a Nagle.

More than a week after we hit the mountains we slipped and skidded down into a hole in the hills called the Mong Wi valley. Some thirty miles to the northeast the Chinese were pounding to death the 300 Japanese remaining at Namkham, but our patrols found no trace of the enemy closer to our valley. We stayed here for about three days before we again turned into the mountains. This time trails were not so good and in some cases disappeared, and the going was rougher than before, but both men and mules were in better shape for mountaineering.

Natives lived on the hog-backed ridges in picturesque bamboo houses, and sometimes within bamboo stockades. Sometimes they paved trails to their alpine villages with huge flagstones, but more often the path to them was clay, packed by the bare feet of dozens of generations of Shans, Likaws, or Kachins. The hill natives had

constructed, by an enormous output of labor, extensive systems of rice paddies in virtually every river valley or wherever a streamlet would furnish sufficient water for irrigation. Judged by their works, their engineering skill is considerable; it is an uncommon people who could carve an agricultural living out of such a savage, though beautiful, land.

Whether they approved of us would be difficult to say. They liked our cigarettes, and they were amazed at our mighty mules, and fearful of them. Few Japanese had penetrated into the deeper recesses of the mountains, and we were about all of the war they had seen; probably all they wanted to see.

At any rate they did not hinder us, and they were someone upon whom we could unload K ration biscuits and tinned "delicacies," so from our viewpoint they served a purpose.

We camped briefly at a Burma-Chinese mountain village called Man Hsa Tan, from which we could see the southwestern extremity of Namkham valley, through which, within a few weeks, the first 6x6 over the Ledo Road would roll. Our business was more to the southeast. We picked up an air-drop on a handkerchief-sized clearing hacked out of the forest on the side of a mountain, and took off again for combat. This time we were nearing the Japanese in quantity, for we were approaching the old Burma Road down which the enemy was withdrawing its Salween River forces before the advance of the victorious Chinese.

We scaled a 7,400-foot pass from which, on a gorgeously clear day, we could see the valley of the Burma Road and, beyond it, piled ridge upon ridge, mountains of Yunnan and Indo-China and Thailand. We bivouacked on the east side of the pass and from here our approach march commenced.

A detailed map of east Burma would show two towns named Mong Yu, about thirty miles apart on the Burma Road north of Lashio. One of them, the northernmost one, is where the Burma and Ledo roads meet; the other is just north of Kutkai. Under our plan of operation a Chinese regiment was to establish a road block at the northern Mong Yu and we were to establish one somewhere near the southern one. The spot selected for our block was just south of a village called Nampakkha, some four miles north of the southern Mong Yu. Three hills were selected as offering positions from which our mortars and artillery could fire upon road traffic, and one battalion was assigned the task of occupying each hill. It was planned that the 124th Cavalry would reach the vicinity within several days and take up positions to the north of the 475th and eventually occupy Nampakkha itself. Half encircled by our positions and those the 124th was to occupy was a long, serpentine valley of rice paddies, which would serve as an immense drop field.

There are two dirt roads which join the Burma asphalt highway from the west, one reaching the town



of Southern Mong Yu and the other Nampakkha. The Japanese apparently expected us to approach over one or the other of these roads, and established blocks on both of them. Unknown to us at the time, the area immediately before the second and third battalion hills, between the hills and the Road, was an extensive Japanese depot and maintenance-shop location, and the enemy was determined to hold it.

The plan of attack called for the first battalion, first, seizing a hill on the southwestern border of the which included "old Marauder" veterans, to strike valley. The second and third battalions would slip through first battalion positions and down into the valley under cover of darkness. They would attack across the paddies and try to sweep their hill objectives on the east side of the valley at dawn on the following morning.

Our approach march extended over two of the toughest days of mountaineering we had struck. They were difficult for the men, but almost unendurable for the mules. Men could slip off their packs at any halt, but not the animals. At one time, Japanese-sympathizing natives caused the column to take the wrong trail, and the battalion was forced to skid and scramble over the mountains as it carved out a path of its own; the mules were under load for more than nineteen hours at a stretch. Much of it was due to an unavoidable situation and it was impossible to unpack the animals or give them the benefit of the lengthy halts to rest or graze. The order had been: "This is the mission. It must be accomplished if it takes every animal we have. Don't jeopardize our success by sparing the mules."

We had started, that first day, before dawn, and we still were slipping and sliding and bumping into the man or mule ahead, and cursing Burma, the Japanese, and a steady, soaking drizzle, well into the early hours of the following morning. Because the mules were exhausted and thirsty, they were unsteady on their feet. Our battalion lost seventeen of them over the side of the mountain that day and night. Some of them were recovered later. Others broke their necks or were never found again. Sometimes, during the quiet of the night, one could hear an animal roll and stop and roll and roll some more for minutes down the mountainside. The softly muttered curses of the GIs who scrambled down through the pitch darkness after lost mules were eloquent and, on a pleasanter occasion, would have been a delight to hear.

Eventually the whisper came back, "bivouac," and unseen hands guided us off to one side, to a field, where we could unsaddle and feed the donkeys and catch a little sleep.

The march resumed at daylight and once again, though the distance covered was short, interminable waits compelled the animals to be under load for long hours. Ahead we could sometimes hear the slap of grenades or the rattle of machine guns as the first

battalion burned out a village and occupied the hill it was assigned. After hours of creeping advance and tedious waits, we arrived at the ruins of the village, where still-smouldering *bashas* provided enough heat to make coffee and warm C rations. We waited until darkness before descending into the valley.

During the interval air transports began to come in. They formed an unending procession, droning round and round the forested hilltop, and each time they passed over first battalion positions, they dropped parachutes of ammunition, food, and forage. Ordnance parachutes, unlike the white cotton ones used to lower rations, were of beautifully colored rayon: red, blue, green, yellow, white. Originally the color of the parachute indicated the type of article dropped, but that system had long been abandoned. Some days later a Japanese was captured on the slopes of this same hill. In a notebook in his pocket he had painstakingly and accurately totalled the number of parachutes of the various colors dropped, but we never learned what conclusions he had reached about them. It was at this time that the Tokyo radio announced that Allied paratroopers were landing in Burma. It was days before they realized we hadn't fluttered in on colored parachutes; we hiked in with Quartermaster mules.

The descent to the valley floor was uneventful, so far as enemy action was concerned, though a GI carelessly dropped a grenade, killed himself and wounded two comrades during the climb down.

The battalion pulled into a draw on the west side of the valley and bivouacked until an hour before daylight, while the I and R platoon of headquarters company scouted the vicinity. The valley at this point was perhaps a quarter of a mile wide; the hill on the east side, which was the battalion objective, rose about 800 feet above the rice paddies. The hill was a horseshoe-shaped mound, with the rounded "toe" facing east toward the Burma Road and the heels back toward the valley we were in. A deep draw nearly severed the hill, separating the heels and having its source in a cirque almost against the forward slope.

K and L companies, starting before daylight, worked their way up over the heels of the hill, while a couple of platoons of I company moved down the Nampakkha dirt road until they hit the Japanese road block, suffering some casualties. By an hour after daylight the hill itself was secure, and headquarters company mortars and heavy machine guns crossed the valley and established themselves. A well-hidden Nambu challenged them in the valley, but caused no losses.

Once the hill was secured, the rest of headquarters company and battalion headquarters crossed the valley to the hill. Headquarters was established in the cirque near its top, and mule picket lines were set up below the cirque in the draw leading to the valley. Dispersal was not possible under the conditions prevailing, although the mules were strung as far down the draw as



possible, and under what protection the steep hillsides offered.

Meantime a perimeter was established around the forward rim of the hill by the rifle companies, and the 81's were being dug in and set up to command the blacktop highway, 2,000 yards to the east. From the top of the hill one could see a stretch of perhaps 1,000 yards of the road; men of the third battalion became the first Allied soldiers since 1942 to see the Road in Burma from the ground. But there wasn't much time for sight-seeing. The Japanese would shortly come around and there was work to be done.

Transports thundered in by the score overhead, and supplies floated down under clouds of parachutes. Every available animal and packer was sent out on to the valley floor to bring the stuff in. The Japanese couldn't pass up an opportunity like that.

From the hills to the north of our position, on the other side of the Nampakkha road, they began sniping with 75's at the mules and men exposed on the valley floor. Enemy riflemen fired continually at the unarmored transports floating by overhead, and reportedly caused some casualties.

The men on the drop field were getting it rough. Each time two or three soldiers or mules would get together, a shell would whip in, and enemy fire was fairly accurate. Occasionally a mule would be knocked out, and the men suffered some casualties, but the work never lagged and an unending procession of ammunition and rations wended its way up the draw and was cached or fed out to the riflemen on top of the hill. Earth walls holding the paddy terraces served as pretty good protection for men on the field, and casualties were much lighter than we had reason to hope for.

Back on the hill during the daylight hours, things were pretty quiet. Occasionally a party of Nips would slip through the woods with a knee mortar and experimentally drop a shell in here and there, but on the whole the battalion was free to dig itself in and prepare for the coming attacks. That was satisfactory to our side.

Men and animals were called off the drop field at dusk. The first enemy attack, striking at the northeast slope of the hill, was delivered about forty-five minutes afterward. It was unsuccessful. Two other assaults were launched during the night, but they were equally futile, and daylight found our positions intact.

Packers and mules again were worked daylong, clearing the drop field, but enemy artillery fire was considerably lessened from the previous day's. However, stray Japanese continued to drop mortar shells into the draw which held the picket lines, and before nightfall the lines were moved over against the north side of the cut, and the animals dispersed as much as the geography of the place permitted. It was good that this was done.

Hardly had darkness set in before the enemy began a mortar barrage which raged up and down the draw

all night and until half an hour before daylight came. Knee mortars and 90-mm. mortars whistled in hour after hour, and it seemed as though every square yard of the floor of the ravine was blanketed by explosions. There was a three-quarter moon that night. From a foxhole on the side of the draw one could see in the moonlight a continuous haze of dust, spotted here and there by flashing explosions, like an electric sign going off and on. Below and to the right, Kachins on perimeter at the mouth of the draw sent streams of tracers into a hedge-row which served as a gate to separate the draw from the valley proper.

No Japanese penetrated our perimeter that night, but enemy explosives rained on us until after dawn.

The mules suffered most. Picket lines were snapped by mortar shells, and occasionally in the lurid light of that Burma moon we could see animals going down, or sometimes we could hear heavily wounded mules staggering and falling into abandoned foxholes. The ravine that night earned its sobriquet of "Dead Mule Gulch."

Twenty-one mules were killed outright or died of wounds as a result of the night's action. Casualties were caused because we could not disperse the animals properly, and also because the enemy concentrated his fire upon the ravine, which they suspected to be the site of headquarters; it was, but Japanese fire didn't get high enough up the gulch.

Once was enough. Mules were too hard to replace in the CBI, and when the Colonel surveyed the damage next morning he ordered most of the animals withdrawn across the valley to the draw from which our original attack was launched. We were to establish our own perimeter there and maintain periodic contact with the battalion by radio. One platoon of the 35th, and about ten mules of battalion headquarters, were to remain on the hill to perform supply duties. The other mules, across the valley now, were to join the rifle company animals in daily clearing the drop field and whatever other packing needed to be done. We established a semi-permanent bivouac and settled into routine pack-train work.

Every day was pretty much the same. At first the enemy had the drop field under direct observation, and harassing fire with artillery was something to be endured as a matter of course. After three or four days the 124th Cavalry arrived from the northwest and stormed a series of ridges east of the northern end of the valley, securing the left flank of the third battalion and eliminating enemy artillery fire from that direction. From then on, his fire became more a nuisance than a threat, although it still occasionally caused casualties. Once in a while a little Japanese whippet tank would slip into position behind a cut-bank on the Burma Road and snap a few high velocity 40-mm. shells at the crest of the battalion hill, attempting to silence a 4.2 mortar we were using to cover the road. These high speed shells normally would just miss the hill, exploding on the drop



field behind it.

The Japanese had a little the better of us in artillery. One battalion of our pack howitzers was located on the first battalion hill, in a position overlooking the Road, and much of the enemy-held territory on either side of it. The enemy made strenuous attempts to silence this artillery, and did do it some damage, using a 150-mm. piece which far outranged our 75's. Our bivouac was underneath the path of the shells. Day after day we could hear the whistle of the 75's spinning out to the Road; and almost as surely as we would identify them, we could hear the slow, rolling whoosh of the giant 150 barrelling up to visit our batteries.

Roughest time was had by the second battalion, which had dug in on a hogback ridge confronting the enemy in prepared positions on a higher elevation of the same ridge. Day after day the enemy poured fire into the exposed second battalion, causing numerous casualties. When a battalion is hurting thus, its supply units hurt too. For two weeks packers and mules had to bring in supplies under sniper fire and, at times, under direct enemy observation.

Tales told about the animals were numerous and, in some cases, possibly true. There was the story of one donkey which fell off the rim of a bluff and rolled into Japanese positions. He scrambled to his feet and bucked and kicked his way back to American lines.

Then there was the tale of the Japanese who captured a loose mule, using the animal for a front, attempted to sneak inside the allied perimeter. He was doing all right and might have made it had he not become impatient and attempted to urge his mule to greater speed: he poked the animal in the rear with a bayonet. Mules don't like that.

Another story told of a packer leading his mule across

the drop field while transports roared overhead. Suddenly the mule wheeled and the packer clinging to the halter shank, was swung some ten feet to one side just as a shell landed where he had been walking. Despite the racket of the airplanes, the mule had heard or felt the shell coming and whirled in time to avoid the explosion.

The rumor that mules can tell where mines or booby traps are laid, and avoid them, was effectively quashed the day an officer from the 31st Pack Troop was blown off his animal by a booby trap his riding mule had tripped. I do not doubt that a mule could be trained to avoid the more obvious traps, and possibly to avoid stepping on mines. Wild animals learn to avoid cunningly concealed steel traps, sometimes buried with all the ingenuity experienced, intelligent trappers are capable of employing. And a mule, in my opinion, doesn't have to hand any wild animal that ever lived anything for intelligence. It would be an interesting experiment to train one.

For three weeks the fighting at Nampakkha continued, but in that time the Japanese retook not a single inch of ground they had lost. Early in February the first elements of the Chinese Salween Army pushed down to make contact with us, and the enemy gradually withdrew through Kutkai and Hsenwi to Lashio and beyond. Our Burma fighting was over. During the campaign we had given Quartermaster pack equipment as rugged a test as it ever is likely to get. In general it proved to be very good equipment indeed. Even excellent equipment, however, can oftentimes be improved. But that has no place here.

There is more to the story, of course. There always is. But mostly it's the part you tell around the cracker barrel in the winters to come.

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# Editorial Comment

The following letter addressed to the editor of *The Chronicle*, a horse magazine published at Middleburg, Virginia, is reprinted here because we believe it is worthy of consideration:

## Horseman's Duty

Gentlemen:

Your editorial of December 13 is most timely. It points out quite plainly the duty of our horse-using population. It is true that the children of tomorrow, and the grownups as well, cannot know anything of the value or the need of horsemastership, or the importance of improving the breed of horses, unless their elders provide means for the use of the horse under a proper guidance. In these things the Horse Cavalry has been of assistance. Our Horse Cavalry cannot be of further aid, however, for the reason that we now have no Horse Cavalry.

Indeed, it is gratifying to know that there are those who acknowledge that the passing of the Horse Cavalry will leave a void that will be hard to fill. As time goes on, it may be that there will be many others to wonder at a policy that would permit the use of funds for publishing subjects as devoid of public value as the love life of insects and deny maintenance of a branch of the Army that may be called upon to insure our National existence. Many of us hoped that Congress would take an interest in the future of Horse Cavalry; that General Herr might be called upon for evidence of the value of Cavalry, even in World War II. It may be that this will yet come to pass. But his words of warning, to which you call attention, indicate that this hope may be a futile one. You are correct in saying that the duty of the American Horseman embraces a large obligation. He may be called upon—as a Cavalryman—in National Emergency, too.

It does seem that for the moment the horse must be thought of as being for use in polo, hunting and in racing. The last named is fast moving into strictly a commercial enterprise. Yet, it is thought that General Herr had a larger interest in announcing his warning. He must think, as do many other horse cavalymen, that this Country may need horse soldiers—and may need them urgently. Since the Army has disavowed any intention to insure an equipped and trained horse cavalry personnel of mounts and men, the plea has been directed to the horsemen of this Country to carry on. It may be that interested citizens will re-establish troops of Cavalry in various places. Forty years ago, there was such a troop in nearly every state. If this obligation is accepted, it is quite possible that the thanks of the en-

tire Country may be theirs. God forbid an invasion by an enemy in any form. But if such calamity comes to pass, we must look outside of our Regular Military Establishment for Horse Cavalry.

Today, December 22, the daily press carried the announcement that Senator Wiley of Wisconsin has expressed concern on the succession of those charged with heading our Government in the event the entire group named in the Constitution as successors to the Presidency are wiped out, say by Atom Bomb, when they are assembled in Washington. He says, "In this Atomic Age, we cannot delay making provision for whatever emergency may arise." We find agreement with the Senator. This would be a terrible situation. And we wonder why our lawmakers do not think deeper yet and, in addition, give thought as to what could happen to the entire Country in case this terrible weapon is let loose on us.

The cost of maintaining horse cavalry is insignificant compared to the saving that could be attained on elimination of useless expenditures. The presence of the horse and association with him insured *esprit*, a boldness, a necessity for physical fitness and quick thinking that has paid off immeasurably more than the cost in dollars for maintaining cavalry. The testimony of Patton, Lucas and Truscott, within itself, is reliable enough in pointing out our lack of judgment in not employing American trained and American horse-mounted Cavalry in Italy. Our common knowledge is ample on the use of cavalry by the Russians.

It may not be amiss for your readers to know what the late Billy Mitchell had to say about the horse in the Army. We always considered him a branch protagonist of the first flight. But he would not have advocated the elimination of the horse in our Army. He was a good horseman. He rode fox hunting, and did some steeplecasing, too. . . .

Undoubtedly, Billy would agree about the Cavalry being useful in our own Country to protect Citizens from those that won't be worthy of such classification who turn to looting, etc., when a bomb comes, and if it proves as terrible as we are led to believe, destroying pipe lines, mines, highways, railroads, telegraph and telephone lines, and havoc is the result. We agree with Senator Wiley. These things should be thought of now. We will have a great need for protection against some of our own people and the enemy. We will have the Infantryman. But is there anything that can be superior to Horse Cavalry in such disaster!

JOHN F. WALL,  
Colonel of Cavalry, Retired.



# Armored Division Associations

## 1st Cavalry Division

MAJOR GENERAL WILLIAM C. CHASE, commanding general of the First Cavalry Division in Japan, writes the following letter to all former members of the Division:

"I want to extend this message to all former troopers and officers of the famous First Cavalry Division, which is now doing occupation duty in Tokyo.

"Not so long ago, many of you returned to the States, some to civilian life, and some to enjoy a pleasant furlough at home before joining a Regular Army outfit. To those of you who have tasted civilian life and found it not quite what you expected, let me extend an invitation to reenlist in your old outfit, the famous First Cavalry Division.

"By enlisting, you can insure good health, security and friendly companionship. You can also get the many benefits offered to those who will serve for three years. If you do decide to enlist, see the nearest Recruiting Officer and be sure to specify your branch as Cavalry, and your theater as the occupation of Japan. Request that you be assigned to this Division.

"The commanding general of the Eighth Army, Lieutenant General Robert C. Eichelberger, has assured me that he will see that all who request it are assigned to the First Cavalry Division.

"The First Cavalry Division needs veterans like you and has a good job waiting for you. Many top vacancies are available, especially for the 'old-timers' who served as NCOs.

"My warmest regards,

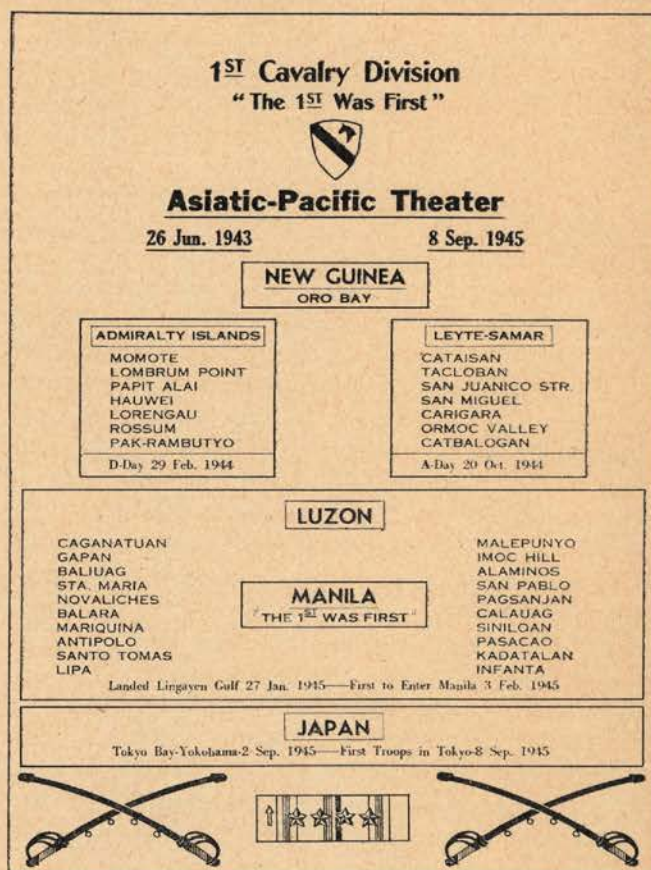
WILLIAM C. CHASE,  
Major General, U. S. Army,  
Commanding."

Hal R. Kilburn, 956 Menlo Avenue, Los Angeles, California, is anxious to contact former buddies in the First Medical Squadron.

Seven of the main camps occupied by troops of the First Cavalry Division in Japan are named in honor of Americans who died heroes' deaths in World War II, it has been disclosed in a recent public relations press release.

Camp Drake, headquarters of the Division, is named after Colonel Royce A. Drake, who was killed October 21, 1944, on Leyte, Philippine Islands, just one day after the Philippines invasion. He was the first officer in the Division to receive the Silver Star in the Leyte campaign. It was awarded posthumously.

Camp McGill, where units of the Fifth Cavalry Regiment are stationed, is named for Sergeant Troy A. McGill, the only First Cavalry Division soldier to win



the Congressional Medal of Honor in World War II. He was credited with killing more than 60 Japs during the Admiralty campaign.

Camp Palmer, occupied by troops of the Second Brigade, was named after Private Nelson D. Palmer, who was killed April 3, 1945, in the Philippines.

Camp King, also occupied by troops of the Second Brigade, is named after Lieutenant Colonel Raymond F. King, of Headquarters, First Squadron, Eighth Cavalry Regiment. Colonel King was killed in action at Mount Malopunyo, Luzon, on April 22, 1945.

Troops of the First Cavalry Division's Artillery occupy Camp Bender, Drew and Whittington.

Camp Bender derived its name from the heroism of Colonel Bender (initials unavailable), one-time regimental commander of the 387th Infantry Regiment of the 97th Infantry Division. Colonel Bender was killed in action in Europe while serving with the Ninth Division.

Camp Drew is named after Private Edwin P. Drew, a soldier of Battery B, 271st Field Artillery Battalion, who was killed in action by machine-gun fire at the Army and Navy Officer Club in Manila, February 21, 1945.



Camp Whittington is named for Private First Class Jefton C. Whittington of Battery A, 82d Field Artillery Battalion, who lost his life in action on Luzon in the Philippines, March 10, 1945. He was awarded the Silver Star posthumously.

The First Cavalry Division's Band is kept busy these days traveling all over the Japanese islands of Kyushu, Honshu and Hokkaido, playing at military installations and ceremonies for Allied troops everywhere.

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### 1st Armored Division

**B**EFORE the 1st Armored Division was inactivated, a large number of its officers and men, who served in the Division overseas, organized the 1st Armored Division Historical Association.

The present trustees are: Lieutenant Colonel Loren D. Buttolph, Assistant AGF Liaison Officer, SEPE, Seattle, Washington; Major Alfred K. Lee, Office of the Staff Judge Advocate, Headquarters 9th Infantry Division, APO 9, c/o Postmaster, New York City, New York; and Chief Warrant Officer Frederick L. Kinney, whose present address is unknown.

The trustees have designated Colonel C. C. Benson as their representative for the receipt of historical records of the 1st Armored Division. Three boxes of these records, including a list of some 20,000 former members of the Division, have been located by Lieutenant Colonel William L. Wells in storage at Fort Knox, Kentucky. Major General John W. Leonard, Commanding General of Fort Knox, has been requested to send these records to Washington, D. C., where they will be consolidated with other 1st Armored Division historical records now in the files of The Adjutant General.

The Adjutant General files now contain approximately 12 filing cabinet drawers full of 1st Armored Division historical records, which are nicely arranged by unit, chronologically within units. Practically all of these documents that were formerly classified as "Secret" or "Confidential" have been declassified and are now available for historical research.

Unfortunately, large gaps exist in these records, particularly with reference to operations in North Africa. Colonel Benson appeals to former members of the Division to send to him such orders, reports, operations maps and photographs as they may now have in their personal possession. He will have them placed in the official A. G. files, where they belong and must be if they are to serve any useful purpose.

Division commanders, staff officers, warrant officers, master sergeants, tech sergeants, staff sergeants, operations personnel and many others, have a habit of collecting "souvenirs"—often original signed documents pertaining to some important operation. So long as these "souvenirs" remain in the hands of scattered individuals, they are practically useless. If concentrated

in the well-arranged files of The Adjutant General, they would provide valuable source material for the history of the 1st Armored Division. Colonel Benson requests all former members of the 1st Armored Division, who have such documents, to send them to him, c/o World War I Branch, Historical Division, War Department Special Staff, Building 21-A, Army War College, Washington, D. C. He will see to it that all official historical records of the 1st Armored Division sent to him are embodied in A. G. files where one and sundry can refer to them.

As to 1st Armored Division photographs for the historical record, Colonel Benson states that six months ago the official Signal Corps volume on the 1st Armored Division contained about 20 pictures, among which Verne Pritchard and Honk Allen were well represented. None of Orlando Ward, Ernie Harmon or various others who had a lot to do with the operations of the 1st Armored Division, and none to show combat operations. These pictures, many without unit identifications, were then filed according to geographical areas rather than by organization. Thanks largely to the efforts of Colonel Henry E. Gardiner, DSC, former commander of the 2d Battalion, 13th Armored Regiment and subsequently commander of the reorganized 13th Tank Battalion (present address 25 Broadway, New York City 4, New York), there are now some 350 pictures in the 1st Armored Division volumes of the Signal Corps. Colonel Benson says, "We need many more, official and unofficial, with names, dates, places. One good picture, with an accurate caption, is worth twenty pages of records." He appeals to those who served overseas with the 1st Armored Division to send him photographs, particularly those which show units or individuals of the 1st Armored Division in action.

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### 2d Armored Division

**T**HE Second Armored Division Association has received an enlarged action photograph of a tank and crew of the Division entering Magdeburg, Germany, the last objective of the Second Armored in the war. The picture and the accompanying letter from General Jacob L. Devers, Army Ground Forces commander, have been framed for hanging in the Association's meeting room. At the present time, however, and until a meeting room is established, picture and letter will hang in the office of the present Division commander, Major General Leland S. Hobbs.

The following extracts are quoted from General Devers' letter:

"From the wall of the Association's meeting room, the photograph should remind your members of their individual and collective contributions to the successful conclusion of the war. I know they are proud of their service, especially of such feats as include the battles of Sicily, the St. Lo offensive, being the first American



troops into Belgium, the breaching of the vaunted Siegfried Line, the Battle of the Bulge, the Ardennes offensive, and finally the triumphant entry into Berlin. . . . Men who served valiantly in war will, I know, continue to serve their country in peace and to maintain their interest in military affairs and in the security of our country."

Captain George Warren, secretary-treasurer of the Association, announced just before Christmas that applications for membership in the Association were still arriving daily. Former members of the Second Armored, even though not interested themselves, are urged to acquaint friends of theirs who were with the Division of the Association and have them get in touch with Captain George Warren, Hq. CC "A," Second Armored Division, Camp Hood, Texas.

At the same time that he made the above announcement Captain Warren also announced that the Publisher, Albert Love Enterprises, Box 5109, Atlanta, Georgia, still has a limited number of copies of the Second Armored History, which was recently distributed to those whose orders had been placed on the advanced sales list.

### 5th Armored Division

THE news of the formation of the Fifth Armored Division Association has been greeted with enthusiasm in all quarters. Many letters are being received and names and addresses are being added at a rapid rate. Some rosters, however, have not yet been received but they are expected in the near future.

It is estimated that the files of Division members and their addresses will be almost completed by March at which time the first issue of a quarterly *Fifth Armored Division Journal* will be issued.

In some cities local chapters are being formed on an informal basis. One of these is in Jersey City and vicinity and is headed by William Toffey, formerly of Division Headquarters. This group meets about once a month for a social evening. These local chapters are encouraged as a means of disseminating information and providing a framework for the Division Association in the future.

Of interest to former members of the 81st Tank Battalion is the news that this Battalion's history is now in the hands of the publisher.

### 7th Armored Division

JOSEPH A. REDDY, JR., general manager of the 7th Armored Division Association, writes from the national headquarters of the Association at Libertyville, Illinois:

"... We certainly would appreciate mention in your JOURNAL. Perhaps, as a starter, we might run the note

that inquiries about the Association can be forwarded to me at P. O. Box 333, Libertyville, Illinois. Also, that in six months of operation we have gained nearly 400 members and that we are planning a really ambitious program for the coming year. We, the division, that is, have two Medal of Honor winners—Sergeant Thomas Kelly, a medic from Brooklyn; and, more recently, Sergeant Robert H. Dietz, Kingston, New York. The latter was a posthumous award. I believe that there are few armored divisions with two such winners. We are taking steps to have some terrain feature in the vicinity of Dietz' former home re-named for him in his and the division's honor. A report to the membership has just gone out and we hope very soon to put out a small newspaper."

### 8th Armored Division

BRIGADIER GENERAL JOHN M. DEVINE, commanding general of the 8th Armored Division from September 1944, to the inactivation of the Division in August 1945, has joined the Army Ground Forces Universal Military Training Experimental Unit at Fort Knox, Ky., to lead the War Department test unit on its UMT plan. On his staff is another former 8th Armored officer, Captain John P. Stafford, Jr., who served with the 8th from March 1942 to December 1943.

Another former 8th Armored man, also at Fort Knox with The Armored School, Lieutenant Colonel E. R. White, has been named acting secretary of the nuclear 8th Armored Division Association. Former members of the 8th, both those still in service and those now separated, are urged to register their names, addresses and pertinent information as to their present occupation with Colonel White at The Armored School, Extension Course Department, Fort Knox, Ky.

### 9th Armored Division

THE first informal party was held by the 9th Armored Division Association at the Hunt Club, Fort Knox, Kentucky, on the night of 14 December 1946.

Plans for the actual organization were approved. A picture of the Ludendorff Bridge, sent to the Acting Secretary of the Association by General Jacob L. Devers, was displayed and observed with enthusiasm by all present. Plans for future meetings were discussed but were left in a tentative status depending on the progress of the organization of the association in the next few months.

Major General and Mrs. Leonard headed the guest list. Others present were: Colonel and Mrs. Adams (G-4); Colonel and Mrs. Engeman (CO, 14th Tank Battalion); Major and Mrs. Dennis (S-3, 19th Tank Battalion); Major and Mrs. King (2d Armored Regiment); Major and Mrs. Roberts (14th Tank Battalion);



Captain and Mrs. Meier; Captain and Mrs. Wilton J. Sherman; and Captain and Mrs. Gelling. Mr. and Mrs. Floyd D. Harder (60th Infantry Battalion); Mr. and Mrs. Ralph A. Castillo (19th Tank Battalion); and Mr. and Mrs. Walter J. Sherman (3d FA Battalion); all of whom are from Louisville, Kentucky, also attended. Mr. O. W. Harmon (Division Headquarters) who happened to be in Louisville on business from New Tazewell, Tennessee, was the only really 'out-of-towner' present at the first meeting.

Captain Louis Gelling, Acting Secretary of the Association, is still anxious to contact former members, and in particular company and unit commanders of the 9th Armored Division, and may be reached at Headquarters The Armored Center, Fort Knox, Kentucky.

### 11th Armored Division

WE want to thank the members of the Association for the swell response to our Newsletter with their comments and suggestions, which have been pouring into the Association offices. For the benefit of those of you who may not have seen it, we reprint below the Belgian message of thanks to the men of the Eleventh, which was received by Ted Cronyn, president of the association:

"Bastogne, July 4, 1946.

"Dear Friends:

"On this anniversary of your Independence Day the Belgian people have met in Bastogne—which symbolizes the wonderful stand put up by the American Army in Belgium—in order to pay to the United States of America a tribute of gratitude and affection.

"Our representatives will lay the cornerstone of a memorial in honor of your Armed Forces, and a plane will take off to Washington to bring to the Capitol earth from the Ardennes, sanctified by American blood.

"We desire to congratulate you as one of these boys who fought so gallantly in the battle of the Ardennes, for our liberation and we send you our best regards and our everlasting appreciation of your help."

(Signed by the Mayor of Bastogne).

Many of you have written letters to us, asking the addresses of former buddies, which we have not answered yet because we want to check our files for corrections before sending you the information you want. We have had quite a few of our letters returned due to the fact that either we did not have the latest address or the person had moved and left no forwarding address.

We visited Cpl. Stanley A. Nelson of the 492d AFA, shortly before Christmas at Forest Glen, Md. Cpl. Nelson is a veteran of both world wars and was wounded about the first day of action in Bastogne. We would like to hear from all of our members who were wounded in action and we want to be sure they are being taken care of properly.

Ernest A. Perlmutter of Cleveland, Ohio, writes us that he is interested in forming a local chapter in Ohio which might include Akron and Canton as well as other near-by cities. We read that Theodore King was elected Secretary of the Woodmont (Conn.) Fire Company. Stoddard L. Ogg was separated from the service after 23 months of hospitalization on December 11th. Guy R. Moats of Boonsboro, Md. wants to get ahold of about 20 sleeve patches to complete a quilt that he wants to display at the Convention next August. Chaplain (Capt.) David E. Kinsler, who hopes for a commission in the Regular Army, writes us from Fort Knox that he will try to send us quite a few addresses of members of the 11th who are still in the service. Marvin Garfield writes that he soon hopes to leave the Vets Hospital in Minneapolis and is interested in forming a local chapter in that city. We were pleased to know that 16 former members of Co. "C" of the 63d AIB have formed a club, with Philip Mildenerger of Tenaflly, N. J. as Secretary. Paul E. Cratty of Roxbury, Mass., is very keen on organizing a chapter in Boston and hopes to make the "Beantown" chapter the biggest and best.

A letter from Johnny Gibson of Division Trains, tells us that he is back playing professional baseball with the Cardinals' Rochester, N. Y. club and hopes to be able to attend the convention in Chicago. Charles J. Hocker of Philadelphia, Pa. writes that his "newsletter" was really his Christmas present from the 11th A.D. Ass'n and he obligingly sent us quite a few names and addresses of former members of the 21st AIB. R. L. Schneider of Chicago (41st Cav.) thinks many of the members would be interested in exchanging pictures taken overseas and he is interested in your comments on this idea.

Speaking of local chapters, practically all members who have replied to our newsletter are very much in favor of such an idea. If a couple of you "go-getters" in each city would get together—we can send you a list of names to contact in that vicinity. Incidentally, this list would contain the names of those who sent in our newsletter coupon—so they must be interested. For the benefit of all of you who have asked—wives will be permitted to attend the convention in Chicago, of course, and we will try to arrange something of interest for them while the actual business meetings are taking place.

Ralph Holzwarth of Syracuse, N. Y. says that he will be glad to offer his assistance in getting publicity for the Association in some of the New York papers. Mrs. Norma M. Chadwick very kindly sent us the *Song of the Armored Division* written by her and dedicated to her son, Pfc. Stanley K. Chadwick, who was reported killed in Belgium in January 1945. Mrs. Olas Wilson of Eldon, Mo. (who was widowed on Dec. 10, 1946) writes that she is interested in having both the ETO booklet and the Division History so her two daughters can learn all about their Daddy's outfit. Mrs. Virgil



Taylor of Cadiz, Ohio, mother of Thos. J. Taylor who was fatally injured in an accident August 30th also wants the History, as do Mr. and Mrs. W. J. Johnson of Ardora, Pa., parents of Wilber F. Johnson, who was killed in action. Mrs. Joseph Mitchell of Denver, Colo. mother of Major William E. Mitchell (21st AIB) who was killed in action April 1945, would like to get in touch with anyone who knew her son. Mrs. Frank L. McIntyre, Sr. of Rochester, N. Y. the mother of Frank L. McIntyre (41st Tank) who was killed in Burgbrohl, Germany on March 9th, 1945, would like to correspond with anyone who knew her son.

✓ ✓ ✓

We have ordered quite a number of windshield stickers with the 11th A.D. insignia advertising the convention in Chicago for members of the Division. We hope to have some news about Lapel pins for those who want them, in the near future.

✓ ✓ ✓

We have received many, many more letters of congratulations and good wishes for the Association, too numerous to mention and list individually, but we thank all of you for your enthusiasm.

Speaking of mail being returned to us—does anyone know the addresses of the following members?

Philip Santanello } Chester J. Prendota } James C. McKnight }	21st AIB	Orrin E. Hunt } Ansel C. Stackpole } Henry K. Hunter }	63d AIB
Frank E. Learned } Troy C. Lee } James C. McMullen } Milton R. Roth }	81st MED.	Rudolph L. Scarboro } Edmund C. Garrabrant } Edward A. Nelson } Russell L. Baker }	41st TANK
William P. Adams — Joseph J. Medek — Charles W. Quillen—42d Tank			

✓ ✓ ✓

We still have not received any rosters for the 133d or the 492 AFA—however, we have received a few names and addresses and hope to get the rosters through these members. We also want you members of the Association to send us any items of news and interest to other members to be published in this column.

The ARMORED CAVALRY JOURNAL wishes to thank the members of the Association who have sent in subscriptions to the JOURNAL.

✓ ✓ ✓

#### 14th Armored Division

A LETTER outlining the plans for the Association and a personal questionnaire will be mailed to all former members of the Division whose address is available within a few days.

All former members of the Division will be interested to know that the official Seventh Army Report of Operations has been released. This report is made up with maps and photographs in three large volumes. It is a comprehensive tactical study compiled from official records. The role of the 14th Armored Division in the

drive through Alsace and Southern Germany is reported along with other operational divisions. It is also interesting to know that the Division history, while out of print, is still in demand. Joe Carter, now employed by the *New York Herald Tribune* and doing some writing for the *New Yorker* on the side, reports that he has requests from the Imperial War Museum, London, the Tactics Library, United States Military Academy, the Tactics Library, The Infantry School, and many former members of the Division. It is hoped that the Association can procure at least 1,500 orders in order to warrant reprinting. In the meantime, a number of our men who were wounded at Hatten and who are still in the hospital want copies—do you have an extra one?

Colonel M. K. "Bullets" Kurtz, now assigned to the Field Artillery School, Fort Sill, Oklahoma, is collecting all types of historical information pertaining to the Division. If you have any information that would be of value to this collection please address him. It may be well to elect him Association historian.

General Smith was recently in San Francisco on emergency leave on account of the illness of Mrs. Smith. Her conditions was good as of the last report.

✓ ✓ ✓

#### 16th Armored Division

PLANS for the publication of a 16th Armored Division Newsletter have been announced by MacArthur H. Manchester, division association secretary. The Newsletter will contain news and information of former division personnel and it is requested that all material for the publication be forwarded to the secretary at this Washington D. C., office, 2517 Connecticut Avenue, N.W.

✓ ✓ ✓

#### 20th Armored Division

KRIS GILBERTSON is secretary of the 20th Armored Division Association and requests that all inquiries about the association be addressed to him in care of *The Rhinelander Daily News*, Rhinelander, Wisconsin.

In his recent letter to the ARMORED CAVALRY JOURNAL he writes: "Yes, I am the secretary of the as yet unborn association. We expect to have incorporation papers drawn up during January and begin actual operations the same month. Inquiries about the association should be sent to me.

"As yet there is not much that I can furnish in the way of news for the ARMORED CAVALRY JOURNAL, but I hope to be able to send contributions regularly in the future."



# What Would You Do?

*by Colonel Hamilton H. Howze\**

## SITUATION

You are the commander of a Cavalry Squadron engaged in preceding and covering the advance of an Infantry Division in a fluid situation. It is now 1000 hours on a bright clear day.

You have reconnaissance troops on parallel roads several miles to your right and left. These are committed and not available for other missions. The principal route of advance of the Infantry Division is via Newton to Manatee. The principal part of your squadron is moving on that road, as is your command group.

Enemy resistance has been confined to sporadic delaying action. Enemy tactical air power and ours are about equal.

A reconnaissance troop has been leading the advance on the Newton-Manatee Road. As its troop commander made the turn at M, he, with a wisdom uncommon to most, dispatched a platoon to cover the flank of the troop and squadron. The flank platoon leader established the bulk of his platoon in position on the Hill at C, but sent one scout squad and one rifle squad into the woods at D and E to defend the bridge over Wildcat Creek, a stream unfordable to tanks or other vehicles. All country on the sketch, except for Tiger Mountain, is good going for vehicles.

As you in your quarter ton pass the woods at M, you hear small-arms and heavy-caliber firing break out to your left front. Accordingly, you stop at the houses at L and get in communication with the various elements of your command.

The troop commander of the reconnaissance troop reports that his troop, as it went into the woods at K, received heavy flat-trajectory fire from the hills north of Wildcat Creek. He also says that his platoon leader on the left flank reports that things are hot and difficult where he is: several hundred enemy infantrymen suddenly jumped across the ridge at A and proceeded South, crossed the creek, and began working in to the woods at B. Our fire killed a number of this infantry but it kept coming. The detachment in the vicinity of D and E can be heard firing heavily, but radio contact with it is lost. One enemy tank can be seen burning at F; two other enemy tanks have disappeared into the woods at G.

Your cub plane reports that he can spot about 30 or

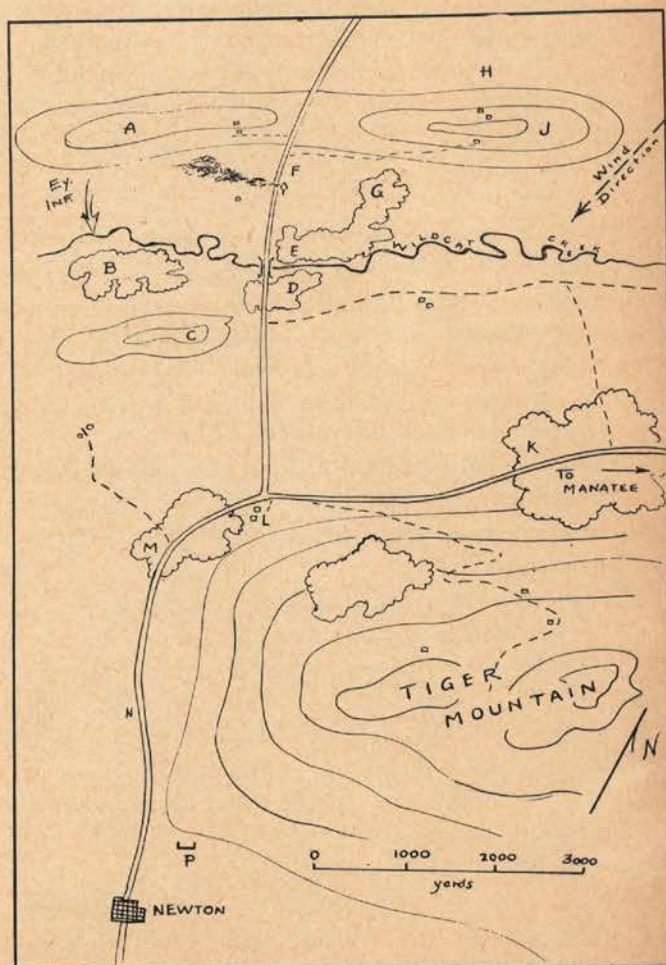
40 vehicles in the vicinity of H, some of which are obviously tanks. A few tanks are firing South from J.

The head of your rifle troops is now approaching the woods at M.

The head of your tank troop is at N.

The howitzer troop has one platoon already in firing position at P. The other two howitzer platoons are with reconnaissance troops on other roads.

At this time the Division G-3 happens to join you in his quarter ton. Conference results in this instruction from him to you: "Hold what you've got. For God's sake, let's not lose Tiger Mountain—it would take us a week to re-take it. We can have a single battalion of Infantry up to you in about two hours. Have guides



\*Director of Instruction, The Ground General School.



meet it at Newton and put it in position, attached to you. A company of medium tanks will reach you about the same time. Handle them the same. The main strength of the division cannot get here until daylight tomorrow. Hold the position until that time. You may be facing the beginning of an attack by the 90th Light Division, which, as G-2 has recently and reluctantly confided, is in the area, in good condition, with the probable intention of making a determined stand which may involve attack. I will square all these instructions with the Division Commander."

About this time you note with dismay that artillery fire of a caliber about 150mm is being methodically ad-

justed in on the Road Junction just North of you.

### REQUIREMENT

What is your plan:

- a. For the disposition and actions of those elements of your squadron presently on the scene?
- b. For the utilization of reinforcing troops which will arrive in two hours' time?

### NOTES

The organization used here is the Proposed Cavalry Squadron: Three reconnaissance troops, one tank, one rifle, and one howitzer troop.

## SOLUTION

### BRIEF ESTIMATE

My mission is to hold Tiger Mountain. We are faced with a possible attack in division strength, supported by tanks. We must occupy and hold Tiger Mountain with our supporting infantry, which will not be available for two hours. To secure this feature, it is essential to delay on Wildcat Creek with our available troops. It is important first to destroy the bridge at D, although there is no guarantee that the enemy will not cross the creek with armored elements above or below this point. The only troops immediately available to me are one reconnaissance troop, one rifle troop, one tank troop and howitzer platoon.

### PLAN

- a. Place harassing howitzer fire on woods at B, and creek line North thereof, at once.
- b. Attack at once with one platoon of tanks and one platoon of riflemen to clear up situation at bridge. Destroy bridge, and defend bridge site.
- c. Retain one reconnaissance platoon on flank protection near point K. Block road from Manatee.
- d. Send one tank platoon and one rifle platoon to reinforce hill C.
- e. Hold one tank platoon and one rifle platoon in reserve near point M.
- f. Withdraw one reconnaissance platoon from K and place on left flank protection West of M.
- g. Hold howitzer platoon in present position to cover entire area.
- h. Expected development will be to destroy bridge at D, hold observation there, and counterattack enemy at B should he launch an assault. Should enemy not launch assault from B, attack the woods with tanks and riflemen to clear out his bridgehead.
- i. When reinforcements arrive, their initial mission will be to organize a defense of Tiger Mountain, then to prepare counterattack plans.

### DISCUSSION

It is essential to destroy bridge at once. Although there is no guarantee that enemy can not cross at other points, this is necessary to secure initial delay.

Infantry in woods B represent a bridgehead in rear of which a crossing for tanks may be constructed. It might be considered desirable to attack it at once with all available troops except those used at bridge D. The situation at this time is not sufficiently clear to indicate that a crossing has not been made West of B. Should this be occurring, the command would be exposed to a flank attack from the West, making it impossible to withdraw on Tiger Mountain. It is therefore desirable first to develop the situation on the West, using the reconnaissance platoon. Should the enemy assault Hill C from Woods B, it would present an excellent opportunity to destroy him by an attack from the West by the reserve.

It is also essential that flank protection be held on the Manatee Road.

1. Failure to hold right flank protection. 15
2. Failure to launch attack on bridge to clear up situation and destroy 20
3. Failure to reinforce Hill C.

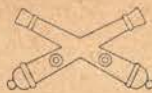
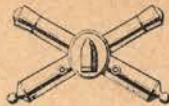
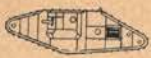
No cut, provided attack on B is launched. 15

4. Failure to provide left flank protection 15
5. Failure to hold squadron reserve.

No cut, provided left flank protection is established, and reserves are used in attack on B. 15

6. Failure to place reinforcing troops on Tiger Mountain initially. 20
7. Any attack across Wildcat Creek prior to arrival of reinforcements. 25





# OTHER BRANCHES



Major General J. L. Homer

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By 1st Lieutenant C. H. Ruse

"The war, so recently ended, has clearly illustrated the advantages of and the need for cooperative action and thorough, mutual understanding throughout all elements and echelons of the Army.

"This need was manifest to the Antiaircraft Artillery early in the war, when in addition to its primary mission of destroying enemy aircraft, it was called upon to serve as Infantry, as Field Artillery, and in the anti-mechanized role. Searchlights were also used to illuminate night battlefields for the Infantry.

"No one can tell at this time the part our new weapon, the Guided Missile, will play in the future development of the Army. But we do know it will be an important part, and that it will in some way affect every branch of the Service. It is therefore essential that everyone in the Army keep abreast of developments in this new weapon and it is equally important that those of us charged with the employment of the guided missile be informed of the activities and developments within other branches. Our peacetime training must be based on a constant exchange of ideas.

"In fostering this exchange of ideas the Armored Cavalry Journal is taking a broad step toward achieving cooperative action and mutual understanding. The portrayal of the activities of 'Other Branches' to its readers is a definite service to the Army and to the nation.

"We of the Antiaircraft Artillery and Guided Missile Center at Fort Bliss, sincerely appreciate this opportunity to present the story of our activities, and I personally would like to congratulate the Journal on its farsighted policy in maintaining the 'Other Branches' section."

*J. L. Homer*

Major General, U. S. Army,  
Commanding General, Antiaircraft  
Artillery and Guided Missile Center.





# The Antiaircraft Artillery

*by Lieutenant Colonel Alvin T. Bowers\**

**The demonstrated superiority of the SCR-584-M9 director-automatic laying 90mm gun combination against flying bombs was responsible for the decision to deploy U.S. antiaircraft battalions in diver defense of Antwerp during the toughest part of the European war. On occasions antiaircraft guns were used to stop German armor. In this article, Colonel Bowers discusses thoroughly the uses and importance of Antiaircraft Artillery in a modern army.**

PRIOR to World War II many of the extremist proponents of heavy air power denied the feasibility of effectively defending against air attacks with Antiaircraft Artillery. Here are some of our own Air Corps statistics on the effectiveness of German flak. In the raid on the shipbuilding yards at Kiel, in June of 1943, 20% of all planes were damaged by antiaircraft artillery flak. The following month in an attack on the industrial plant at Kassel, 65.5% of our planes were damaged by antiaircraft artillery.

In a general study of the over-all figures, there was an indication that on our raids damage by enemy antiaircraft artillery accounted for 20 to 60 per cent of all damage, both major and minor, to our attacking force.

We believe that our Antiaircraft Artillery is superior to any in the world in construction and fire control equipment. Our 12th Army Group reported that from "D" Day to 20 December 1944, in 4,393 raids, by 9,700 enemy planes, 1,192 were destroyed and 781 probables. This is good shooting. The record of the 12th Army Group is matched by those of our other armies, including those in the Pacific.

The importance of Antiaircraft Artillery during World War II can be readily appreciated when study of any amphibious operation is undertaken. In almost all of these types of invasions, the Antiaircraft Artillery went in with an early wave.

At Anzio, the position of our troops was extremely precarious. The line of supply came from ships in the harbor. The Germans threw every available plane at this shipping. In one instance a formation of 60 JU 88's, DO2 17's, and HE 177's were picked up approaching the harbor. The 90's were able to open up while these planes were far at sea. This broke up their formation and the attacks by single planes—dive, low level, medium, and high level bombing, together with deck strafing had very limited success.

The Antiaircraft Artillery defenses are credited with saving our line of supply. In a short period of time the enemy lost over 102 planes, and they were forced to abandon large-scale air attacks on the Anzio harbor. Records show that forty per cent of all attacking planes were shot down.

A similar situation occurred when the Remagen Bridge was crossed. The Germans realized the importance of this bridge and immediately launched all available planes with a mission to destroy it. In the early morning of the crossing, three Stukas and one ME 109 dove at the bridge; all four were destroyed. Later that morning, eight Stukas dove at the bridge, and all eight were destroyed with the aid of searchlights. The antiaircraft artillery made a very definite contribution toward keeping this bridge open until auxiliary bridges could be built.

\*Coast Artillery Corps, Ft. Bliss, Texas.



Secondary missions of anti-aircraft artillery frequently rival in importance its primary mission. Northwest of the City of Cebu, in 14 days of firing, a detachment of 90 millimeter guns knocked out seven tunnels, 17 dugouts, 77 pillboxes, seven trench systems, four supply dumps, three DP's, destroyed one CP, and silenced 29 machine guns. General Omar Bradley stated that without the help of the Anti-aircraft Artillery Omaha Beach could not have been held. There the units functioned in a ground role.

During the early phase of the Bulge attack practically no field artillery was available to stop the German armor. However, nine battalions of anti-aircraft artillery were available, and their employment as artillery and anti-tank weapons caused the slow-down of the attack which was vital in the saving of Liege and Antwerp.

Let us participate in a typical anti-aircraft artillery action.

The city air-raid sirens, with their mournful, ear-shattering howls, are signalling the approach of enemy bombers. Minutes later, when the last throbbing roar of the sirens dies, a deep silence falls on the port and city. People are scurrying into shelters. The lights in the ports go out by areas, leaving large patches of blackness.

After a short period of waiting and growing tension a thin curving stream of brilliant red dots rises into the night sky. Another stream of red rises beside it. Then another and another—nearer now. Seconds later a distant chattering of rapidly firing guns is borne in. Now the volume of sound grows as other anti-aircraft guns spring into action. Soon the whole port area is jarred by fire of all types of anti-aircraft, from the rapid staccato of machine guns and the beating cough of the 40s (40mm automatic cannon firing 120 rounds per minute) to the heavy thunder of the 90's (90mm guns firing 25 rounds per minute). A fantastic number of rounds from hundreds of hot gun barrels are hurtling toward enemy raiders. In the tracer-filled sky two flaming planes fall to earth. A terrific concussion signals the collision of a fully loaded bomber into a mountainside.

Now the surviving enemy planes are speeding out of range. The gunfire dies down, then stops. Silence settles once more, only to be broken again by the steady, unwavering howl of the city sirens signalling "all clear."

That was the anti-aircraft artillery in action. That spectacular display of light, fire and sound was the punch of our anti-aircraft artillery.

Now let's turn back the clock about a half hour, reset the battle stage, move our observation point to one of the 90mm anti-aircraft gun batteries and observe how it joined in the fight.

This battery, we find, is located on a bluff overlooking the port. It is a good gun position affording excel-

lent "visibility" for the radar and a clear field of fire for the guns of 360 degrees. The radar is concealed in a hole blasted out of the ground. Only its dish-shaped antenna is above ground level. About 15 yards away an optical tracker is located in its own small pit. These two instruments furnish to the electronic computer the "present position" of the enemy in the sky under all conditions of visibility, day or night. A revetted trailer near by carries the computer. This instrument accepts the "present position" data from the tracking instruments and applies automatically all ballistic corrections. It adds superelevation, drift, prediction. This combined data is automatically transmitted to the guns.

The guns, which are located about 250 yards from the radar, accept the data from the computer and automatically point themselves continuously at the predicted position of the target. There are four of these guns set in individual revetments, in a rough square measuring about 50 yards on a side. Each gun is dug in to a depth where its crew will be protected from flying shell fragments. Where it is impossible to dig a gun in, a revetment is built up to the height of the gun trunnions.

The sound of the 35 KVA power plant, generating only enough power now to keep the radar warmed, can be heard. Four turrets of multiple-mounted machine guns are dispersed around the area for local protection. In the near-by Battery CP the duty officer and his enlisted assistants form the stand-by crew. One of these assistants is just making his "half hour check" of the gun stand-by crews over the hot loop.

The duty officer is now answering the buzzing of the telephone marked AAOR (Anti-aircraft Operations Room). He receives the long-ring warning of "Condi-

**Anti-aircraft guns blast enemy raiders over a North African port.**





tion Yellow." One NCO alerts the stand-by crews over the hot loop and announces "Condition Yellow." Another NCO plots the location of "multiple hostile" targets on his plotting board. The duty officer notes that the targets, now about 100 miles away, appear to be headed for the ports, and rings the BC to inform him of the situation. In a very short time the BC enters and checks the plots. The radar crew reports that the radar is searching.

When the plots indicate to the AAOR that the local port is definitely the objective the warning "Condition Red" is received. The BC presses a button which sounds the local siren. In less than three minutes after the sounding of the siren the guns are completely manned and ready for action.

When the plots on the long-range chart have reached the proper area, they are transferred to the short-range chart. A report is received over the "command line" that the radar is "on target." The computer operator adjusts his dials and notes that the fuze dial is "off scale"—the target is beyond range. Slowly the fuze dial creeps down to 30 seconds (time of flight of the projectile) and then lower. At 26 seconds the BC gives "Commence Firing." Soon the Chief Radar Operator reports "target destroyed." A new target is assigned, and the guns swing over to it and renew their firing. So to the end of the raid, when "Condition White" is announced, signalling the "all clear." The BC then makes out his report.

The "close-up" above was a view of one type of anti-aircraft artillery unit in only one type of action. There are other types of units in the anti-aircraft, each capable of performing multiple types of missions.

The anti-aircraft gun battery, in addition to its primary function of defense against aircraft, is prepared when the situation demands—and has done so in the past war—to blast pillboxes with direct fire, to fight tanks, to fire long-range harassing fire, to interdict enemy supply roads, to destroy personnel and unarmored vehicles with time fire, to attack vital pin-point targets at long range, to place guide lines of aerial bursts for directing our aircraft to their targets, to engage in counterbattery fire, to destroy enemy OP's, to give close support to the infantry and to destroy buzz bombs.

The anti-aircraft gun battery can perform these missions swiftly and with tremendous fire power. At Toulon, when French Army "B" Headquarters wanted to take advantage of a target of opportunity, a column of trucks carrying enemy reinforcements, they called on the anti-aircraft. Two batteries put more than 200 round of 90mm HE shells in the air before the first round landed. The target was smothered, all rounds falling within 65 seconds.

Rivalling the heavy gun in versatility and deadliness are the 40mm and 37mm automatic anti-aircraft cannon. During the war they could be found anywhere

and usually were. These guns, capable of firing 120 high explosive projectiles per minute, each weighing two pounds and fitted with supersensitive fuzes, were the best known of all Anti-aircraft weapons to troops of other branches. They gave added security to our front-line soldiers during the early days of the war in Africa when Stuka Valley and Messerschmitt Lane were well travelled aerial highways; "H" hour, "D" day, of every amphibious operation in this war found these guns in large numbers in the early waves of boats streaming for the beach. Mounted on half tracks the M15, with one 37mm anti-aircraft gun and 2 coaxial .50 cal. machine guns were familiar and reassuring sights to countless infantry and armored force soldiers. Each of these M-15's was accompanied by an M-16. The M16 was also a half-track vehicle on which was mounted a turret carrying four .50 cal. machine guns. This electrically operated turret could be traversed and elevated rapidly while pouring out streams of bullets. These broke up many an enemy aerial assault on our armored and infantry spearheads.

In later stages of the war, more numerous by far than any other type of anti-aircraft automatic cannon was the 40mm gun, with its accompanying 4-barreled .50 caliber machine gun, turret mounted. This pair could be seen everywhere; on airfields in the rear areas, along every important supply route and deployed in the fighting zones. Divisions had complete battalions of them attached. Every Field Artillery battery had them as neighbors. They could always be found in the most forward positions of the front lines. Here, with their tremendous fire power, they were death to low-flying planes and of superlative worth in their alternative missions of laying down supporting fire for our infantry attacks and for resisting enemy counterattacks. They could be found in position to protect the cover river crossings. In Italy they were on the banks of the Rapido River in the bloodiest battles of the Italian campaign. There on one occasion they covered the approach of the assault troops for a crossing and protected their retreat when the assault failed. They were on the beaches in the landings on Pacific Islands. The "40" and its companion, the "quadruple .50," were used for simulating attacks by infantry at night, for marking, with tracer fire, boundaries between units in night attacks and for reducing enemy machine-gun nests. When the final scores are totaled for World War II the automatic anti-aircraft cannon will receive a higher score of enemy aircraft destroyed than will any of the other anti-aircraft weapons.

The searchlights, when supplanted by the radar for night firing, were shifted to artificial moonlight assignments, and proved so useful in forward areas that they will be retained for that use.

In the closing days of World War II the Anti-aircraft Artillery had the most modern artillery weapons in our Army. It included firing data devices that continuously



transmitted data to the guns automatically, mechanisms that made a battery fully automatic except for gun loading. Guns that traversed and elevated with speeds to match the fastest flying targets, turrets with quadruple mounts which reacted to the slightest touch of a finger.

The greatest improvements made were directly attributable to the radar as conceived and developed by the Signal Corps and the Antiaircraft Artillery. This opened up an entirely new field of investigations as to application of principles, and resulted in such side developments as the proximity fuze and controlled bombs.

In automatic weapons the development trend has been toward increased fire power and speed of action. To this end the .50 cal. single mount has been transformed into the quadruple turret mount, and the Bofors 40 is now dual mounted on a full track vehicle. The guns too have stressed rapidity of laying, but with them accuracy of fire has been considered more important than volume. The 90mm gun has proven more effective in a dual role than the much touted German 88, and shows superiority in both air and ground firing. The lower silhouette of the 88 is about its only advantage.

Newest and most vital addition to the matériel of the antiaircraft artilleryman is the radar. Its electric scrutiny of the sky is unhindered by darkness, by rain, fog or snow. It can pick a target out of the sky and follow it automatically and smoothly. It determines the distance to the target by measuring the almost infinitesimal time interval that occurs between the moment an electric impulse is projected toward the target by the radar and the moment of its return. This range, and the direction to the target, it transmits automatically to the director, which is the computing instrument of the battery, for conversion of this information into firing data.

The first radar, the SCR-268, reached the antiaircraft soldier about 1940. Intended to replace the old sound locator it was primarily searchlight equipment. However, its possibilities for use as a gun pointing instrument were immediately recognized and necessary modifications were accomplished. It went to war with the first antiaircraft units to see action, and despite its crudeness contributed to many a successful defense against enemy air raiders, particularly around Algiers, North Africa and Palermo, Sicily. In early 1944, the antiaircraft received its new radars specifically designed for gun laying. This set, the SCR-584, was the answer to the antiaircraft artillery soldier's dreams. With it the antiaircraft artilleryman could at last shoot as well at night as he could in daylight. He improved his daylight shooting too, since he could now "see" farther (up to 70,000 yards), and therefore pick up his target in plenty of time to make his data smooth.

Born of the antiaircraft artilleryman's desperate need for seeing the target under all conditions of visibility and weather, the SCR-584 became one of the most widely used radars. The Field Artillery used it for

enemy road surveillance and for location of enemy mortar positions; the Air Force used it to direct planes to their targets on close support missions. When equipped with a standard air force bombsight this radar was actually used to release, at the proper instant, a bomb carried by a dive bomber 20 miles away and diving on its target through a blanket of fog. The SCR-584 played its greatest roles in England during the battle against the V-1 and in Belgium in the anti-Buzz-bomb defense of Antwerp.

The antiaircraft artillery weapons with which we ended the war will most certainly be used at the start of any future wars. The importance of antiaircraft artillery has been recognized by making them an organic part of the infantry division. However, our present equipment has limitations which future developments in offensive weapons may render obsolete; for example, the German V-1 weapon flew at a speed of between 300 and 400 miles an hour. Developments today indicate that this same weapon equipped with a ram-jet engine may have a speed upwards from 1,500 miles an hour and a range of up to a thousand miles. Our present antiaircraft equipment could not cope with these missiles nor with medium or high flying bombers traveling at supersonic speeds. At the present moment this supersonic barrier is being attacked by both England and America, and success appears imminent. No counterweapon has yet been developed for the V-2 rocket, which has a speed of 3,500 miles an hour and a range of 200 miles. The Antiaircraft Artillery is deep in the problem of guided missiles for this purpose as well as for use on the offense.

Present weapons must not be discarded. They are still vital and will play their role in the future. The Army Air Forces do not believe that *tactical* aircraft, engaged in ground strafing and low-level bombing attacks, will exceed the speed of the present-day fighter bomber. Even if aircraft assigned to tactical missions are capable of flying at supersonic speeds they will have to be slowed down to approximately 400 miles per hour when they make their attack. It is impractical to strafe or bomb accurately at low levels and high speeds. Therefore, our present automatic weapons are capable of functioning efficiently against such types of attack.

The Antiaircraft Artillery has a brilliant future in the light of present research and development. With the cognizance that the research laboratories must work hand in hand with the professional in the field, the next 10 years will show amazing advances in this branch of the Service.

No Antiaircraft Artilleryman will ever be satisfied until he has a missile with a muzzle velocity equal to the speed of light, with an accuracy of 100 per cent hits, with the ability to engage targets that travel at speeds in excess of 5,000 miles an hour, and with a lethal range from a few hundred feet to the outer limits of the stratosphere.



# Communications — Nerve Center of An Army

*by Gerald Egan\**

FROM a humble beginning, when the telegraph was considered one of the marvels of science and semaphore flags were the accepted means of communication, the Army Signal Corps has grown to gigantic proportions numbering, at its peak in World War II, approximately 360,000 highly trained officers and enlisted men.

When Japan capitulated in August, 1945, its communications networks, totalling more than 800,000 circuit miles, spread out from the War Department in the Pentagon (Washington, D. C.), down through the chain of command, to every spot where American troops were in action.

The Signal Corps resolves itself into four main functions. They are: to train and furnish specialized signal troops and units to all requiring elements of the Army; to operate the Army's communications network; to develop, procure, store, issue and repair communications equipment and supplies; and to perform photographic work for the Army except the Army Air Forces.

No branch played a more vital part in the winning of the war than did the U. S. Army Signal Corps. Signal Corps men were always among the first to land on beachheads both in Europe and in the Pacific. They furnished and operated the signal communications for the break-through at St. Lo; they were in the forefront during the dash across France into Germany, and they were among the first troops to re-enter Manila, where they re-established communications destroyed by the retreating Japs.

Signal Corps photographers accompanied all our armies, and obtained many of the excellent motion picture shots, and stills exhibited in theaters and periodicals throughout the country. Signal Corps radiotelephoto and broadcast facilities played a major role in keeping the American public informed as fast as possible on the World War II campaigns.

Primary responsibility for the fulfillment of the Signal Corps' mission and for the functioning of many related assignments rests with the Chief Signal Officer,

who acts in a dual capacity. As chief of an arm and service, he commands and controls troops, activities and services, and as a staff officer, he is staff adviser to the Secretary of War, the Chief of Staff and to the directors of the War Department General and Special Staffs on all matters relating to signal communications and Signal Corps functions within the Army.

Although the Signal Corps operates signal communications in ground echelons only down to the level of the Division, it performs many functions essential to the communications systems of the smaller units. Supervision of the lower echelon communications systems is one of these functions, and others include the procurement, supply, and maintenance of signal communications equipment, coordination of the communications systems of parallel subordinate units, and, to a limited extent, training of communication personnel for the various Ground Forces army.

Each field army is usually allotted a signal construction battalion, a signal operations battalion, a signal radio intelligence company, a signal repair company, a signal pigeon company, and a signal photographic company. However, to supplement these Signal Corps units, the commander of a field army may also call upon a General Headquarters reserve, from which Signal troops of various categories may be drawn by the army requiring them.

Authorized as a separate branch of the Army by Act of Congress on 3 March 1863, and numbering only a handful of men with the crudest material, the Signal Corps had for its first Chief Signal Officer the then Colonel Albert J. Myer, inventor of the wigwag system of signalling. Honored as the founder of the Signal Corps, Colonel Myer was brevetted a Brigadier General in 1880 shortly before his death.

Before we entered World War II, the Signal Corps operated a domestic radio network extending to Honolulu, San Juan, Panama, Seattle (for Alaska), and Manila. Only about 5,000 messages daily were handled. By the time the atomic bombs were dropped, this comparatively small military communications system

\*Office of the Chief Signal Officer.



had been expanded enormously into a gigantic round-the-world belt line of multichannel circuits, with a traffic handling capacity of 100,000,000 words per day.

This belt line, extending from Washington to Asmara in Eritrea, to New Delhi (India), to Brisbane (Australia), to San Francisco, and back to Washington, and operated by the Signal Corps' Army Communications Service, formed the greatest unified military communications system ever developed.

Because of the flexibility of this system, all phases of America's war effort were coordinated—mobilization, production, training, transportation, feeding, equipping, and actual fighting.

In 1859, before the Signal Corps was authorized as a separate branch of the Army, Congress appropriated the modest sum of \$2,000 for signalling equipment, comprising mostly signal flags, lanterns and similar simple items. During World War II more than six and a half billion dollars were spent by the Signal Corps for signal communications equipment. For the Fiscal Year 1945 alone, the Signal Corps procured: 440,000 radio sets, 550,000 radio transmitters and radio receivers, 915,000 telephones, 2,840,000 miles of wire (excluding wire in cable), and 5,250,000 strand miles of wire.

In the field of research and development, Signal Corps engineers, working with leading civilian scientists, made many notable advances in the production of precision equipment of a highly technical character. The work of the Signal Corps research laboratories rose from a budgetary allotment of \$704,000 in the Fiscal Year 1940, to \$65,000,000 during Fiscal Year 1944.

It is not generally known that the Signal Corps was responsible for the development, and much of the research on radar until October 1944, when the Army Air Forces gradually took over that part of it defined as peculiar to its own arm.

Virtually all important radar equipment actually employed in combat up to the end of the war, including the complete radar equipment of the B-29s, was developed by the Signal Corps.

It was with the use of specially designed radar equipment that Signal Corps scientists at the Evans Signal Laboratory, Belmar, New Jersey, made contact with the moon in January 1946. Pulses of very high frequency energy were shot out into space, and about two and one-half seconds later their echoes were detected.

In the field of wire communications, the Signal Corps contributed some important improvements. New types of telephones were developed to minimize weight and extend talking range. A lightweight set was evolved in which no batteries were needed; the current for the talking circuit was produced by the sound of the speaker's voice.

Switchboards, too, were extensively improved. The smaller switchboards used at divisional headquarters

were so designed that they could be moved rapidly from one command post to another and set up in a matter of minutes. Field switchboards suitable for battalion use were simplified and lightened so one man could carry them.

Many new types of wire and cable were developed. Assault wire, weighing only one-fourth as much as field wire, was so light that one man could easily carry a mile of it on his back. To facilitate the laying of assault wire, special dispensers were developed to replace the bulky reels previously used. With the aid of these dispensers coiled wire could be paid out without a twist or snag from the packboard of a soldier on foot, from the rear of a jeep, from a light airplane flying at two miles a minute over an impenetrable jungle, or even from a bazooka shell or rifle grenade in flight.

Carrier equipment, superimposing several electrical circuits on one physical circuit by means of different frequency bands, was adapted by the Army from commercial civilian designs. Ingenious "packaged" carrier equipments, which could be transported easily, and set up at new locations with a minimum of delay, were also developed.

Some of the most useful communications developments made by the Signal Corps during World War II were in radio. While other more spectacular radio sets were developed, the "walkie-talkie" which enabled a

**The Handie-Talkie, one of the most useful Signal Corps radio sets, which was developed for advance ground force units.**

Signal Corps Photo





soldier to carry his own broadcasting station with him into combat and operate it, captured the popular fancy. Later came the "handie-talkie," a transceiver which the soldier could easily carry in one hand.

In addition there were field portable radio sets, which could be carried by one or more men and immediately set up and utilized for two-way communication. The Signal Corps also developed a large variety of vehicular sets, which afford greater range than pack or portable radios. Push-button radios were provided in tanks, tank destroyers, and other vehicles, as well as in all army airplanes.

Outstanding among the larger vehicular sets is the powerful mobile radio station—SCR-299, and later the SCR-399 and SCR-499. These were installed in a standard 2½-ton truck and equipped to maintain the two-way communication of an army or corps headquarters across distances of hundreds of miles. It could operate either on the move or while parked.

Radio Relay equipment was another scientific development fostered by the Signal Corps. Extended use of very high frequency (VHF) radio, made necessary to accommodate the great volume of military communications traffic, encountered a serious obstacle in that such frequencies are not generally effective beyond the visual horizon.

The need for communications over greater distances in maintaining control with a fast-moving army, or to span breaks in wire transmission lines, was met by the development of the radio relay system. By this means, signals, both voice and teletype, were relayed automatically from point to point, providing a continuous link from the sending to the receiving positions.

Originally intended as a supplement to multichannel wire networks, the radio relay systems proved so dependable that, in many cases, wire was not installed even in stabilized situations.

Among the major landline projects engineered and constructed by the Signal Corps during World War II, the most outstanding was the great telegraph and telephone line extending from Calcutta (India) to Kunming (China) and beyond, a distance of over 2,000 miles. This has been called a communications achievement without parallel. The line stretches through impenetrable jungles, over the Himalaya Mountains, and spans some of Asia's mightiest rivers. It was completed despite monsoons, a desperately resisting enemy, the dangers of the jungles and almost insurmountable construction obstacles.

Another such project was the Alaska Military Highway Telephone-Telegraph Line, constructed in one year. Signal Corps troops fought raging blizzards, subzero weather, mud, and 2,060 miles of rugged wilderness to provide a vitally needed link between the United States and Alaska.

Between June 1942 and August 1945 the Signal Corps photographed 1,251,212,709 V-Mail letters. In

1944 alone, there were 634,334,199 V-Mail letters. It is estimated that the process for that year saved an air freight bulk of 30,000,000 pounds.

During the current fiscal year the Signal Corps is placing particular emphasis on its research and development program. Twenty-five million dollars, approximately one-fourth of the budget, will be expended for this purpose.

Major expenditures in this field will be in the general multipurpose radar field; continued research in wave propagation—in an effort to widen the usable portions of the already crowded radio spectrum—and improvements in the field and fixed plant applications, including short, medium and long-range ground radio communications equipment. The miniaturization program begun during the war will be continued in order to provide small, lightweight tactical field equipment.

A small, active staff of inventive and experienced technical men will be maintained to design and develop the most modern equipment in the laboratories as a basic foundation for rapid expansion in case of emergency.

Other proposed Signal Corps expenditures are based on carefully studied plans for furnishing fast, accurate and secure communications services for the Army in the United States, in occupied countries and at other points where United States troops are based and where these facilities are essential.

Procurement has been reduced to the minimum necessary to augment existing stocks and to provide for a limited amount of newly designed equipment for extensive field tests.

Intensive training of the new men coming into the Signal Corps to replace the highly specialized operating personnel now returned to civilian life is one of the major concerns. These new men present the same training problem encountered during the war. The enlisted school at Fort Monmouth is giving courses in 29 different classes of communications trades, and communications and photographic specialists in order to provide these replacements.

The Signal Corps will continue to produce and distribute all motion and still pictures for the War Department agencies. This will include the production of essential films for training all components of the postwar Army. Many subjects for training films covering scientific and technical advances brought out during the war are included in this program.

Active participation in the postwar Army ROTC program is well under way, with many colleges and universities already approved for Signal units. Signal Corps extension courses have been revised and extended to reflect lessons learned in the various campaigns of World War II. These courses are designed to enable National Guard and Signal Corps Reserve Officers to study the latest techniques of military communications and other Signal Corps functions.



# QUARTERMASTER CORPS

## American Soldier of Tomorrow

*by W. C. Hendricks\**

**Meet the United States soldier of the future! He is the most efficient fighting man on the face of the earth. To make the American soldier of the future the finest of them all, and keep him tops through unrelenting effort, is the purpose and determination of the Quartermaster Corps.**

**I**F the Quartermaster Corps has its say the American soldier of tomorrow will continue to be the best equipped and best fed in the world. Today the QMC, as always, is busy developing and testing new food, clothing and equipment.

In both World War I and II the American soldier was fortunate in that he had strong Allies to hold the lines while vital time was being consumed in making ready. World War II posed an especially tough problem for the Quartermaster Corps, but it whipped it. For the first time in history, United States troops were called upon to fight in almost every kind of climate and under virtually every condition to be found in the world.

Before the last war, American military experience had been largely confined to action in the temperate zone and the feeding, clothing, and equipping of troops did not pose any problems radically different from those of previous wars nor of the civilian economy. The challenge of the global war was met by another demonstration that necessity can sometimes be the mother of invention. Starting with World War I conceptions, the sinews of combat were steadily improved in quality and serviceability to meet the demands of every kind of climate and topographic situation and the quantities of production attained an ever-increasing acceleration. No nation and no army ever did a better job.

Now World War II rests with the writers of history.

The world finds itself today in a swiftly moving scientific age in which atomic energy, electronics, and guided missiles are a few of the new items. These weapons will be perfected and others, perhaps even more potent, will follow.

The Quartermaster Corps, which is charged with de-

veloping and supplying all of the materials needed to maintain the soldier, intends to meet the challenge of the future by helping to keep the United States in the forefront of military technological advancement; to so develop the power of this Nation that no foreign aggressor will dare strike; and thus to insure the peace.

The scientific resources of scores of universities, colleges, governmental agencies, industrial laboratories, and foundations throughout the United States have been mobilized by the Quartermaster Corps as part of its long-range program looking to the preservation of national security under any emergency that might confront this country. Intensive research is being conducted in such subjects as food products, clothing and textiles, shelter, chemicals, mechanical equipment and and equipage, fuels and petroleum products, and the many other items needed by the soldier. Some of the finest scientists in Europe have joined the quartermaster staffs to add their intellects to the coordinated program.

Reaching deeply into the fields of pure and applied sciences, this program has for its purpose the exploitation of every factor that contributes to making the American soldier the most efficient in the world. Because the civilian population requires the same substance for its maintenance, health, and well-being as does the soldier, discoveries and improvements that are made in the course of this research and development program will benefit all of the people.

Basic in this far-reaching Quartermaster program is the study of man himself.

All the weapons, all the machines, all the equipment must be handled by men. It is not sufficient that our weapons be superior to those of other nations—our men must be superior also. Now, for the first time, concentration is being made upon reducing to an exact science the study of man's requirements, his capabilities and

\*Office of the Quartermaster General.



limitations under any given condition of climate, terrain, or objective. The science of climatology undertakes to determine how best to protect man from his environment.

Precedents have had to be ignored and bold strides taken in exploring these new fields. Studies are being made of the soldier both from the physiological and psychological standpoint. Measurements are being made of his reactions to heat and cold, to varying amounts of exertion, to fatigue, and to all the other elements that involve his relationship to his surroundings.

The study of environmental protection is centered in the Quartermaster Climatology Research Laboratories at Lawrence, Mass. Through the development of this science it is expected that all guesswork will be taken from such questions as to how much and what kinds of clothing are needed by a human being at any place on earth at any time of the year.

Weather chambers are operated at the Lawrence laboratories where any kind of weather from 65 degrees below zero to 160 degrees above can be reproduced, as well as any degree of humidity. Even rain and snow are employed. Men spend hours in these chambers wearing clothing and using equipment that would be required under field conditions. Other tests are carried out on high mountains, in the Arctic, and in the tropics where men try out new equipment under actual field conditions and report their findings.

At the Bikini tests, Quartermaster observers noted the effects of atom bomb blast, heat, and gamma rays on food, seeds, growing plants and animals, wearing apparel, packing materials of various types, and many other kinds of equipment. The articles exposed to the bombs are now undergoing examination and analysis in laboratories so that the effects of the atom bomb may be learned. After the effects are determined steps will be taken to find means for combatting the damage done by atomic energy.

What kind of food will be supplied to the soldier of the future?

Centering in the Food and Container Institute of the Armed Forces at Chicago, the Quartermaster Corps is conducting the most widespread and coordinated scientific research program into foods and containers ever undertaken. With the cooperation of nearly 100 research laboratories and with the assistance of a civilian committee on food research, studies relating to almost every phase of food production, processing, and packaging are being pursued. More than 125 projects have already been brought under way relating to the utility, stability, nutritional adequacy, and acceptability of foods.

In their laboratories scientists are seeking to learn the causes of food deterioration and why foods lose flavor and texture in processing or in storage. Human appetite is undergoing a detailed analysis from physical and mental standpoints so that its secrets may be learned and

foods made more acceptable.

To learn what the average American likes to eat, a survey of dietary habits is being conducted throughout the country. The results of this survey will not only give information regarding the distinctive food preferences in the many geographical sections of the Nation, but also in the various economic levels of the population, in isolated and marginal communities, and in occupational classifications. The results of this research should mean a better nourished population and an improved average of physical fitness.

The Quartermaster Corps continues to seek for better rations. Since the war two new operational rations have been developed—the E ration for individual use in combat and the five-in-one for feeding small groups of men separated from their kitchens. Tests have already proved that these rations are greatly superior to the C, K, and 10-in-one rations issued during the war.

As with food, so also the Quartermaster Corps is conducting basic research into all of the other fields appertaining to the essential needs of the soldier. Scientific studies are being made in textiles, clothing, footwear, chemical products, insect repellents and insecticides, rodent repellents, mechanical equipment, plastics, tents, sleeping bags, and many other items.

In the Boston Quartermaster Laboratories research and experimentation is going forward in the processing of leather and the designing of footwear, gloves, and other articles made of leather. Collaborating and assisting in this work are several industrial laboratories. Scientists are endeavoring to develop better and more economical methods for tanning leather and to improve its wearing and water-repellent qualities. They are working toward better designs for Army boots, shoes, and other leather items.

A vast research program is being conducted under Quartermaster direction in the improvement of petroleum products. Various methods are being devised for the production of synthetic petroleum products by shale extraction and manufacture from coal and other hydrocarbons to supplement the natural supplies. Development is being sought of improved types of fuels for rockets, jet-propelled planes and missiles, and diesel engines. In this program the Quartermaster Corps has the assistance of several eminent European scientists.

To improve the wearing qualities, serviceability, and functional characteristics of textiles which go to make up Army clothing, tentage, and numerous other articles, the Quartermaster Corps has organized and set in motion one of the most comprehensive programs of research ever inaugurated in this field.

With its center in the Philadelphia Quartermaster Depot Laboratories and joined by scientists in educational and industrial institutions, studies are being made in the basic and chemical properties of fibers as well as in the characteristics of fabrics and completed garments.



Included in this research are studies of mildew and microbiological deterioration, how to improve wearing qualities, how to prevent woollens from shrinking, how to make fabrics impervious to water and fire. Experiments are being made with cements used as a substitute for thread in closing the seams of garments and tents. Scientists are seeking new types and designs of garments which are lighter in weight, more durable, and so constructed as to give maximum protection against heat, cold, moisture, and insects.

The Quartermaster Corps is constantly improving its mechanical equipment.

At the Quartermaster Depot at Jeffersonville, Ind., and in industries under contract, mobile equipment such as laundries, bakeries, refrigerators, warehouse fork-lifts, shower baths, and repair shops are being made ever lighter in weight, more rugged, and capable of better field performance. The objective is to have all this equipment so light that it may be airborne to points directly behind the fields of combat. Another program calls for standardization of such items as fork-lifts, warehouse tractors and trailers. During the war it was necessary to procure, for example, about 30 different types of fork-lifts from many different manufacturers. Now it is planned to standardize on not more than three sizes with all parts interchangeable.

The myriad of smaller items supplied to the soldier by the Quartermaster such as razors, toothbrushes, lockers, mess kits, cooking and eating utensils are each undergoing fundamental studies to determine how they may be improved or perhaps displaced by something entirely new. There is now under test a new knife, fork, and spoon, each stamped from a single piece of stainless steel, which can be nested, snapped together, and carried in a uniform pocket.

With attention directed to "top of the world" defense, many new Quartermaster items are being tested in Arctic maneuvers this winter. These include mobile kitchens, Arctic clothing, skis, sleds, snowshoes, boots, insulated tents, an immersion-type heater for converting snow and ice into water, and new types of hot food and water containers to mention only a few.

The Quartermaster Corps is the biggest merchant in the world.

During World War II, the Quartermaster Corps supplied food, clothing, shelter, mechanical and personal equipment to more than 8,500,000 men stationed in all parts of the world. It procured some 70,000 different kinds of items and expended more than 21 billion dollars for these supplies.

The problem of supply is one of the chief responsibilities and concerns of the Corps. It has many complexities and is forever changing since a situation in an emergency is never the same. In war the task of organizing and channeling production from the farms, the mines, and the factories is an undertaking of the first magnitude.

Equally comprehensive was the problem of storage and distribution.

As early as 1940, preliminary studies were instituted which culminated in the construction of 22 depots. Thirty-seven market centers, located at strategic points, were organized for the purchase of perishable foods. Since the war these centers have been reduced to 12 in number, but with the high-grade efficiency employed in their conduct and management they have a capacity for expansion to six times their present load.

Besides functioning as warehouses, the Quartermaster Depots are concerned with many other activities such as packing, crating, reclamation, and maintenance of technical laboratories. Electrical accounting machines in each depot are connected in a network which keeps the Office of The Quartermaster General constantly advised of all stock balances, procurement transactions, and other information concerning the enormous amount of business being carried on.

An important phase of Quartermaster activities is the reclamation and repair of worn and damaged clothing and equipment. During the 11 months following VJ-Day, materials valued at nearly \$150,000,000 have been salvaged, repaired, and returned to stock for re-issue. This was accomplished at a wage cost of about \$13,000,000, or 9 per cent of the reclaimed value of the supplies.

The Quartermaster Corps is providing orthopedic footwear for servicemen who have suffered disfiguring injuries to their feet and is cooperating with the Veterans Administration in providing the same service for veterans. Special lasts are made for each of these cases and the footwear is constructed at the Boston depot. The service will continue during the lifetime of these veterans or as long as they are in need of special shoes.

Long-range plans for the improved training of personnel and for keeping pace with technological developments have already been put in operation by the Quartermaster Corps. Officers from Ground and Air Forces, as well as from the Navy and Marine Corps are being trained at the subsistence school in Chicago in the latest techniques for processing, distribution, preparation and serving of foods.

Army food service instructors are trained at Camp Lee, Va., and at the same camp advanced courses are conducted for commissioned officers in Quartermaster services and techniques. At all QMC installations, in-service training is an important aspect in the improvement of efficiency.

Nearly a score of colleges are participating in the QMC Officers Reserve Corps training program and many officers are receiving technical instruction in advanced courses at universities, colleges, and trade schools.



# Smoke — Tactical Weapon Of World War II

*by 1st Lieutenant C. H. Ruse\**

EMPLOYMENT of smoke in battle tactics is not new, yet during the recent war the Chemical Corps introduced several new methods of producing and employing smoke as a weapon of war. It is notable that with newly developed smoke devices it was possible to conceal battle maneuvers of an entire Infantry division under a mantle of chemically produced fog. Whole cities or other large concentrations were made to disappear from view of enemy aircraft under clouds of artificial haze. Smoke was effective in blanketing beachheads against enemy fire. In some instances, prior to assembling for assault, airborne troops were landed behind smoke walls.

## EARLY USE OF SMOKE IN WARFARE

Evidence that smoke tactics were known to ancient India is revealed in the Sanskrit epic Ramayana which details the life and adventures of Ramachandra and his final translation to heaven when he hid himself in "that terrible darkness of clouds."

A biblical reference to the advantages of smoke for screening purposes is recorded in the protection of the Israelites by a miracle smoke cloud in their flight from Egypt to the Promised Land in this passage of scripture:

"... and it came to pass, when Pharaoh had let the people go, that God led them not through the way of the land of the Philistines, although that was near; for God said, Lest peradventure the people repent when they see war, and they return to Egypt. . . ." Exodus XIII: 17. "... and the Lord went before them by day in a pillar of a cloud, to lead them the way. . . ." Exodus XIII: 21.

And again when:

"... the angel of God, which went before the camp of Israel, removed and went behind them and the pillar of the cloud went from before their face, and stood behind them. . . ." Exodus XIV: 19.

Throughout the centuries, men have sought to conceal battle maneuvers. History records that both Caesar and Pompey employed smoke strategy in the wars of the Roman Empire about 50 B.C.

Gustavus, after pursuing Tilly across the Danube into Donauwörth in 1632, effected his crossing of the Leck in the face of the enemy's strongly entrenched

camp at Rain, protected by a smoke screen created from burning wet straw.

In August 1704, the advantages of "Fog Operations" were demonstrated when the English and Austrians, led by the Duke of Marlborough and Prince Eugene, under cover of the "Blenheim mist," outwitted the superior French and Bavarian forces of Marshals Tallard and Marsin concentrated on the left bank of the Danube near the city of Blenheim.

## SMOKE IN WORLD WAR I

The value of smoke as a screening weapon was also recognized during World War I. Smoke shielded operations of the 15th Division, A.E.F., and was employed in the Meuse-Argonne offensive. In 1914 smoke created from the burning of a haystack enabled a British unit to withdraw from the La Bassée canal defense. British smoke shells were developed and put to use by 1916. One year later in the battle of Arras, the great value of accurate projection of these shells came to be appreciated.

## GERMAN SMOKE IN WORLD WAR II

The significance of screening smoke was demonstrated by the Germans in World War II in their blitz of the Low Countries. In May 1940 when the Belgian fort of Eben Emael capitulated to superior German forces, artificial fog successfully curtained flamethrower attacks directed at the embrasures of the ports. German assault troops were protected by a mantle of man-made fog when the steel and concrete fortifications of the French Maginot Line were first broken between Saaralben and St. Avold. The Nazis' crossing of the Marne in 1940 was also made under cover of smoke.

Smoke was used extensively at the ports of Casablanca, Oran, and Algiers by the Germans, and Allied naval units reported their targets difficult to see through the artificial mists during the African invasion. It will be remembered that although British fliers were constantly on the alert in their search for the German battle fleet, they were outwitted by clouds of smoke over Brest that covered the landscape for 40 square miles when the warships *Gneisenau* and *Scharnhorst* made their escape to sea through the channel. On October 10, 1942, the Germans announced that they had evacuated the peninsula across the Kerch Strait

\*Office Chief of Chemical Warfare Service.



from the Crimea under cover of artificial fog, intimating that all troops and supplies had been safely withdrawn.

### BRITISH SMOKE IN WORLD WAR II

The initiation of smoke by the British in World War II dates from the days following Dunkirk when the Luftwaffe made daily raids over England. At that time the British used orchard smudge pots to conceal vital installations. Later they developed and devised ways of producing smoke similar to our own. By the time war activities shifted to the Middle East, British smoke had gained considerable recognition and with the raising of a smoke screen over Malta on May 10, 1942, the first smoke dispersion in that area, aerial supremacy over that island passed from German to British control. It is believed that a smoke screen was an important factor in surprising and confusing the formation of 150 German bombers every one of which were either destroyed or damaged by English Spitfire planes and flak.

### INNOVATIONS IN U. S. SMOKE

Smoke developments employed by the United States during the war helped materially to hasten victory. Screening smoke was used to blanket ports, harbors and cities in an attempt to prevent accurate bombing and to effect wall-like screens to blind front-line enemy observation.

Employed on all American fighting fronts, smoke was a particularly vital factor in keeping down American casualties in its adaptability to both offensive and defensive combat. It greatly reduced the effectiveness of enemy air operations by obscuring targets. River crossings were shielded by artificial fog and enemy mortar and artillery fire was disrupted by smoke screens which served as protection for our Infantry advances.

### METHODS OF PRODUCING SMOKE

The Chemical Corps developed several methods of producing smoke. In addition to screening smokes furnished by its Mortar Battalions, artificial fog, which hid troop movements, ports and bases, was made by mechanical generators, smoke pots, smoke grenades, phosphorus shells and bombs, and aerial spray.

The largest smoke-producing device employed by the Chemical Corps during the war, a mechanical generator (M1) which requires a truck or trailer for transporting, can blanket a square mile of area within 10 minutes. This model generator was developed to fulfill the need for screening large areas quickly. Non-existent a short time before we made initial landings in North Africa in late 1942, the M1 supplied protection for troop maneuvers when U. S. Forces first landed at Oran. From North Africa, Sicily and Italy to operations in the Pacific this large generator was used to produce large-area smoke screens.

Early experience with the large model indicated the need for a smaller type mechanical generator of similar

characteristics. This resulted in the development of a model known as the M2. Weighing only 180 pounds when empty, the M2 mechanical smoke generator could be carried by two men or mounted in jeeps or light landing craft. With favorable wind conditions, this small type fog machine produced smoke screens four to five miles long and 200 yards wide. Both of these smoke producers vaporize hydrocarbon fog oil and water into an oil spray which billows forth in the form of a snow-white steam. The resultant cloud formation is extremely persistent.

While a great number of combat smoke missions were conducted by Chemical Corps mortar companies, Chemical Corps smoke generator companies operated the mechanical generators in both rear-area and combat screening missions. During the height of the fighting in the Mediterranean theater, smoke companies were kept continually on port screening operations. Surrounded by Nazi-held hills, the Anzio Beachhead was the scene of many smoke operations extending over a period of several months. Fog generators maintained smoke screens 15 miles long, fourteen hours every day, to blind the enemy. At night, the machines were turned on at the slightest indication of a bombing raid.

Smoke protection was also supplied by Hexachlorethane (HC) smoke pots ranging in size from the 11-pound container, which burns for six minutes, to the 30-pound size which continues to make smoke about 20 minutes. These smoke pots were used to fill up gaps in support of large screening missions.

For amphibious use, a floating smoke pot was developed and used in river crossings and landing operations

Chemical Corps combat troops of the 161st Smoke Generator Co. operating their M-2 mechanical smoke generators during the screening of the Saar River Valley, Germany.

Signal Corps Photo





and for harbor protection.

A particularly effective ground screen can be built up with white phosphorus (WP) shells fired from the 4.2-inch chemical mortar. During the Sicilian and Italian campaigns, smoke screens from these mortars confused enemy tank crews. The withdrawal of Ranger raiding parties from within the enemy lines was effected under protection of these mortar-made smoke screens. Joining with heavy artillery, the four point two's set up huge WP smoke screens on the North bank of the Volturno when General Mark Clark's Fifth Army crossed that Italian River in October 1943. Chemical Corps floating smoke pots were also set adrift to complete the smoke curtain in this operation.

The quickest way of building up a large smoke screen is by liquid chemicals sprayed from airplane smoke tanks. The Chemical Corps provided the Army Air Forces with FS, a solution of sulphur trioxide in chlorosulfonic acid. This mixture was sprayed from airplane smoke tanks to build up smoke curtains. Two types of tanks were designed for airplane smoke dispersal. One of these is mounted under the wings of light planes and the other is suspended from the bomb bays of larger bombers.

In September 1943 the first American paratroop assault was made under the protection of three smoke screens laid down by light fighter planes near Lae, New Guinea, in the Markham River Valley. The operations started when seven Boston bombers each modernized with chemical spray tanks contributed FS smoke to the three 4,000-foot screens released along the wooded area bordering a Japanese airstrip. The smoke settled rapidly to the ground then billowed as it rose to a height of approximately 400 feet, forming dense white curtains. Under this protection almost 2,000 paratroopers descended from low-flying transports on three sides of their objective and quickly assembled for a successful attack on the airfield.

Smoke bombs, another World War II development, dropped by aircraft proved effective in designating bombing targets, and in covering landing operations. Landing operations at Dieppe and Sicily were made under cover of smoke produced by these bombs. Jetisoned in long neat rows along either side of the harbor, these same bombs, 100-pound WP type, were dropped in Simpson Harbor at Rabaul, New Britain, November 9, 1943. Within a few seconds the white phosphorus rose to form two cloud-like walls, each three-quarters of a mile long, to mark off the target. Shore batteries completely blinded were unable to fire accurately at our waves of bombers which followed immediately and the mission was successfully completed.

In addition to these methods of producing smoke screens, the Chemical Corps developed smoke-filled rockets and colored smoke grenades. The colored smoke grenades were made for either hand or rifle projection and were furnished in colors of red, yellow, orange,

green, blue, violet and black. They were used to mark ground positions so that friendly aircraft would not mistake them for enemy establishments. Targets were indicated to our planes overhead on the basis of pre-arranged color patterns. The red grenades were particularly effective in snow-covered areas. In the Buna Mission area both hand and rifle grenades were put into service.

A particularly interesting smoke signal is the Sky-marker, designed to indicate the bomb release line for heavy bombardment formations. Dropped from the pilot plane, its spectacular fall, discernible for 25 miles, is the signal for other craft in the wing to release their bomb load. The Sky-marker has a thin shell and weighs about 100 pounds when filled with FS. It has frangible discs inserted in both nose and tail.

#### U. S. SMOKE MISSIONS

Some of the most outstanding smoke missions of the Chemical Corps during the war and their implication to military protection may be recalled in the smoke screening of river crossings. Among these will be remembered the Volturno, in Italy, where a chemical unit firing mortar shells every 15 seconds, established a screen three miles long and nearly 1,000 feet high to blind the enemy. The screen was maintained for 18 hours and assisted our troops in making a successful crossing.

In September 1944 when the Third Army crossed the Moselle River in France, fog produced by our generator units merged with early morning mists to drift across the river and mantle enemy observation posts with an impenetrable haze. Under cover of this mist, an Infantry reconnaissance task force crossed to the wooded hills on the opposite side of the river. The vanguard of this mission maintained a screen for 30 hours before main Infantry assault troops took over.

For two weeks in December 1944 the 90th Infantry Division remained invisible when it crossed the Saar River, wiped out a number of enemy installations, took 1,200 prisoners and recrossed the river—all without being seen by the enemy. This was made possible by smoke from the M2 mechanical smoke generators, augmented by HC smoke pots when capricious winds made rifts in the screen.

During a 10-day preparation period, prior to the crossing of the Rhine, smoke in its many phases was employed to confuse the enemy in an effort to screen the build-up of troops and equipment. Under the command of Field Marshal Montgomery, the Ninth U. S. Army, the First Canadian and Second British armies participated in the 60-mile screen produced by employing mechanical generators supported by smoke pots and all other smoke producing devices.

The results of these and many other successful smoke missions evidence the importance of Chemical Corps smoke as a vital weapon of war.



# Evolution of Japanese Cavalry

*by Major Hal D. Steward\**

**"Although the Japs realized the importance of mechanization in modern warfare they didn't lose sight of the fact that Horse Cavalry still has a place in a modern army. At the close of World War II the Japanese Army had four Tank Divisions, 10 Independent Tank Brigades, and two Horse Cavalry Brigades."**

JAPANESE military men like military men of other world powers decided in pre-World War II days that their Army must be greatly mechanized to be successful in battle. The Japs, however, were never able to complete their large-scale plans for mechanization. Lack of iron resources and mechanical ability among the Japanese people defeated their efforts.

These facts have been revealed in recently translated Japanese military reports. The translated reports were made available to the author through the courtesy of the 1st Cavalry Division, which at present is occupying Tokyo.

When the Inspectorate of Cavalry was abolished in Japan in 1941, and the Armored Force Headquarters was established, it was planned to have 15 mechanized divisions by 1950. However, before this aim could be realized the Greater East Asia War commenced and the plan had to be severely modified, particularly because of the shortage of iron. Hence, Japan was greatly lacking in mechanized strength at the end of World War II.

But, let us go back and see how the Japanese Cavalry followed approximately the same processes of evolution as the Cavalry units of the armies of other countries. By the time the Greater East Asia War started it had become a modern mechanized force.

The period of the great Japanese civil wars (Sengoku Era) was an era in which battles were decided by bow and arrow, and mounted combat was the most widely used method of warfare. At first, enemy Infantry camps were overrun by single horsemen armed with swords, lances or bows and arrows. Gradually, however, mounted combat as such developed, and eventually mounted forces which engaged in all aspects of war were formed.

In the 12th year of Temeun (1546) rifles were intro-

duced in Japan from Portugal, and the various warring rivals began using them on a large scale. As a result, the tactics of employing Cavalry as mobile groups gradually ceased, and battles were determined by the firepower of rifles and sudden attacks with swords and lances. From 1546 until the modern period no great change in the Japanese Cavalry can be seen. It was used largely for purposes of scouting, patrolling, and command liaison.

Japan was shaken loose from her "closed door" policy by the nations of Europe and America in the first year of Meiji (1868). The country was stimulated by the culture of the world powers and carried out reforms along many lines, including the military for which rapid expansion plans were laid. The armed forces of Japan organized in the first year of Meiji consisted of six divisions plus the Imperial Guard Division.

In each of the six divisions there was only one troop of cavalry, used for scouting purposes. Even at the time of the war with China in the 27th and 28th years of Meiji (1894-1895) the Cavalry was a weak branch of the army used only for scouting.

When the Manchuria question arose and relations between Japan and Russia became increasingly worse, military preparations were expanded enormously. The total number of divisions was increased to 12. Three troops of Cavalry were included in each division, and two independent Cavalry brigades were organized. Finally, the Russo-Japan War occurred in the 37th and 38th years of Meiji (1904-1905). During this war divisional Cavalry was used for short-range divisional scouting and as a flank and rear guard for the division. The Cavalry brigades were used for short-range scouting; to maintain liaison and fill the gap between units; to guard the flanks; and, when necessary, engage in decisive battles.

The Cavalry brigade performed brilliantly in the

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Russo-Japan War. At about this time the Cavalry had become an important part of the Japanese Army.

Some of the outstanding examples of Japanese mounted Cavalry in the Russo-Japan War are:

1. In the engagement at Sha-ho (northern part of Liao-Yang) in October, 1904, the Russian Army massed a large force in the mountainous sector southeast of Mukden and attacked the right flank of the Japanese First Army. Their plan was to break through to the vicinity of Penchi-hu. The Second Japanese Cavalry Brigade under the command of Major General Kaninomiya was near Liao-Yang. The brigade drove rapidly to Penchi-hu and attacked the flanks of the Russian Army, which was then trying to break through the flanks of the First Army. The Cavalry brigade finally succeeded in stopping the attack; it was the decisive factor in the victory of the Japanese forces in the Shaho engagement.

2. In the winter of 1905, both the Russian and Japanese armies were in bivouac because of the extreme cold. However, in January, 1905, the Russian Army gathered its forces southwest of Mukden and made a sudden assault on the left flank of the Japanese Second Army in an attempt to break through the Japanese lines. Under the command of Major General Akiyama the Japanese First Cavalry Brigade, which was at the time guarding the left flank of the Japanese Army near Heikoutai and Chengtanpao, stopped the Russian forces and broke up the attack. This Cavalry brigade's action was the basic reason for the victory in the Heikoutai engagement.

3. The combined Japanese Cavalry force under the command of Lieutenant Colonel Naganuma was used in the early part of 1905, as a raiding unit. This unit started from Inner Mongolia and circled in back of the Russian lines to Changchun, making quick forays against the rear of the Russian lines en route. When it reached Changchun it destroyed the railroad bridge of the South Manchuria Railway and threatened the Russian supply line. As a result, in spite of the fact that the unit was hard pressed during the Mukden battle, the Russian Army had to divert two divisions or more to guarding the railroad line. By causing the Russians to spread their strength in this fashion the Cavalry force contributed materially to the Japanese victory.

At the end of the war with Russia, Japan increased the Cavalry strength by two more mounted brigades.

Between the end of the Russo-Japan War and World War I nothing of note occurred in the organization, equipment or use of the Japanese Cavalry.

In World War I Cavalry units did nothing which was particularly outstanding, and after it developed into a war of position it seemed almost useless. Consequently, after the end of World War I, the discussion among Japanese military leaders arose as to whether Cavalry was any longer of value to an army. In Japanese circles such discussions were widespread and heated.

Some Japanese officers argued that the fact that Cavalry forces cannot operate in the face of firepower was clearly proved in World War I. Many decided that in future wars firepower will be used on a larger scale and with even greater intensity and that Cavalry units will not even be able to operate on a local basis. Some decided that victory will depend mainly upon fire superiority and that such units as Cavalry, which have only a temporary, relatively low degree of mobility, are out of the question and should be abolished.

Those Japanese officers in favor of keeping the Cavalry argued that Cavalry activities were limited in the first World War due to the special nature of the combat area. They stated that mounted Cavalry would be of particular value on the Asia continent where battles will be fought over large areas and rugged terrain.

Finally, the view that the Cavalry was relatively useless won out in military circles, and the opinion that emphasis should be placed on other types of mobile forces became more and more widespread.

Immediately after the Manchurian Incident (1933-1934), the First Independent Mixed Brigade was activated with two battalions of motorized Infantry (armored cars included). This provided the first opportunity to test such a unit. However, the topography of Manchuria, and in particular the primitive condition of the roads, caused constant breakdowns in vehicles and afforded little chance to employ the unit as the light, mobile force it was intended to be. Moreover, no one was accustomed to handling such a unit. The result was that the Japanese held little hope for the future of this type of mobile force, and the First Independent Mixed Brigade was deactivated immediately thereafter.

When the Nomonhan Incident occurred and the Russian and Japanese armies clashed on the Western Manchurian border in 1939, the Japs felt the strength of Soviet tanks in full measure. As a result of this engagement, the Japanese Army realized the necessity for mechanization, and steps were taken immediately in that direction.

In a short time World War II broke out. The excellent results achieved in the early stages by the mechanized forces of the German Army were observed and the Japanese program of mechanization was stimulated accordingly. In rapid succession the Japanese Army witnessed the destruction of the Polish Cavalry forces by Germany's mechanized might and the amazing results of the mechanized, blitzkrieg tactics used against France. The Japanese Army was also influenced by the views of German Field Marshal Guderian who held that mechanization was the key to modern warfare.

At the close of World War II the Japanese Army had four Tank Divisions, 10 Independent Tank Brigades, and two Horse Cavalry Brigades.

Although the Japs realized the importance of mechanization in modern warfare they didn't lose sight of the fact that Horse Cavalry has a place in a modern army.



# Rocket Research Carries On

*by Lieutenant Colonel Harvey Rivkins\**

**P**RACTICAL research on all phases of rocket warfare is being pushed by the U. S. Army Ordnance Department.

"Free Enterprise" is being used to exploit the peace this country has won in the deadliest and most costly of wars the world has known. The "Free Enterprise" consists of scientists, American industry, and the Universities of the Nation and they have been invited by Army Ordnance to participate in a twofold program.

First, is the military side—not only does the Ordnance Department want to acquire the entire "know-how" of long-range missiles but be able as well to produce a rocket that can be used for defense and offense purposes. Second, Army Ordnance has offered the rocket as a vehicle to science, industry, and learned bodies to utilize the warhead for many types of research in the lofty altitudes in the region of cosmic rays.

The Research and Development Division of Ordnance, headed by Brigadier General H. B. Sayler, who served as a railway artillery officer in World War I and Chief of Ordnance in the European Theater of Operations in the last conflict, isn't overlooking a thing, carrying on research in many fields.

Not only does the V-2 program have great impetus with the arrival of 1947, but intensive experiments are being conducted with the WAC Corporal, U.S.-made liquid fuel rocket; and the "Nike," a liquid fuel anti-aircraft missile.

The Army is conducting other experiments. For instance, there's a bombardment rocket, built along the lines of the German Waterfall, by General Electric.

Sparked by Colonel Holger N. Toftoy, Chief of the Rocket Division, and Lieutenant Colonel James G. Bain, Chief of the Guided Missiles Branch, Ordnance has made rapid strides in the firings of captured German V-2 rockets at the desert proving ground in White Sands, New Mexico.

Early collaboration between U. S. Army Ordnance and the Navy's NRL—Naval Research Laboratory—is paying dividends in the rocket program at the White Sands Proving Ground in New Mexico.

With the later addition of two other members of the rocket backfield, Science and Industry and the Army Air Forces, the Ordnance Department put on full steam ahead in its announced plan to fire 25 captured German V-2 rockets by the spring of 1947.

However, at year's end in 1946 after meeting with his V-2 advisory Board, consisting of Commanders Omar N. Spain and D. J. Dockum, of the Navy Department, Colonel M. F. Cooper, of the Army Air

Forces, Colonel Hobart Hewitt, of the Army Ground Forces, Captain R. P. Jones, of the Signal Corps, and Mr. J. W. Crowley, of the National Advisory Committee for Aeronautics, General Sayler decided to continue the V-2 program until May 27, 1948. An additional 25 rockets will be added to the 25 that were to complete the program this spring.

As 1946 drew to a close, a roundup of accomplishments of the rocket program reveals some startling facts.

Of 16 rockets fired from 16 April to December 17, 10 were completely successful, four indicated failure of the control system early in their flights so the fuel had to be cut off from the ground by radio, thus crashing the missiles into the desert sands.

One propulsion unit blew up. Another rocket, in a freak flight, tilting to 15 degrees on take-off instead of the customary 5, stabilized itself and rose to a then new altitude mark of 93 miles. When it plummeted to earth, the rocket had ranged 131 miles from the launching site.

There were thrills galore for the eyewitnesses to the 16 rocket firings, starting from a humble static test on a crude concrete guillotine-like structure to the latest word in rocket fashions for firing V-2's—the Gantry Crane, an upside-down "U" shaped tower, with steel lattice effect and platforms, not unlike the miniature toy erector sets thousands of "future Admirals and Generals" are today playing with all over the land.

From a zero height at static test, the rocket has been propelled into the ionosphere to record a world's record altitude of 200,640 yards or 114 miles. The mark was accomplished in the first night shoot of the Ordnance Department's rocket program on 17 December at midnight. The fiery flame roaring from the rocket could be seen for 300 miles and resembled the tail of a comet.

A new wrinkle was tried in the warhead at this shoot, that of popping out "ersatz" meteors when the rocket reached an altitude of 120,000 feet. Nine rifle grenades had been converted into vehicles to hurtle out the meteors at 10-second intervals. The work was done under auspices of the Johns Hopkins Laboratory of Applied Physics, with Dr. James VanAllen at the rocket scene. The New Mexico School of Mines made the meteors, each of which measured about the size of a 10-cent piece, under the direction of Dr. E. J. Workman, president of the school and Dr. J. L. Paddison, pioneer in meteor development.

With the loss of the warhead which blew from the missile on descent, no positive proof has been obtained as to whether the meteors were actually fired. Scientists are divided in their opinions on the result. It was ex-

\*U. S. Army Ordnance Department.



pected that the shaped explosive in the grenade would propel the artificial meteors lower than real meteor speed which is 30,000 to 100,000 feet per second.

Dr. Fritz Zwicky, meteorite cosmologist, of the California Institute of Technology, who took an active part in the meteor launching, may plan another rocket shoot sometime next summer. He will have the aid of Dr. Fred Whipple, of Harvard, who has a number of specially designed cameras to track the rocket.

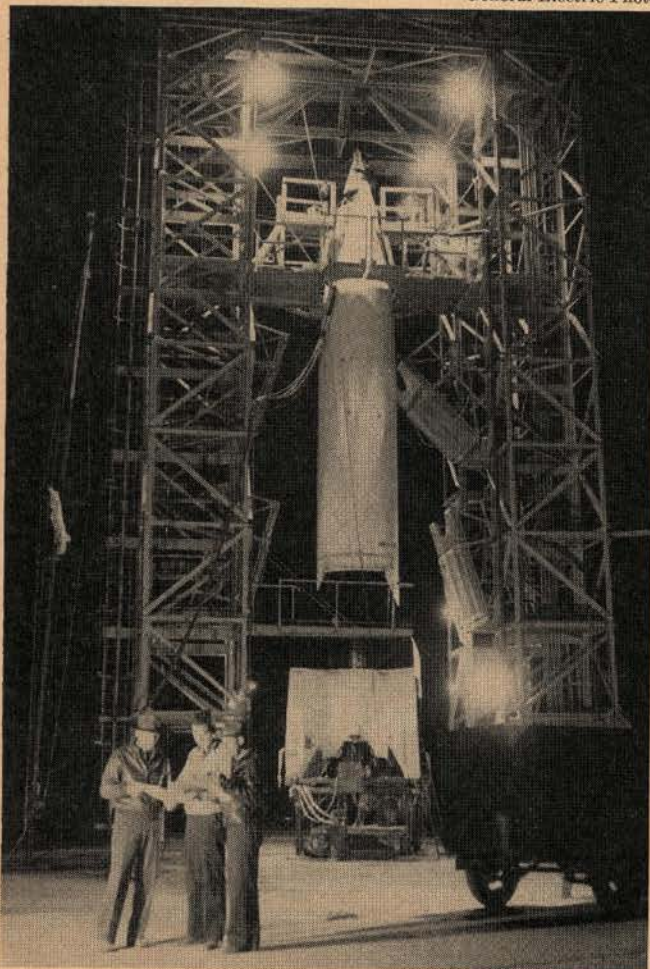
In the field of ballistics, Ordnancemen in the Ballistic Research Laboratory of Aberdeen Proving Ground, Maryland, have gained some valuable data by tracking every missile with radar, telescopes, phototheodolites, and doppler radio. Knapp Bowen cameras are also used to photograph the trajectory for the first few seconds after launching.

From these measurements have come complete records of the position, aspect, and velocity of the rocket throughout its flight. This data is extremely valuable to the designer of guided missiles. In addition, they form the basis for evaluation of facts concerning behavior of missile components, physics of the upper atmosphere, and military countermeasures.

The Ordnance Department is being greatly aided

The task of preparing the V-2 for flight goes on at night under searchlights mounted on the big "gantry" crane.

General Electric Photo



by the General Electric Company. To date General Electric has performed some outstanding work on the V-2 rockets. The concern has utilized recording devices on each rocket to measure performance of components such as jet vanes as well as turbine speeds, pressure in combustion chambers, time and end of burning, fuel tank pressure, rocket skin temperature, and vibration of the structure.

Most of the work done by German engineers in the early days of the rocket launchings is now being handled by Americans. The Army Ground Forces has its First Guided Missiles Battalion stationed at White Sands. The assembly, handling and launching of the V-2 is now more than 50 per cent in the hands of the Army Ordnance, General Electric, and AGF personnel. Later, it is expected, the entire firing of each V-2 will be handled solely by U. S. personnel.

To plumb the physics of the upper atmosphere, the Army Ordnance Department has a technical panel under the leadership of Dr. E. H. Krause, of the Naval Research Laboratory for guidance. The body is composed of representatives of a number of leading scientific institutions that have been utilizing the warhead space for measurements of scientific phenomena at altitudes far in excess of any hitherto accessible.

Only through a free balloon flight had science been able to get instruments to a height of 22 miles.

However, with the record flights of the V-2, new fields of study in the upper atmosphere have been opened. Vital data have been obtained, including: Cosmic ray count, ionosphere experiments, solar spectroscopy, effect of cosmic radiation of seeds (packages of seeds were placed into warheads shot into the realm of intense cosmic rays), temperatures and pressures at high altitudes, studies of artificial meteorites and photography of the earth.

Although recovery difficulties have limited the success of some of the shoots, Dr. Krause has revealed that more valuable data on cosmic rays, solar spectroscopy and pressure and temperature have been obtained than by all other means during the 10 years prior to 1946. In addition, through the aid of the Johns Hopkins Laboratory, spectacular photographs have been obtained of the earth from altitudes up to 65 miles. Now, with improvement of recovery techniques, it is expected that information of even greater scientific import can be looked for in 1947. Besides Dr. Krause, on his panel are: Mr. G. K. Megerian, of GE, technical aide; Mr. J. Brinster, Princeton University; Dr. W. G. Dow, Michigan University; Dr. M. J. E. Golay, Signal Corps Laboratory; Dr. C. F. Green, GE; Dr. M. D. O'Day, Watson Laboratories (AAF); Dr. Newbern Smith, National Bureau of Standards; Dr. J. A. VanAllen, Applied Physics Laboratory, JHU; and Dr. F. L. Whipple, Harvard.

The Signal Corps of the Army, the Army Air Forces and the Army Ground Forces have collaborated with



Army Ordnance in tests of present radars to determine their effectiveness in detecting and tracking missiles of the V-2 type.

Scientists of Applied Physics Laboratory, Silver Spring, Maryland, have filled warheads of three V-2's with instruments for recording data on cosmic radiation in the upper atmosphere. Dr. J. A. VanAllen, Dr. H. E. Tatel, and Dr. R. P. Peterson are in charge of the studies to determine the nature of primary rays and to investigate changes they undergo while passing through the atmosphere. These studies are part of the basic research program carried on by the Laboratory under contract with the Navy Bureau of Ordnance.

The German rockets, reconstructed by Army Ordnance and General Electric engineers, have carried APL instruments on their two highest flights—104 miles on July 30, and the record of 114 miles on December 17. In these experiments cosmic ray showers were picked up and counted by two specially designed telescopes which looked out of small windows on either side of the warhead. The telescopes are made up of highly sensitive Geiger-Mueller counters placed between lead plates which sort out the particles for detection by the counters. Cosmic ray impulses thus received actuate the telemetering equipment located in a compartment just below the warhead which relays the signals to the ground.

Dr. VanAllen reports that the Applied Physics Laboratory investigation reveals cosmic ray showers are 300 times more numerous in the upper atmosphere than at ground level.

Counting rates of single Geiger tubes and "simple" telescopes were also obtained and yield data of special interest.

In the July 30, test, a continuous record of cosmic showers phenomena from ground level to 450,000 feet showed that the showers increased as the V-2 carried data recording instruments into the upper air, their frequency leveling off above 200,000 feet.

In addition to collection of cosmic ray data in the October 24, V-2 shoot, Johns Hopkins University scientists obtained a motion picture of the earth's surface from the time the rocket left the launching platform through its ascent to an altitude of 65 miles, and the first 20 miles of its descent.

Although the pictures were made to obtain information on the roll and pitch of the missile and other ballistic data needed for interpretation of the cosmic ray and spectograph data, they contain material of great interest to meteorologists and geographers.

After passing the peak of its trajectory, the rocket tumbled several times, enabling the camera which had been installed in the rocket's fuselage to photograph the horizon, showing an area of 40,000 square miles.

A special ultraviolet spectograph designed by Dr. J. J. Hopfield, of the Applied Physics Laboratory in conjunction with scientists of Bausch & Lomb was also

carried in the October 24, missile. The instrument was successfully recovered along with some film preserved in a strong steel cassette from the impact wreckage.

Later study of the film may furnish new information on the spectrum of the sun, heretofore excluded from human study by the light absorption of the earth's atmosphere.

Ordnance's V-2 program really began before V-E Day. In April 1945, a month before Germany collapsed, word was received by Ordnance headquarters in Washington that the V-2 assembly plant at Nordhausen and Peenemunde, Germany, had been captured, together with a group of German scientists.

Colonel Toftoy, an authority on Mines, who aided in "delousing" Cherbourg harbor in the early days of the Normandy invasion, flew to Europe to interview German scientists rounded up by Ordnance Intelligence teams under Major James P. Hamill. Hamill now is at Fort Bliss supervising the work of German rocket experts who voluntarily came to this country.

In July of 1945 V-2 parts began to arrive in the United States and were shipped to the Ordnance Proving Ground at White Sands which is under the command of Lieutenant Colonel Harold R. Turner. By the end of August, 299 freight carloads of parts were expertly handled by Turner.

The balance of the year saw General Electric making an inventory of missing parts and finding that only 25 V-2's could be assembled. With the aid of German scientists plans went ahead for the first firings in the spring of 1946.

Colonel Bain called a meeting of interested civilian and military groups to map out the V-2 program both from a scientific point of view as well as the Army. An interesting agreement came out of the session.

The Ordnance Department took primary responsibility for behavior and functioning of rockets; GE, the responsibility for assembling, handling, launching and determination of component functioning, assisted by German scientists and members of the Ground Forces 1st AAA Guided Missiles Battalion.

The collaborative program between Army Ordnance and the Naval Research Laboratory, later joined in by other agencies, progressed exceptionally well, in spite of the hundreds of problems which have arisen. The Army Ordnance Department, the Office of Naval Research, the Army Air Forces, Signal Corps, Army Ground Forces, universities, scientists and industry are going ahead in rocket research during 1947.

But don't let anyone tell you we're in for a push-button war!

We've got a long, hard road ahead of us and many moons will pass, as the Indians say . . . before we'll be zooming around in space ships, and enjoying rocket trips to the moon, stepping out on space platforms 5,000 miles up while our space ship gets a shot of cosmic rays for the long leg of the trip.



# Research and Development — New War Department Division

*by Major General Henry S. Aurand\**

**World War II caught the United States lagging behind in scientific military development—but the war was hardly under way before the well-established fact was realized that science and technology play as big a part in winning a war as does a soldier with his weapon.**

**W**HEN the United States entered the last war Germany was far ahead in scientific advancement. But, once American scientists got started, it did not take them long to catch up and surpass the Nazis.

The war proved conclusively that national security requires close cooperation between the armed forces and the forces of science and technology. The Research and Development Division of the War Department General Staff was created in June 1946, to maintain this relationship in time of peace.

When the Research and Development Division was established five policies were put into effect, as follows:

- (1) The Army must have civilian assistance in military planning as well as for the production of weapons.
- (2) Scientists and industrialists must be given the greatest possible freedom to carry out their research.
- (3) The possibility of utilizing some of our industrial and technological resources as organic parts of our military structure in time of emergency should be carefully examined.
- (4) Within the Army we must separate responsibility for research and development from the functions of procurement, purchase, storage and distribution.
- (5) Officers of all arms and services must become

fully aware of the advantages which the Army can derive from the close integration of civilian talent with military plans and developments.

To implement these policies, the Research and Development Division is staffed with selected Army officers and top-flight civilian scientists and engineers. The officers have been chosen on the basis of their experience and knowledge of the technological requirements of the Army and the combat conditions under which equipment must function. The civilian experts have been recruited from the laboratories of the nation's educational institutions, foundations and industries to assist the War Department on an annual rotation basis.

The Director of the Research and Development Division serves as adviser to the Secretary of War and the Chief of Staff on all War Department matters relating to research and development. He has responsibility for:

- (1) The mobilization and application of national research and development resources in support of the mission of the Army in peace and in national emergency.
- (2) Promoting progress in pure and applied scientific research of potential military value and economic feasibility.
- (3) Developing, in collaboration with the Plans and Operations Division, new matériel and techniques in accordance with new strategic concepts and/or the latest advances in science.

\*Director of the Research and Development Division, War Department.



- (4) Formulating and supervising the over-all research and development program of the War Department.
- (5) Providing assistance and guidance to War Department research and development agencies in carrying out their respective programs.
- (6) Directing initiation of projects, allocating responsibility, coordinating progress, and insuring consideration of user interest, including demonstration of new equipment and techniques, in connection with War Department research and development activities.
- (7) Insuring that there is adequate representation between the War Department and other agencies on matters concerning research and development of War Department interest.

Assisting the director of the Research and Development Division is a Civilian Deputy Director and a Military Deputy Director. Dr. Cloyd H. Marvin, Civilian Deputy Director, has been president of the George Washington University (Washington, D. C.) since 1927. Brigadier General Earl S. Hoag, who served with the Air Transport Command during most of World War II, is Military Deputy Director of the Division.

Working under the Division's Directors, at the staff level, are the Executive Office, which is responsible for administration, policies and procedures within the Division; the Plans and Policy Office, which initiates, coordinates and supervises the planning for research and development; and the Control Office, which evaluates the progress of research and development within the War Department and recommends adoption or change of policies and procedures based on this progress evaluation.

The Division, at the operations level, is divided into the Research Group and the Development Group. The Research Group provides guidance for the mobilization and application of research facilities and methods, and of scientific personnel and information, to the solution of military problems or in furtherance of knowledge of potential military worth; exercises staff supervision over non-material research; provides direction for scientific educational programs, and prepares recommendations on legislation pertaining to research and development activities. These functions of the Research Group are carried out by the scientific branch and the scientific manpower branch.

On a level with the Research Group is the Development Group, which exercises staff supervision over the research and development projects of the developing agencies of the War Department; assigns research and development responsibility to the appropriate developing agencies; reviews and approves the assignment of priorities so as to insure a minimum of duplication of effort and a maximum of progress; approves the procurement of development matériel for experimental and

service test purposes; insures coordination between the developing and using agencies throughout development; coordinates arrangements for the service testing of development matériel.

Comprising the Development Group are the ordnance-signal branch, the general matériel branch and the air branch. The air branch maintains liaison between Army Air Forces, Army Ground Forces and the Technical Services in development of air matériel for use by ground troops.

In addition to the regular organization of the Research and Development Division there is in the process of formation the War Department Research Advisory Panel, comprising outstanding civilian scientists and engineers. The Panel will be directly responsible to the Secretary of War and will be coordinated with the Research and Development Division through the Division Directors.

With the direct support and assistance of civilians—working within the Research and Development Division, serving outside the War Department as members of the Research Advisory Panel, or merely helping as interested scientists and engineers—the War Department has the benefit of broad guidance and is able to furnish science and industry with a firsthand understanding of Army problems and objectives.

The Army is fully alert to the fact that success in war will no longer be possible unless the Armed Forces have the best weapons that the scientific and industrial talent of the country can produce. Future planning must involve the concept of an established partnership of the military, science and industry.

Officers assigned to the Research and Development Division of the War Department General Staff are ones who have specialized in one or more branches of military application. They are classified as military service specialists and exercise staff supervision over the development projects of the Technical Services and Army Air Forces. Thus, one or more officers are assigned to deal directly with the Ordnance Department, the Army Air Forces, Corps of Engineers, Signal Corps, Chemical Corps, Medical Department, Quartermaster Corps and Transportation Corps.

For optimum operation of the Research and Development Division, the key officers and civilian scientists must obtain assistance from other interested War Department agencies. These agencies are the users of the equipment which is developed. Primarily, these users are the tactical organizations of the Army Ground and Air Forces. All of the many developing agencies, however, are users of certain special equipment. The Transportation Corps uses ships and trucks; the Signal Corps uses communications equipment; the Engineers use the heavy engineer equipment and bridging equipment, as well as many other supplies; the Medical Department uses the specialized articles necessary for evacuation and hospitalization, and so forth. The desires of the



users are very broad, but they must be definitely known before a War Department research and development program can be begun.

Once the program is prepared and furnished to the various research and development agencies of the War Department, they in turn interpret this program into the specific projects which they will undertake. These projects are passed upon by agencies known as technical committees, one for each research and development agency. These technical committees have in their memberships representatives of all other research and development agencies and of the users. When the technical committee has passed on a report, its minutes are sent to the Director of Research and Development for approval. Once this approval has been obtained, a project may proceed.

The reasons for submitting these projects to the Research and Development Division for approval are as follows: it must be determined that the project is in accordance with the program; whether the priority assigned to it is in accordance with the over-all requirements of the War Department; whether the developing agency recommended by the technical committee is the proper one to undertake the project, and whether there are other projects which will be duplicated and should be altered or changed if a particular project is approved. There are also budgetary questions that come to this review, as well as the reconciliation of differences, either between developing agencies or between a developing agency and the user.

Once the projects are under way, quarterly reports of progress are submitted to the Research and Development Division to assure progress, or to cancel projects encountering unsurmountable obstacles. Likewise, inspections are made of the installations at which the project is being undertaken. The actual work of research and development remains in the hands of the research and development agencies of the War Department.

The largest of these agencies is the Engineering Division of the Air Matériel Command of the Army Air Forces. Approximately two-thirds of the War Department expenditures for research and development are allocated to the Army Air Forces. The greater proportion of this money is spent for the development of pilot models which are flown in competitive tests in order that the best type of aircraft may be obtained for Army use.

The remaining research and development agencies, in approximately the order of their expenditure, are the Ordnance Department, the Signal Corps, the Corps of Engineers, the Quartermaster Corps, the Chemical Corps, the Medical Department and the Transportation Corps.

None of these agencies has direct jurisdiction at the moment over research and development in the atomic energy field. This is still performed by the Manhattan

District, the organization and facilities of which have been transferred to U. S. Atomic Energy Commission.

The research and development agencies of the War Department may undertake a project in several ways. If a project is one of pure research, it is the policy of the War Department to make a contract with a civilian institution for the necessary work. This institution may be a university, a foundation or an industrial organization. In general, such projects are not classified as secret, confidential or restricted, unless the contractor feels that he has discovered something, the disclosure of which would seriously impair national security. With certain important exceptions, the application of available scientific information or facts obtained from these pure research contracts is usually done in Army facilities. There are almost 100 of these facilities scattered throughout the country, with one or two located outside of the continental United States. These facilities are not only for the application of known scientific facts to the development of military equipment but also for testing pilot items constructed as the result of development.

When an item of equipment has passed the required test, it is placed before the appropriate technical committee for standardization. When this standardization has taken place, the functions of research and development for this particular item have been completed. The standardizing action of the technical committee indicates that using and developing agencies have concurred that the item is suitable to be manufactured for military purposes.

This is an oversimplified description of the evolution of an item of military equipment from the time it is initiated in the research and development program of the War Department, through the project stage, to standardization. Many problems are encountered that are not solvable without the assistance of the great scientific and engineering resources of the United States. Many devices are utilized to maintain contacts with this scientific and engineering knowledge.

The War Department endeavors to maintain in its research and development facilities certain top scientists and engineers as civil service employees. Due to the competition for the limited number of these technicians the War Department has some difficulty in making both working conditions and salaries sufficiently attractive. Without this scientific and engineering personnel to furnish the backbone of research and development the program and projects would be seriously impaired.

Adequate personnel, both military and civilian, is essential if the Army's research and development program is to be carried out properly. In addition, it is imperative that the Army have sufficient facilities and funds for efficient and satisfactory execution of the program. The speed with which it can be carried out is dependent more than anything else on adequate Congressional appropriations.



# A POINT OF LAW\*

WITH ACKNOWLEDGMENTS TO THE *H.L.I. Chronicle*

THE following extract from the *Military Gazette* of March 6, 1896, would seem to prove that the Army has not advanced very greatly in some directions, for the whole of the extract might well have been dated March 6, 1946.

(I)

CONFIDENTIAL (DISCIPLINE)

BOGGLEYWALLAH,  
May 23, 1898.

From OFFICER COMMANDING 2D BUSH WHACKERS,  
To ASSISTANT ADJUTANT GENERAL BOGGLEYWALLAH DISTRICT.

SIR,—I have the honor to report for the information of the Major General Commanding, that I have placed Major R. Crosse-Grain under arrest. I have the honor to state that Major Crosse-Grain admits that he wore a false nose on parade today. He maintains that he has a perfect right to do so, as the use of a false nose on parade is nowhere prohibited in Army Regulations.

He also states that he used it as a convenient receptacle for the whistle which, he points out, is directed to be always carried, while no provision is made for its carriage in existing uniform. I can obtain no further explanation of his conduct from him.

I have the honour to be, Sir,

Your obedient Servant,

A. CHUMP, Lt. Col., Comdg. 2d B.W.

(II)

To OFFICER COMMANDING, 2D B.W.

Has this officer ever suffered from sunstroke?

Was he sober yesterday? and is he of temperate habits generally speaking?

Obtain medical evidence on these points.

By Order,

25/5/98 B. SNOOKS, Major,  
A.A.G. Boggleywallah District.

(III)

To THE A.A.G. BOGGLEYWALLAH DISTRICT.

Surgeon Major Jobbs has interviewed Major Crosse-Grain and states that in his opinion the prisoner is quite responsible for his actions. His previous medical history does not point to sunstroke as having affected his mind. Major Crosse-Grain has always been to my knowledge most strictly temperate.

A. CHUMP, Lt. Col., Comd. 2/B.W.  
BOGGLEYWALLAH, 26/9/98.

(IV)

From A.A.G. BOGGLEYWALLAH DISTRICT.

To O.C., 2d B.W.

The G.O.C. cannot conceive any reason for Major

Crosse-Grain's conduct, other than that of temporary insanity. From sympathy with the Prisoner's wife, the Major General is willing, on receipt of a written apology from Major Crosse-Grain, provided also he retires from the service, to overlook the matter.

By Order,

B. SNOOKS, Major,  
A.A.G. Boggleywallah District.  
BOGGLEYWALLAH, 26/5/98.

(V)

From OFFICER COMMANDING, 2D B.W.

To A.A.G., BOGGLEYWALLAH DISTRICT.

Major Crosse-Grain firmly declines to offer any apology whatever, as he considers his conduct does not require any. I must inform you that I consider any sympathy for Mrs. Crosse-Grain thrown away as that lady has been hysterical ever since witnessing the march past, and cannot be induced to discuss the matter seriously.

A. CHUMP, Lt. Col., Comdg. 2d B.W.  
BOGGLEYWALLAH, 26/5/98.

(VI)

To JUDGE ADVOCATE GENERAL, 20TH CIRCLE.

The G.O.C. requests you will be good enough to frame a charge against Major Crosse-Grain, 2d Bush Whackers, based on the conduct described in the attached correspondence. Early compliance requested.

By Order,

27/5/98 B. SNOOKS, Major,  
A.A.G. Boggleywallah District.

(VII)

From J.A.G., 20TH CIRCLE.

To A.A.G. BOGGLEYWALLAH DISTRICT.

I consider a charge under Section 12, Army Act, viz., "False Personation," would be most suitable for the case. Charge Sheet in duplicate herewith.

C. GOBBLE, Col. Offg. J.A.G., 20th Circle.  
27/5/98.

(VIII)

From A.A.G. BOGGLEYWALLAH DISTRICT.

To J.A.G., 20TH CIRCLE.

The G.O.C. cannot imagine why you wish to charge Major Crosse-Grain under this Section. Why not under Section 16, A.A., "Conduct unbecoming an officer and a gentleman"?

By Order,

28/5/98. B. SNOOKS, Major,  
A.A.G. Boggleywallah District.

(IX)

From J.A.G. 20TH CIRCLE.

To A.A.G., BOGGLEYWALLAH DISTRICT.

\*The Tank, Journal of the Royal Tank Regiment.



There appeared to me to be legal difficulties in the way of the charge made as suggested. Perhaps I was wrong. Charge in accordance with Section 16, A.A., in duplicate herewith.

C. GOBBLE, Col., Offg. J.A.G., 20th Circle.

(X)

To A.A.G., BOGGLEYWALLAH DISTRICT.

From O.C. 2d B.W.

I have read over the charge to prisoner. He informs me he will object to the charge in as much as he alleges that the false nose worn by him was not unbecoming as "officer and a gentleman," indeed, that it becomes him more than does his own. He has stated his intention of proving this to the satisfaction of the Court by ocular demonstration. As a defense of this nature might tend to be somewhat ludicrous, I would respectfully suggest trial under another section of the Army Act, viz., Section 40, "Conduct prejudicial to good order and military discipline."

30/5/98. A. CHUMP, Lt. Col., Comdg. 2d B.W.

(XI)

To J.A.G., 20TH CIRCLE.

For opinion.

By Order,

B. SNOOKS, Major,

30/5/98. A.A.G. Boggleywallah District.

(XII)

From J.A.G., 20TH CIRCLE.

To A.A.G., BOGGLEYWALLAH DISTRICT.

It is regrettable that there is no section in the Army Act dealing specifically with acts of this nature. Having regard to the nature of the parade, I am in some doubt as to whether the charge should not be preferred under Section 35, A.A., viz., "Treason." I am afraid that I could not advise trial under Section 40, unless there is some evidence to show that the wearing of the nose (false) by the prisoner produced effects injurious to good order and military discipline. Did any of the soldiers show by their conduct that this was the case?

C. GOBBLE, Col., Offg. J.A.G., 20th Circle.

1/6/98.

(XIII)

To O.C., 2d B.W.

The G.O.C. distinctly heard and saw men in Major Crosse-Grain's Company laughing. Can you obtain any other evidence in support of this amongst the NCOs or men.

By Order,

B. SNOOKS, Major,

A.A.G. Boggleywallah District.

(XIV)

From O.C., 2d B.W.

To A.A.G. BOGGLEYWALLAH DISTRICT.

Upon inquiry I find it would be undesirable to seek evidence in this direction. Major Crosse-Grain, though unpopular with the senior officers, is undoubtedly extremely popular with the younger officers of the Regi-

ment and the men. There is a feeling, I find, amongst the men, that their laughter is the principal cause of Major Crosse-Grain's trouble. I have reason to believe that, if called upon to give evidence, the men will state that the cause of their laughter was the conduct of the G.O.C.'s charger at the moment the Company marched past.

A. CHUMP, Lt. Col., Comdg. 2d B.W.

BOGGLEYWALLAH, 1/6/98.

(XV)

To J.A.G. 20TH CIRCLE.

Please frame charge against Major Crosse-Grain under Section 40, Army Act.

By Order,

B. SNOOKS, Major.

A.A.G. Boggleywallah District.

(XVI)

From J.A.G., 20TH CIRCLE.

To A.A.G., BOGGLEYWALLAH DISTRICT.

Charge in duplicate herewith.

C. GOBBLE, Col., Offg. J.A.G., 20th Circle.  
2/6/98.

(XVII)

From O.C., 2d B.W.

To A.A.G., BOGGLEYWALLAH DISTRICT.

I have read the charge to Major Crosse-Grain. He states that he is prepared to meet it. He desires me to inform you that he will call upon the G.O.C. as a witness for the defense. He intends to prove that the G.O.C. constantly wears false teeth on and off duty, and that the G.O.C. was wearing a set of false teeth, or at least some false teeth, on the parade of May 23. He also intends to call evidence to show that a Staff Officer in Badbownugger is allowed to wear a glass eye without question. I presume that prisoner is within his rights.

3/6/98. A. CHUMP, Lt. Col., Comdg. 2d B.W.

(XVIII)

From A.A.G., BOGGLEYWALLAH DISTRICT.

To O.C., 2d B.W.

If Major Crosse-Grain will send in his papers the G.O.C. is willing to overlook the conduct of that officer, and will dispense with further action.

B. SNOOKS, Major,

3/6/98.

A.A.G. Boggleywallah District.

(XIX)

To A.A.G.

Major Crosse-Grain consents to send in his papers upon being granted leave of absence from this date, pending retirement, and upon being furnished with a copy of the correspondence in the case.

3/6/98. A. CHUMP, Lt. Col., Comdg. 2d B.W.

(XX)

From A.A.G., BOGGLEYWALLAH DISTRICT.

To O.C., 2d BUSH WHACKERS.

Leave granted. Correspondence (original) herewith.

By Order,

4/6/98.

B. SNOOKS, Major, A.A.G.



# Postwar Organized Reserve Corps

*by Major General Edward S. Bres\**

A NEW program for the Organized Reserve Corps is already in its first stages of implementation. More than one million members have volunteered for the Organized Reserve Corps, and over one thousand units have already been activated.

The theory of a well-trained and equipped Reserve is in itself not new. It was, in fact, proposed to the first Congress by our first President, George Washington.

World War II has taught us the value of preparedness, and it is toward this end that plans have been made for the Organized Reserve Corps. Realizing that the Regular Army alone cannot in itself provide for the adequate defense of this nation, the War Department has ordered the implementation of the new plans for the Organized Reserve Corps and the important role that it will play in the postwar Army of the United States. On June 6, 1946, each of the Army Commanders in the United States was directed, by the War Department, to initiate the present program for the Organized Reserve Corps.

The mission of the ORC is to furnish, in the event of an emergency, units that in time of peace will be organized and trained for rapid mobilization, deployment and expansion. (These units to be of the type and numbers which, together with the Regular Army and the National Guard, comprise the Army of the United States.) To furnish additional trained personnel, both commissioned and enlisted, necessary for replacement and the expansion of the Army of the United States.

The Chief of Staff is immediately responsible for supervision and control over the Organized Reserve Corps. The Executive for Reserve and ROTC Affairs is charged with facilitating business pertaining to the ORC, including liaison with and advising the Chief of Staff on matters pertaining to the Organized Reserve Corps.

The initial procurement of officers will be as provided in W. D. Circular 270, 1946, and by the appointment of warrant and flight officers of all components, and enlisted personnel of the Organized Reserve Corps of the first three grades who have had a minimum of six months' war service, and who are found qualified by an examining board under standards to be prescribed by the War Department.

Individuals with honorable and creditable service as commissioned officers in any of the armed services of the United States may, if found eligible, be appointed in the Officers Reserve Corps upon application to The Adjutant General.

Continuing procurement of officers will be by the

appointment of graduates of Senior ROTC units and of officer candidate schools.

Continuing procurement for enlisted personnel, while Selective Service is in operation, will be in accordance with the provisions of AR 150-5, and W.D. Circular 270, 1946, and from among volunteers who have performed their required service in the armed forces.

Until the National Defense Act is amended to provide for warrant officers in the Organized Reserve Corps, warrant officers separated from the service are authorized to enlist in the Enlisted Reserve Corps in grade one, enabling them to remain active in the Organized Reserve Corps. In addition, those flight officers who have not qualified for appointment as second lieutenants, Air Reserve, may enlist in the Organized Reserve Corps in grade one.

Clergymen, doctors, and dentists, as may be essential and as prescribed by the Secretary of War, may be appointed and commissioned at any time regardless of previous military training.

Such technical experts, as may be essential, may be appointed and commissioned at any time, regardless of previous military training, under regulations to be prescribed by the Secretary of War.

Boards, composed of an equal number of officers from the Regular Army and of the Organized Reserve Corps senior to the person to be examined and operating under standards to be prescribed by the War Department, will be appointed and convened by direction of the major command as near as practicable to the place of residence of the person to be examined. At least one member of the board will be of the same arm or service as the individual being examined. Prior consent of Reserve officers to serve on these boards will be obtained, and they will not be ordered to active duty to serve on these boards. Boards will be appointed to examine applicants for commission; examine applicants for officer candidate schools; examine officers recommended for promotion; submit recommendations on the fitness of an officer for retention in the Organized Reserve Corps; submit recommendations on the fitness of an officer for reassignment to the Active Reserve from the Inactive Reserve.

The Active Reserve will consist of all qualified personnel of the Organized Reserve Corps who are required in T/O&E units of the Organized Reserve Corps, and in addition, all qualified personnel other than those assigned to units, for necessary replacements and expansion of the Army of the United States.

Units of the Organized Reserve Corps are classified and defined as: Class A Units, which will have assigned thereto complete T/O&E strength for both offi-

\*Executive for Reserve and ROTC Affairs, War Department.



cers and enlisted men; Class B Units, which will have assigned thereto full T/O&E strength of officers and at least an enlisted cadre; Class C Units, which will have assigned thereto full strength of officers only.

Composite units will be organized, composed of officer and enlisted personnel of the Active Reserve not assigned to T/O&E units, for individual training and administration.

In general, higher headquarters will be activated before lower units. This will facilitate the organization and control of lower units when they are activated. Each unit will be initially activated as a Class C Unit. Priority of activation will be given units allocated as Class A Units.

The location of the home station of a unit, except affiliated units, will be designated by the major command and will be based on the following considerations: Distribution of Reserve personnel; population of military age; availability of personnel for units requiring technically trained personnel; utilization of the unit upon being mobilized; location of Regular Army and National Guard units of similar types in connection with active peacetime training facilities.

When other conditions permit, several units of the same type will be located in the same vicinity. This will permit the maximum economy in instructor personnel, installations and equipment.

Since no legal authority exists at present for the payment of drill or armory pay (*i.e.*, nonactive duty pay), units may progress from Class C to Class B on a voluntary basis, and thus take advantage of the services of war veterans willing to volunteer for such service.

Requirements for activation of Class C Units are: to have a qualified commander available and sufficient officer personnel to organize the unit at 60 per cent strength under appropriate tables of organization; storage facilities for essential training equipment, and office space and conference room(s) available.

Requirements for expansion from Class C to Class B are: a unit must fulfill all the requirements of a Class C Unit; must have available for assignment 80 per cent of officers and 80 per cent of key noncommissioned officer personnel for a cadre; storage facilities for essential training equipment, office space and training space for officers and cadre, and the approval of the major command to expand to Class B.

Requirements for expansion from Class B to Class A: a unit must fulfill all the requirements of a Class B Unit; have assigned its complete authorized cadre, and have available for assignment at least 80 per cent of officer personnel and 40 per cent of enlisted strength (including cadre) under appropriate tables of organization; storage facilities for essential training equipment, office space and training space for officers and enlisted men, and the approval of the War Department to expand to Class A.

Requirements for Air Reserve Units are approxi-

mately the same, with the exception of required personnel. In the Air Reserve, Class C Units require 75 per cent of officer strength, Class B Units 75 per cent of officer and 75 per cent of enlisted cadre strength, and Class A Units require 90 per cent of officer and 50 per cent of enlisted personnel.

When a Reserve unit has met the requirements for expansion, major commands may authorize the expansion, if it is provided for in that portion of the Organized Reserve Corps Troop Basis allocated their respective areas. Any unit that is authorized to expand to a higher classification is not eligible to initiate the training program of the higher class until it is officially recognized as a unit of that class. No unit will be recommended for expansion to a higher class unit if it does not maintain its initial requirement of personnel, and does not meet the training standards prescribed by major commands. In order to retain recognition, all units must maintain the initial requirement for expansion and meet prescribed training standards.

Major commands will, whenever practicable, organize into composite organizations, such officers and enlisted men that are not assigned to T/O&E units in order to maintain interest of individuals to further their training and to facilitate administration.

The postwar policies governing the Inactive Reserve are presently in process of being implemented. The Inactive Reserve will consist of officers only, and of all sections authorized for the Active Reserve. All future assignments to the Inactive Reserve will be in the same section as that in which appointed and commissioned at the time of transfer from the Active Reserve.

The Inactive Reserve will be composed of those officers who temporarily cannot participate in the required activities of the Active Reserve. Officers residing in foreign countries will not be placed in the Inactive Reserve solely because of residence abroad; those officers temporarily assigned thereto from the Active Reserve who are under statutory retirement age, and who have failed to maintain the standards of training or efficiency required for retention or promotion in the Active Reserve, but who may reasonably be expected to requalify within one year for the Active Reserve, provided that the recommendation of the board for transfer of an officer to the Inactive Reserve is approved by the major command; those officers temporarily assigned thereto from the Active Reserve who have developed a physical incapacity which is believed remediable within one year; those officers in the Honorary Reserve, officers transferred to the Inactive Reserve must requalify for the Active Reserve within one year after removal of the cause for inability to participate in the required activities of the Active Reserve or be separated from the Officers Reserve Corps. Officers who are eligible for the Honorary Reserve may be transferred to that section provided that they make application for such transfer to The Adjutant General within six months after



the termination of the one-year period.

The general objectives of training are to plan and conduct training of the Organized Reserve Corps so as to enable each unit to achieve the ability to perform its mission in the field within six years after date of recognition, and for the training in composite units of individuals of the Active Reserve not assigned to T/O&E units.

For all individuals of the Active Reserve: the objectives are to develop and qualify individuals for their contemplated duties in the event of an emergency, for active duty with the Regular Army, and for duty in connection with any universal military training program which may be established; discover, develop and qualify officers with special abilities to assume technical, staff or command responsibilities up to and including the highest levels; and to develop personnel who can be utilized as instructors.

An additional objective for officers in the Active Reserve is to prepare, by progressive selection and training, officers qualified to assume command and staff responsibilities of all echelons up to and including the highest levels; to prepare those individuals who possess special aptitude for special or technical assignments in the Organized Reserve Corps units, and to make available the necessary facilities for the development of such individuals' military skill and knowledge. Full use will be made of depots, laboratories, and similar facilities of the technical services to develop the technical aptitude of such individuals.

Home training will be on a nonpay status until enabling legislation is enacted. No training above company level will be conducted without prior approval of the major command excepting schools for officers of all grades; communication and command post exercises; fire direction exercises and similar problems where it is necessary for individuals, companies and batteries to participate with headquarters companies or batteries in order to train headquarters personnel.

In carrying out the training policies of Army Ground Forces, the major commands will exercise command of and supervise the training of the Organized Reserve Corps in its geographical area, through the respective military districts; apply training directives and programs received from Commanding General, Army Ground Forces, for all Organized Reserve Corps units which would normally support a field army; supervise instructors by frequent visits by senior district instructors for the Organized Reserve Corps and by staff officers of the Army, or overseas departments, concerned; inspections of units both during home and field training periods by visiting staff officers of major commands concerned; conduct of tests by teams from major commands or from technical services as appropriate during both home and field training periods; spot inspections of Organized Reserve Corps units and visits to major commands by major forces, or by the chiefs of technical and adminis-

trative services or their representatives, to coordinate standards of training. Maintain command responsibility for efficiency and training within Organized Reserve Corps units.

Selected officer personnel will be assigned to appropriate courses at established service schools. Selected enlisted personnel will be sent to established technical and service schools. Certain technicians may be assigned to civilian schools. Selected personnel may be placed on extended active duty with the permanent establishment or units of the Organized Reserve Corps; appropriate Army extension courses will be available.

Unit instructors will be provided for units down to and including battalion level or equivalent grouping of smaller units and service-type installations, the number of instructors depending on geographical distribution of units and the work load within a given area.

The duties of unit instructor will be to advise the unit commanders in all matters pertaining to his unit; however, the instructor has no command functions within that unit, nor is he under the command of the unit commander. He will occasionally teach some subjects to a group of officers who will in turn become instructors. He will be intimate with the status of organization, training and equipment, and participate in training inspections. He will advise individual members of the unit on their personal military problems when requested. Applications for Army Extension Courses will be approved by him. All instructors are authorized direct communication with service schools on matters pertaining to Army Extension Courses. The unit instructor will also keep the major command advised, through channels, of the status of training and efficiency of Reserve units to which the instructor is assigned, and recommend or comment upon recommendations to the unit commander regarding promotion, transfer, reclassification, reassignment, or relief from duty of any personnel of the unit. He will in addition be responsible for the activities of the unit instructors of subordinate elements, and will maintain records of all training participated in by individuals receiving instruction under his supervision.

All persons appointed officers in the Organized Reserve Corps will be commissioned in the Army of the United States under the authority contained in Section 37 of the National Defense Act.

The authorized grades in which appointments may be made are second lieutenant to colonel, inclusive, in all sections, except that the following limitations will be applied to all officers not covered by W. D. Circulars 140 and 270, 1946. Chaplain Reserve—first lieutenant to colonel, inclusive. Medical, Dental, Veterinary and Sanitary Corps Reserve—first lieutenant to colonel, inclusive. Medical Administrative Corps Reserve—second lieutenant to captain, inclusive. Judge Advocate General's Department Reserve—captain to colonel, inclusive. Honorary Reserve—highest grade attained



while on active duty with the Army of the United States.

Appointments in every case will be for a period of five years, but an appointment in force at the outbreak of war or made in wartime will continue in force until six months after the termination of the war, should the five-year period covered by the appointment terminate prior to that time.

Policies for promotion in the reserve components of the postwar Army are now in the process of formulation. Promotion of commissioned officers will be based on length of service-in-grade; efficiency and demonstrated command or staff ability at the appropriate level. The following minimum educational requirements will be prerequisite for promotion, except where an officer has in time of war performed satisfactorily in the same or higher grade, or has clearly demonstrated his qualifications by actual performance of the duties for the higher grade. To general officer—the successful completion of an appropriate course of the Command and Staff College, or a local branch thereof. To colonel of a combatant arm—the successful completion of an appropriate course of the Command and Staff College, or a local branch thereof.

All officers nominated for promotion will be examined by a board of officers composed of an equal number of Regular Army and Reserve officers, as prescribed by the Secretary of War. Full consideration will be given by the Board for Army Extension Courses completed, active duty performed, and for inactive duty training.

The ages for appointment and promotion for the various grades will be as prescribed by the Secretary of War. Officers with wartime service will be given due consideration. Qualification requirements for officers of all reserve components will be standardized in order that officers thereof may be readily interchangeable.

Officers of the Inactive Reserve will be ineligible for promotion.

For enlisted men, the grades will be identical with those prescribed for the Regular Army. Regulations covering promotion and reduction of noncommissioned officers and privates first class will parallel the regulations prescribed for the Regular Army. Enlisted men will have opportunities to become commissioned officers through Officer Candidate Schools or the Reserve Officers' Training Corps.

Transfer between branches of the Officers Reserve Corps will be made only in the interests of the service, and when made will be without change in grade or date of appointment. The officer concerned will serve the unexpired portion of his five-year appointment in the branch to which transferred. Transfers between branches of the Active Reserve will be made only with the consent of the officer concerned. No transfers will be made without the approval of the general officers exercising supervision over the two branches concerned.

Transfers between Active and Inactive Reserve will be made upon the recommendation of a board.

Transfers between branches of the Enlisted Reserve Corps will be made only in the interests of the service, and when made will be without change in grade or date of enlistment. Transfers between branches of the Enlisted Reserve Corps will be made only with the consent of the enlisted man concerned. Transfers between branches of the Enlisted Reserve Corps may be authorized by commanders of organizations normally commanded by a general officer.

Each major force and major command headquarters within the continental limits of the United States will include an appropriate number of officers of the Organized Reserve Corps on active duty, who in addition to their other duties will assist and advise the commander and staff thereof in regard to Organized Reserve Corps affairs. Officers so detailed will serve for a period of not more than three years, and while so serving will be detailed to the General Staff with troops. Such officers will be in addition to any reserve component officers on active duty whether serving on the special staff or in any other capacity.

A mandatory age-in-grade, and a length of service-in-grade provision, as prescribed by the War Department, will be adopted, insuring appropriate age for the actual assignment of every officer. Exceptions to this policy in the case of officers with wartime service will be given due consideration.

During such period as may be required to reorganize the reserve components, and in any event not to extend beyond 1 January 1951, the assignment of all officers of the Organized Reserve Corps will be limited by those ages set forth below. Assignment will be terminated upon reaching the following birthdays:

Assignment	2d Lt.	1st Lt.	Capt.	Major	Lt. Col.	Col.
Army Air Forces Units and Qualified Air Res. Officers Necessary for Balanced Air Reserve Force . . . . .	31	36	41	44	47	49
All other Air Reserve Officers . . . . .	36	41	46	49	52	54
Army Ground Forces (including AGF Service Troops) . . . . .	30	35	42	47	52	55
All others in the Organized Res. Corps . . . . .	40	43	46	51	55	60

No candidate will be given an assignment who is less than 21 or more than 60 years old; nor, except for Army Air Forces, unless his age is such that he can serve at least one year before assignment would be terminated by the age limitation for each grade. For the Army Air Forces no candidate for assignment to a unit as second lieutenant shall be more than 27; as first lieutenant, more than 32, as captain, more than 37, as major, more than 40; as lieutenant colonel, more than 43; as colonel, more than 45.

All officers of the Active Reserve will, upon reaching the statutory retirement age, be transferred to the Inactive Reserve, thence to the Honorary Reserve.



# Book Reviews

**THUNDER OUT OF CHINA.** By Theodore H. White and Annalee Jacoby. William Sloane Associates. \$3.00.

An inside story on what is happening in China today, *Thunder Out of China* is a book well worth reading.

Professor John K. Fairbank writing in the *New York Times Book Review* said: "This book is of national importance, and bears directly on our fate to come. It may remake American policy. The lid is really off, and the American public can see what kind of dictatorship they are backing in the name of democracy."

Richard Watta, Jr., of the *New York Herald Tribune Book Review* wrote: "The clearest, frankest and most combatively readable key to an understanding of tormented China's current tragedy that the average intelligent reader could hope to find."

"A book of such power and persuasiveness that it holds the interest and attention as tenaciously as any mystery thriller. *Thunder Out of China* is a genuine national service, for only an enlightened public opinion can successfully check a foreign policy of folly," wrote Hallett Abend in the *Philadelphia Record*.

*Thunder Out of China* is recommended reading.

✓ ✓ ✓

**AN ERNIE PYLE ALBUM.** Arranged and Edited by Lee G. Miller. William Sloane Associates. \$3.00.

This is Ernie Pyle's story in pictures and text—arranged by his lifelong friend and biographer. From his boyhood days in Indiana through all of his campaigns, it is a picture supplement to Ernie's own books. It has over 300 photographs, 160 pages and 12,000 words of text.

The book is a must for all persons who followed Ernie's column during the war.

✓ ✓ ✓

**THE PLOTTERS.** By John Roy Carlson. E. P. Dutton & Company. \$3.50.

Here is another smashing exposé by the author of *Under Cover*. This book gives the lowdown on Klansmen, the Fascists, the Nazis and the so-called American Firsters. It also discusses the Communists in America at length.

*The Plotters* rips wide open the plans and aspirations of anti-democratic individuals and members of the political underworld who have made hate their business—who foment anti-Catholic feeling, spread anti-Semitism and racial discrimination. Carlson includes sections on veterans' organizations and certain conservative groups—destructive and constructive—who are playing a vital part behind the scenes in postwar America.

This book is also a tremendously fascinating personal adventure story of an undercover agent who dares to give names, dates and places.

**INTRODUCTION TO NEW ZEALAND.** Baker and Taylor Company. \$3.00.

Every American soldier that visited New Zealand during the war in the Pacific will remember it.

Here is a book prepared by New Zealanders to answer the questions Americans ask about their island country. You can gauge its scope by these subjects, taken at random from its table of contents: The Face of the Land; Cities and Towns; People; History; Economics; Aviation; Farming; Industry; Shipping; Marketing; Imports and Exports; The Maori People; The Press; Broadcasting; Writers; Art; Science; Films; Education; Bibliography.

Printed throughout in color, the book is illustrated with hundreds of drawings, a large colored map and more than 100 photographs.

✓ ✓ ✓

**THE CHRYSANTHEMUM AND THE SWORD.** By Ruth Benedict. Houghton Mifflin Company. \$3.00.

The war and the peace have both made Japan headline news in the United States. Thousands of Americans are today with the occupation forces and the ties that are being forged between the two countries will have great consequences as time goes by.

We cannot afford to dismiss the Japanese as queer ducks. We must know their strengths and their weaknesses.

In this book an anthropologist writes of their view of life and of themselves. She sketches in the main outlines of their society and then describes their curious system of practical ethics, their ideas of good and evil, and the disciplines which make them able to live according to their code.

No work on Japan, not forgetting Percival Lowell or Lafcadio Hearn or Basil Chamberlain, has gone so deeply into the story of the development of the ideology of Japan as it is reflected in the daily manners and customs that condition their surprising conduct in warfare with the West.

The book is of interest as a contribution to the history of human thought, and as an illumination of the cause and conduct of World War II it is of first importance. It is a suggestive guide for the nations of the West in their effort to regenerate Japan, to make it in the course of time a peace-loving nation qualified to take its place in the new world order.

✓ ✓ ✓

**THERE WILL BE NO TIME.** By William Liscum Borden. The MacMillan Company. \$2.50.

This book seems to be a rehash of what has been written in newspapers, magazines and books for the past several years. The author makes us aware of nothing we don't already know.



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**WARSHIPS OF THE WORLD.** By Roger Kafka and Roy L. Pepperburg. Cornell Maritime Press. \$17.50.

This is the finest and most complete book of its kind ever produced. It gives a day-by-day account of all the battles and major actions at sea from September 1, 1939 to September 2, 1945 and a detailed biography of every ship in every combatant Navy.

It tells you where and when each ship fought . . . and where, when, and how the ships that were lost met their end. The actions are listed in a separate index. An addenda carries through the disposal of enemy fleets up to September, 1946.

Complete statistics are given on every ship in every Navy in the world—from landing craft and auxiliaries to battle-ships.

There are almost a thousand photographs and hundreds of profile drawings of representative ships of each fleet.

1 1 1

**CAREER OPPORTUNITIES.** Edited by Mark Morris. Progress Press. \$3.25.

This book provides practical information about a hundred leading occupations. It tells the reader exactly what he needs to know in order to enter a particular trade, business, or profession. It tells him how to qualify, what earnings he may expect, what personal aptitudes are desirable, what educational preparations are necessary, where additional information can be secured, etc.

Chief emphasis is given to those occupations which have permanent possibilities, constitute an essential part of the nation's economy and offer special advantages to veterans. Also included are some unusual occupations which have developed since the war.

1 1 1

**PAT RIDES THE TRAIL.** By Genevieve Torrey Eames. Illustrated by Dan Noonan. Julian Messner, Inc. \$2.00.

This book is the story of a little girl who enters into the Two-Day 100-Mile Ride which is an actual annual event at Woodstock, Vermont. It is a story that will interest young people whether they ride or not, but it will have a particular meaning to those who do.

Pat Carey had wanted a horse of her own for all the five years she had lived on her Uncle Ben's farm in Vermont. She had saved the money she earned doing chores and as the story begins, she has just bought a horse at auction. She names him West Wind after her Uncle Ben's farm.

The story goes on to tell how Pat plans to ride West Wind in the 100-Mile Trail Ride held every year in Woodstock. How Pat and West Wind train all summer long for the great event. It tells of the obstacles that are put in her way and how she overcomes them.

This is a warm, friendly story about a young girl and her love and understanding of horses. It is the tale of a typically American family and a girl who accomplishes what she does because of her good sportsmanship rather than because of luck or superhuman ability.

It is a book for boys and girls from 10 years up.



MAKIN. Historical Division, War Department. Printed by the Government Printing Office. 35¢ (Add 10¢ for postage.)

This book deals with the operations of the 27th Infantry Division Task Force, under the command of Major General Ralph C. Smith, which between November 20 and 24, 1943, made the difficult assault landings on Makin, northernmost atoll in the Gilberts, and drove eastward to the tip of the island to rout the Japanese.

Tenth in the "American Forces in Action" series, published by the Historical Division of the War Department Special Staff, *The Capture of Makin* is based upon a first narrative prepared in the field from military records and from notes and interviews recorded during the operation by Lieutenant Colonel S. L. A. Marshall, now chief editorial writer of the *Detroit News* and author of the books *Bastogne* and *Kwajalein*.

These historical reports, titled collectively "American Forces in Action" stress individual tactical actions, relating the successes and failures of small army units, and as such should be valuable to army schools as well as of interest to combat soldiers who took part in the action.

The books deal with the tactical problems encountered in airborne landings, mountain combat, river crossing, etc., rather than with major combat engagements, and represent only a preliminary effort in the recording of the larger history of the war. This will be told in a series of forthcoming volumes entitled "The United States Army in World War II."

1 1 1

VOLUME VII OF NAZI CONSPIRACY AND AGGRESSION. By the Office of the Chief of Counsel for Prosecution of Axis Criminality. Printed by the Government Printing Office. Set of Eight Volumes, \$18.00. The books are being distributed as each volume is completed.

Volume VII is the fifth of eight volumes entitled *Nazi Conspiracy and Aggression* and contains documentary evidence introduced during the trial as well as many documents used as background material in the case against major Nazi war criminals. Some of the most interesting documents are:

Keitel's order of October 31, 1941, directing the use of Russian prisoners of war in German war industry in violation of the Geneva Convention.

Opinion of the Chief of the German Intelligence that the German treatment of Russian prisoners of war is a violation of International Law.

Notes of Hitler's talk to his generals, August 22, 1939, announcing his intentions to create a border incident and attack Poland within a week.

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**MAUSER RIFLES AND PISTOLS.** By Walter H. B. Smith. The Military Service Publishing Company. \$5.00.

Here is another book in the tremendously popular National Rifle Association library books.

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The text reveals many hidden facts in the history of the Mauser firm, and brings to light the astonishing record of Charles Norris, an unknown figure in American arms development.

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The third will be *Mannlicher Rifles and Pistols* and the fourth book will be *Remington Handguns*.

**BRASSEY'S NAVAL ANNUAL 1946.** Edited by Rear Admiral H. G. Thursfield. The Macmillan Company. \$6.00.

This is the 57th year of issue of this unique handbook and commentary. The present number is largely composed of surveys, from various points of view, of the final phases of the War at Sea which came to an end in the period under review.

While the book is chiefly concerned with winding up the war operations with which it has dealt almost exclusively during the last six years, it starts by looking forward to the navies of the future.

**THE AERODROME.** A novel by Rex Warner. J. B. Lippincott Company. \$2.75.

The author has justly called this a "love story" because it is from the incalculable power of love that have developed both the Aerodrome with its ruthless, inhuman efficiency, and the Village, with its sensuality, its muddle and stupidity. On the one side is the Air Vice Marshal, a character whose satanic pride forces him to reject the world as it is and to attempt to reshape the whole material of human life. On the other side is the youthful teller of the story who, brought up in the Village, and later serving with distinction at the Aerodrome, discovers an acceptance of ordinary life which is too vast to be reshaped by any one will.

**RIOT CONTROL.** By Colonel Sterling A. Wood. The Military Service Publishing Company. \$2.00.

Here is a complete manual on how to control and handle riots.

The manual deals with the problem of riot control from the viewpoint of the platoon, company or battalion and their officers who find themselves pitted against a mob. It outlines practical suggestions for riot control training and operations; and also, briefly describes certain essential weapons, chemical munitions and special equipment.



THE HORSEMAN'S ENCYCLOPEDIA. By Margaret Cabell Self. A. S. Barnes & Company. \$5.00.

Reviewed by Mrs. Beatrice Ayer Patton

This book is an important ready reference for anyone concerned with the world of horses, and, as such, is worthy of a place on the library shelf beside that nine-volume masterpiece, *The Horse*, by Sir Wortley Axe. Its greatest use, however, will be for the beginning horseman, for it is packed with information and common sense, and seasoned with tradition.

The line drawings explaining dentition are practically foolproof, and the paragraphs on feeding and simple medication are sensible and easy to follow.

The descriptions of the evolution of the horse and of foreign and domestic horses show much study, but I must add one comment on our American military riding. Every difficult feat of horsemanship practiced at the foreign military schools has been duplicated at our own school at Fort Riley, Kansas, where all forms of intrepid riding are considered training in those qualities of leadership which cannot be taught by non-dangerous sports. The feat of jumping horses through a window where they cannot see the landing, which Mrs. Self describes as performed only at the Italian school of Tor di Quinto, was performed many times before large audiences in 1921 and 1922 by General, then Major, George S. Patton, Jr., and his team of officers and men.

The paragraphs on dress and on teaching riding should be taken to heart, and the remarks on courtesy will be read by experienced riders with the same deep feeling with which they were penned.

Horses are being used more and more for sport in America, and beginners should learn the traditions connected with them by heart, while old riders refresh their memories, remembering always that, without rules, there can never be a game.

1 1 1

THE WAR REPORTS. By General of the Army George C. Marshall, General of the Army C. H. Arnold and Fleet Admiral Ernest J. King. J. B. Lippincott Company. \$7.50.

The final responsibility for the military conduct of the United States' share in World War II rested upon the shoulders of three men—Generals Marshall and Arnold and Admiral King.

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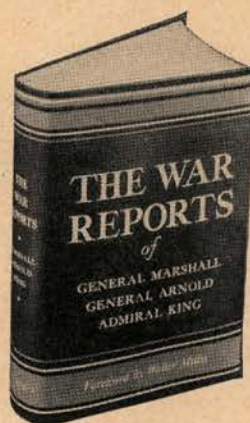
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✓ ✓ ✓

HOW TO HUNT AMERICAN GAME. By Robert B. Vale. Military Service Publishing Company. \$4.00.

Here is no pink-coat ridin'-to-hounds book on hunting—but an honest, down-to-earth, grass-roots guide to plain American hunting.

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Mr. Vale, an experienced journalist who has devoted many years to hunting and writing about hunting in all parts of America, has distilled into this book the results of years of observation and practice. His wit and wisdom is matched by the illustrations of George Miksch Sutton, famed for his work as Curator of the Museum of Ornithology at Cornell University.

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✓ ✓ ✓

HUNTING BIG GAME. Edited with Introductions and Notes by Townsend Whelen. The Military Service Publishing Company. Two Volumes. \$4.00 each. \$8.00 the set.

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These tales open an almost entirely unknown world on sport; that of hunting man-killing big game alone, without the vast equipment and caravans of modern, organized hunters and explorers. The authors tracked in unexplored countries, living and surviving and earning a livelihood by the rifle alone.

The comments of the writers on the technical sides of their rifles and ammunition and equipment are extremely valuable to all hunters.

These anthologies make fascinating reading for the practical hunter or the armchair outdoorsman. Whelen has dug deeply into the literature of hunting and has selected, what, in his expert opinion, are the best big game hunting stories of all time.

A list of the authors included in Volume I are: Frederick Courteney Selous, William Cotton Oswell, Sir Samuel W. Baker, Arthur H. Neumann, St. George Littledale and Frederick Vaughan Kirby.

The authors of Volume II are: Charles Sheldon, Theodore Roosevelt, Vilhjalmur Stefansson, Daniel Moreau Barringer, George W. Sears (Nessmuk), Frederick Courteney Selous, Warburton Pike and Townsend Whelen.

1 1 1

**TOGETHER: ANNALS OF AN ARMY WIFE.** By Katherine Tupper Marshall. Tupper and Love, Inc. \$3.50.

Here is the story of an army wife that should be read by all service wives. Army officers will also find it well worth their time to read about the private and human side of the wartime Chief of Staff and newly appointed Secretary of State.

Mrs. Marshall accompanied General Marshall from his post as Assistant Commandant of The Infantry School, through duty with the CCC, the Illinois National Guard, duty with troops—and through those tense, demanding years when General Marshall guided the United States Army through the greatest war of all time.

*Together* is a warm, well written book, with excellent touches of humor. Mrs. Marshall quotes many letters that came to General Marshall from notable persons.

It is highly recommended reading.

1 1 1

**THE ROAD BACK.** By James H. Smith and Natacha Rambova. Creative Age Press. \$1.00.

This book discusses a program of rehabilitation for veterans. It is divided into four sections entitled: What Is Rehabilitation; Approach To Rehabilitation; The Civil Center Of Rehabilitation; and Industrial Program of Re-employment.

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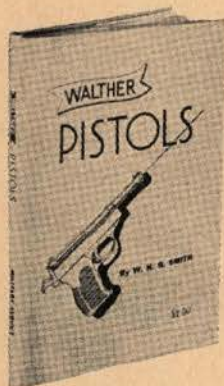
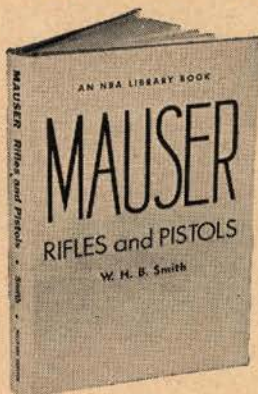
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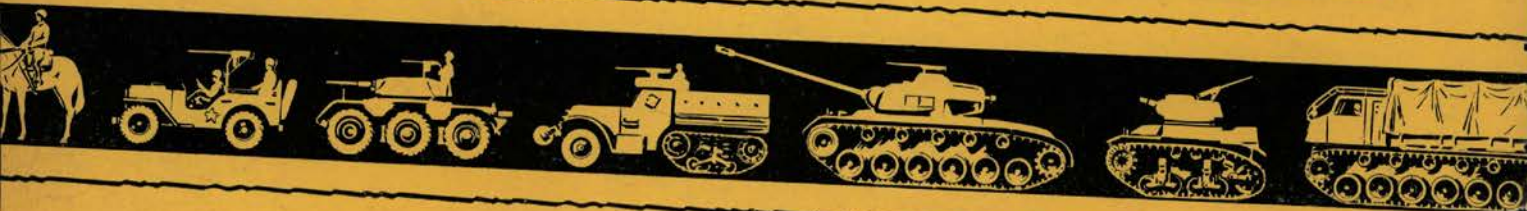
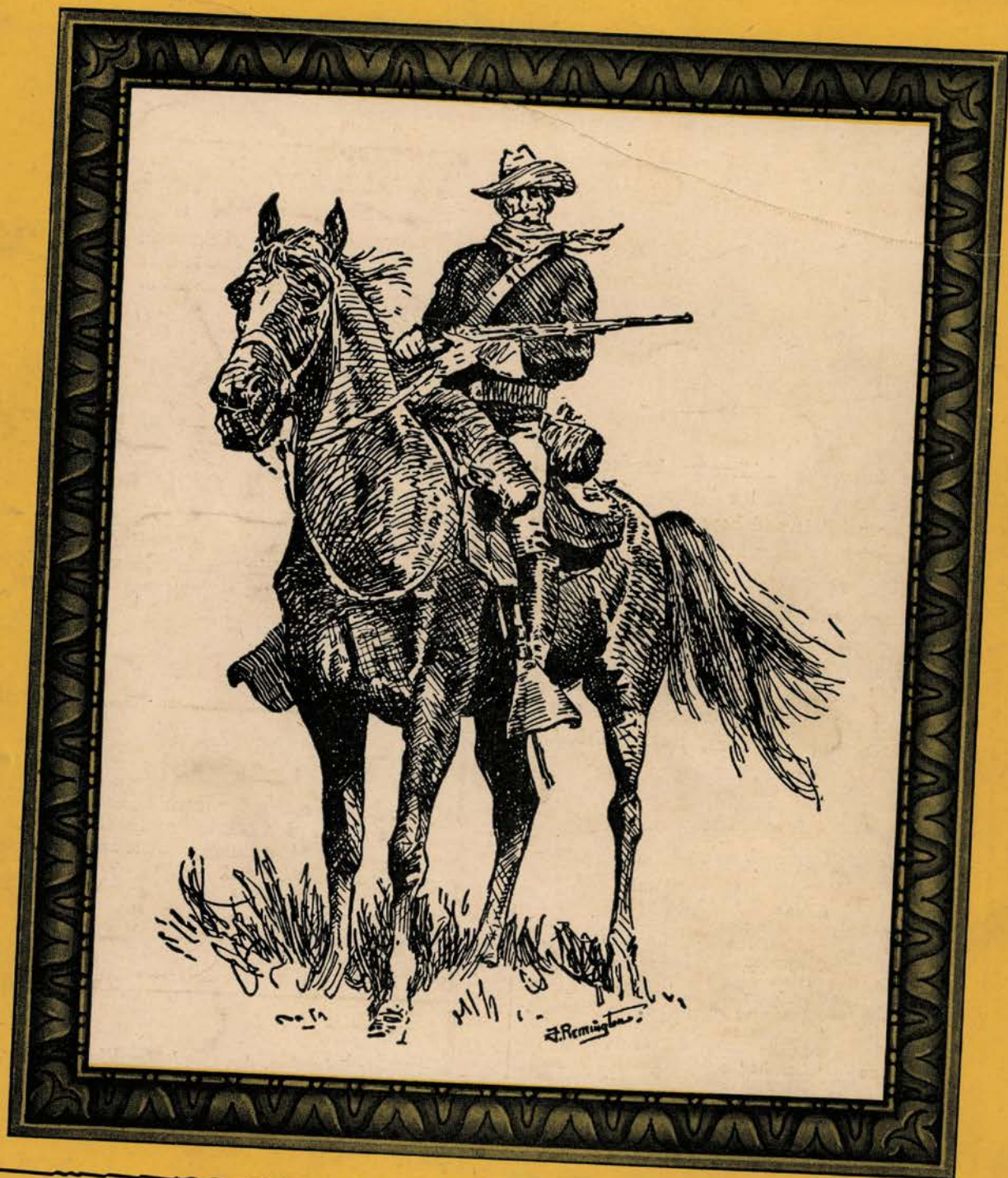
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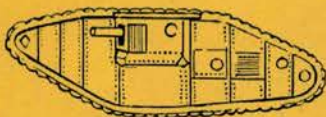
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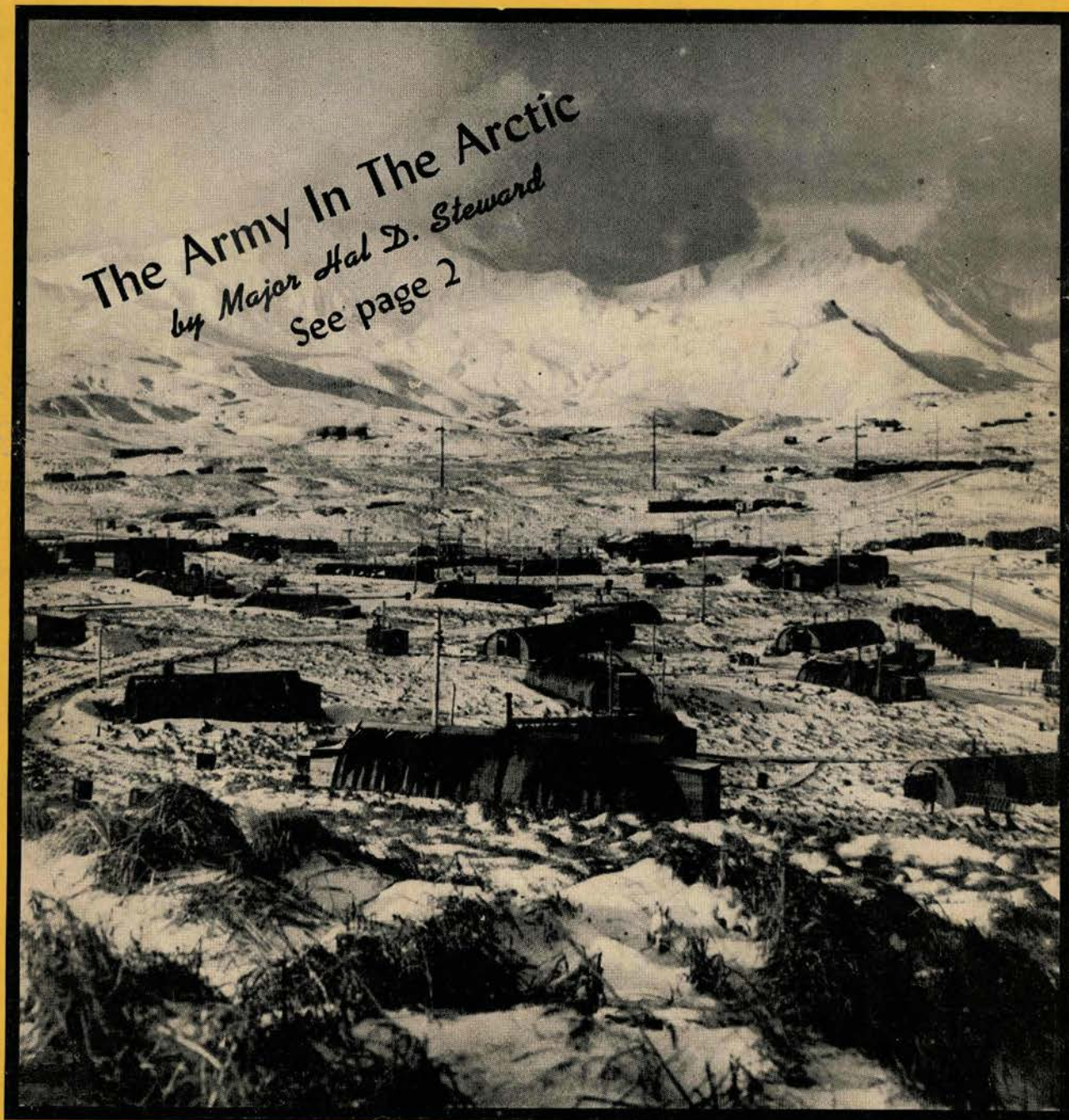


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# THE ARMY IN THE

## A FIRSTHAND

*by Major*

**O**PINIONS as to the practicability of armor under conditions found in the Arctic regions of the Far North differed among the army officers interviewed on a recent 10,000-mile air tour of Alaska and the Aleutian Islands that took this writer to Task Forces "Frigid" and "Williwaw" and the Alaskan Department Headquarters.

"Armor is thoroughly impractical in the Arctic," is the flat statement of Colonel Paul V. Kane, commanding officer of Task Force Frigid stationed at Fairbanks, Alaska, where temperatures drop to as low as minus 67 degrees.

But Major Myron Johnson, tank test officer at Task Force Frigid, and Captain George J. Sheets, commanding officer of Company B, 66th Tank Battalion, the outfit that is testing all armored equipment for the task force, disagree with Colonel Kane. They both say that with improvements and modifications on present American tanks they can be made successful in the extreme cold weather areas.

At Task Force Williwaw on Adak Island in the Aleutians, Major J. H. Cronin, chief of armor test section, states that tanks have been found unsatisfactory because they quickly bellydown in the soft Aleutian tundra.

Tanks and other armored equipment, however, are not the only pieces of military equipment that are being found in need of modifications for efficient use in the Arctic regions. It has been discovered that equipment, especially vehicles, begin to fail at 40 degrees below zero.

Sixty degrees below zero seems to be, from Task Force Frigid tests and observations, the breaking point for soldiers in standing the severe cold. After a temperature of minus 60 degrees is reached they lose efficiency with increasing pace. According to Colonel Kane, Frigid commander, a man loses his efficiency at the rate of two per cent for every degree under zero. This means, that at minus 50 degrees and below, a man needs assistance in taking care of himself.

Upon arriving in the extreme cold areas of Alaska soldiers must go through a mental conditioning to erase the fear of cold. This, according to Colonel Kane, is important.

One tank officer assigned to Frigid spent six hours in a tank at sub-zero temperatures and he said his efficiency at the end of the period was nil. In the Arctic, no person has yet been able to stay in a tank for more than six hours. A person cannot remain in an M-4 Tank (Sherman-medium) for more than about 10 minutes in sub-zero weather without beginning to freeze. On one test when the outside temperature was only seven degrees below zero, the temperature in-

**Major Hal D. Steward, Assistant Editor of the Cavalry Journal, recently returned from Alaska and the Aleutian Islands to report on the activities of cold weather Task Force Williwaw. Here is his firsthand report on what he and discovered. This is the first report to be published anywhere on**

side the M-4 was comparable to minus 42 degrees because of the wind chill factor.

Task Force Frigid is charged with testing equipment and clothing in the extreme cold, while Task Force Williwaw has the different job of testing equipment and clothing in the wet-cold weather. Ladd Field at Fairbanks, where Task Force Frigid is located, and Adak Island in the Aleutians, home of Task Force Williwaw, are considered to be ideal for these important tests.

Tanks and armored vehicles can move over the roads and trails at Adak in good fashion, but the driving rain and snow interfere with the gunner's observation. The M-24 light tank is considered by Williwaw tank officers to be best suited for Adak operations, while the M-26 tank is considered the worst for mobility and movement. However, for general purpose vehicles, the LVT-4 (Buffalo), Jeep and Weasel are the best.

In the Frigid tank company, there are 178 enlisted men and six officers. The company has all the organic tanks of a normal tank company plus four half-track vehicles of an armored infantry platoon, 21 test vehicles, and a maintenance section that has one two-and-one-half-ton truck, an M-32 tank recovery unit, a 10-ton wrecker, a quarter-ton and a three-quarter-ton truck, a M-3 half-track, and a M-26 A1 tank retriever.

So many modifications are necessary on present armored vehicles to make them practical for operations in extremely cold conditions that it is the belief of many Frigid armored officers that mechanized vehicles should be completely redesigned.



# ARCTIC

## ND REPORT

*D. Steward*

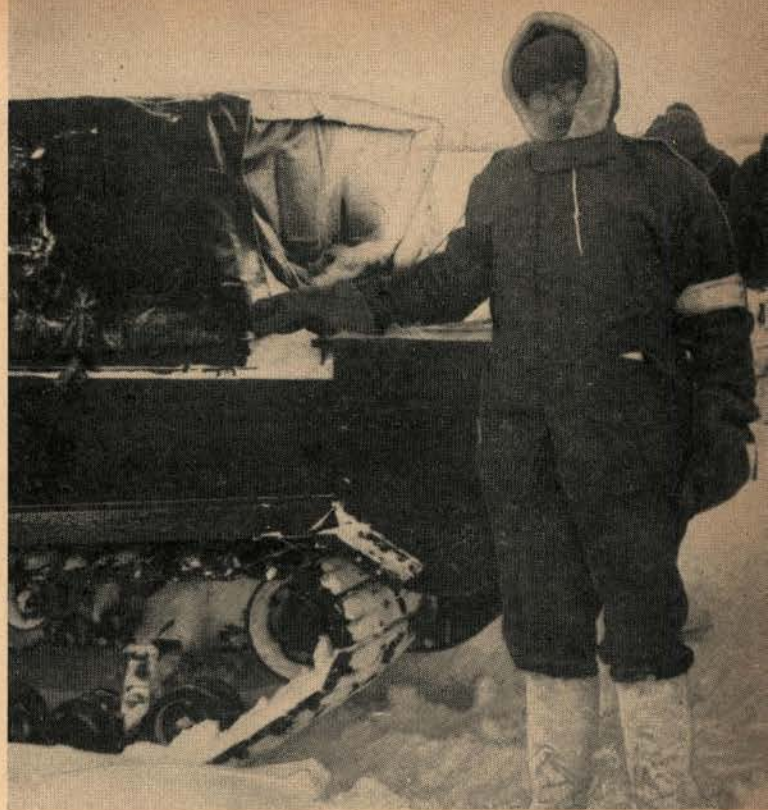
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t full-length magazine article  
these task forces.

Gun turrets on M-4s, M-24s, and M-26s freeze at about minus 35 degrees. Ammunition is difficult to handle inside a tank in the extreme cold. Human flesh will burn if held too long on metal. Clothing is too bulky for tank crewmen, especially for the driver. Tracks and bogey wheels become frozen and immovable after 10 hours of exposure in the extreme cold. These are just a few of the difficulties being encountered by armored men attached to Task Force Frigid.

A tank that will operate in the extreme cold areas, according to Captain Sheets, should have the following requirements: 1. lubricants that will not freeze, 2. greases that will not freeze, 3. a better grade of gas with a lower flash point, 4. a battery that will take a charge at extreme low temperatures, 5. a heater in the tank that can be adjusted to whatever temperature is desired, 6. clothing that is less bulky for the crew members, 7. all seals made of material that will stand the cold down to minus 70 degrees or lower, 8. the M-26 needs a heavier engine, 9. tank crewmen must be extremely skilled in the performance of their duties.

Maintenance units are hard to move in the severe cold weather experienced in the Far North. The present authorization of mechanics in a tank company is too inadequate for efficient maintenance. It should be increased at least three times. Organizational spare parts should be increased for more unit assemblies. The unit assemblies should be winterized at the factory where they are manufactured.

It is the opinion of Captain Sheets that each tank operating in extreme cold areas should be equipped



The author, dressed in heavy Arctic clothing, stands next to a Weasel, which has proven so far to be the most efficient vehicle in the Far North.

with a wanagan on sledges that the vehicle can pull. The wanagan should be about 10 feet long, eight feet high and eight feet wide. Inside the wanagan would be folding cots, a heater, a table, and stowage cabinets. This would provide shelter for the crew. During an actual engagement the wanagan would be disconnected. After the combat action ended one tank could pull all the wanagans of the unit to the next selected position.

Most tankmen assigned to Frigid desire a ration on the order of the C or E ration that would have a pleasing flavor. They also believe that it is absolutely necessary to have an organic unit with each company to thaw out and prepare the food. It now takes 40 minutes to thaw out the meat component of C or E rations. Insulated containers to protect the food from the cold should be provided. When exposed to the Arctic cold, food freezes solid before a soldier can eat it.

Frigid officers estimate that they spend 90 per cent of their time fighting the elements.

Ice fog created by gun blasts makes it impossible for the gunner to observe his fire from a tank turret. At the present time a tank crewman must observe the tank's fire from about 20 yards to the flank.

Electrically heated suits for the tank crew, such as the air force now has, may be the answer to combat cold as far as armored personnel are concerned.

There is much disagreement among Frigid officers as to whether armored vehicles could operate effectively over the terrain found in Arctic regions. Many maintain that the lack of road networks and deep snow would limit the mobility of armor to a great extent.



Others take the stand that the ground is hard and flat enough to operate without networks of roads. But, all agree that the tanks must first be modified so that they can operate mechanically before tests on mobility and maneuverability are conducted in the Arctic.

No satisfactory method of evacuating casualties in the extreme cold areas has yet been discovered. If a wounded man was allowed to lie in the Arctic cold for more than a few minutes he would in all probability freeze to death. Some means of evacuating casualties instantly must be discovered.

While in Alaska this writer observed on January 24, 1947, the first tactical maneuver of all combined units of Task Force Frigid.

It was clearly emphasized in the tactical problem that time factors in assembling squads, platoons, and higher units are different than any place else in the world. The problem was worked out according to schedule but much slower than it would have been in a temperate zone.

Tanks in the tactical problem traveled at only four miles per hour; ordinarily they travel at about 20 miles per hour under favorable conditions.

Frigid has a policy that men are taken in from the field when their body temperature drops to 96 degrees from exposure to the severe cold. A few had to be sent in during the tactical problem that lasted three hours. The Germans have recorded body temperatures of 80 degrees of men still living. However, recovery from such low body temperatures is rare.

"The tests of weapons and equipment we are con-

ducting at Task Force Frigid will prove a challenge to American industry," says Major Milton Price, plans and training officer of the task force. He was explaining that much of the standard army equipment is being observed when in use in Arctic weather. "The equipment is beginning to fail us. Much of it cannot be used in the Arctic. But if industry can supply the kind of equipment we need, we can supply the kind of men who can use it. The men here are not failing."

A strong "buddy system" is in force at Frigid whereby men pair off and watch out for each other. They watch one another's faces for signs of freezing. They never venture away from camp alone.

Wardrobe of the average soldier serving with Frigid outdoors is: long woolen underwear (over which you pull on two pairs of trousers); light woolen socks, two pairs of heavy ski socks, a pair of felt socks and a pair of mukluks (knee high canvas boots); a woolen shirt or two, a sweater and finally a heavy pile parka (coat with hood); two pairs of gloves and a heavy fur-lined cap to protect your face and head.

"I can't imagine moving masses of troops across this country by land," is the statement of Major General Howard A. Craig, Alaskan Department commander, who believes that airborne troops only could be successful.

This same opinion is shared by Colonel Kane, Frigid commander.

Movement over terrain is the big job confronting Task Force Williwaw on Adak Island. This task force is having little difficulty with the firing of its weapons,

This unimposing row of tents serves as field headquarters of Task Force Frigid when it is maneuvering on the barren wastes of the Arctic.

Signal Corps Photo





but keeping troops warm and dry is a problem it has not yet solved.

It is not possible to move such artillery pieces as the 155mm rifle ("Long Tom") off the roads because they become bogged down in the mud immediately. This is being solved by dragging the large guns on sledges across the mud and wasteland.

Only about two per cent of Adak, where temperatures seldom fall below freezing, according to Colonel A. M. Gurney, commander of U. S. troops on Adak, is usable for military installations. The remainder is a wasteland of mud, marsh, rocks and rugged mountains.

Small arms need more lubrication in the Aleutians than they do in temperate zones. Too much clothing is necessary to keep the men warm and dry. No adequate shelter has been devised for service in the field on Adak. This is also true at Frigid. Tentage and shelter in the opinion of Williwaw officers will probably need to be completely redesigned.

Medical evacuation presents a problem in the Aleutians as it does at Frigid. The present methods used on Adak are unsatisfactory because they require too much personnel and time. A method is being worked out whereby a Weasel can be used as an ambulance.

There is no difficulty in water purification on Adak.

Two Task Force Williwaw tanks are shown bogged down in the tundra found on Adak Island in the Aleutians. Such terrain as this has slowed down task force operations.

Forward aid stations as yet have no satisfactory shelter. Work is being done, however, on an evacuation sleeping bag designed to keep a casualty warm. Electrically heated blankets are also being experimented with.

The Arctic today presents problems to the American Army that it has never experienced in its battle history.

All troops will need a long period of training in cold weather operations (at least three months) before being sent to the Far North for duty. It is the opinion of Frigid and Williwaw officers and men that a soldier could not move directly into a severe cold weather area and be expected to perform efficiently in actual combat without proper training.

Normal body functions in the Arctic are performed at risk. A deep breath during exertion or coughing may result in frostbitten bronchial tubes. Sweat may freeze. Elimination involves complications and discomfort.

The problem of keeping warm in moving vehicles is being faced by Frigid soldiers. There, lack of body movement plus tight quarters in the covered Jeeps and Weasels cause discomfort.

Carbon monoxide gives great trouble to persons riding in closed vehicles in the Far North. This difficulty must be conquered.

Communications men have a tough job in the Arctic.

Signal Corps Photo





The laying of cable must be done by hand in deep snow and violently cold temperatures. Finding and repairing breaks made by animals, tanks and other accidents is a mean job.

Mechanics, making emergency repairs in the field, must take off their large mittens (and often the wool glove) in order to reach into a tight place and make an adjustment. Cold tools frostbite the hand, and while the hand is numb it receives no warning of burns from hot metal until the damage is done.

Standing around in the Arctic is hard work. The clothing issued at the present time is warm enough to keep a man from freezing while he is moving, but when he stands still for a long period he is subject to torturous pains from the extreme cold.

Because of the dryness in the Arctic, fires are a great hazard. Every precaution must be taken against them. If a unit goes for a whole week without having a fire they consider it a record.

Alaska is lacking in supply lines and communications. This would present the Army with one of its biggest problems, in the event of another emergency. A single track railroad that isn't expected to last more than one or two years longer without extensive, expensive and probably uneconomical expenditure of labor and materials, is today attempting to supply the 80,000 people of Alaska. During this writer's visit to Fairbanks the train had been delayed for two weeks because of snowbanks and landslides.

Circumstances (many beyond the control of Task Force Frigid) have prevented the unit from getting the necessary equipment to carry out its program successfully. The recent shipping strike on the West Coast did much to hold up supplies to Frigid. Some of its equipment is still held up somewhere along the line. The task force is scheduled to leave Fairbanks sometime in May, and because much of the equipment hasn't reached it, many cold weather tests may be left uncompleted.

Some Frigid officers are of the opinion that the Quartermaster Corps should have a clothing alteration unit attached to the task force so as to make the necessary adjustments on winter clothing as recommendations are made and proven.

Colonel Joseph D. Raney, commander of Williwaw, stated in an interview, "Adak is ideal terrain for cavalry operations, especially in the use of pack animals."

The Williwaw commander had requested that a pack animal unit be assigned to the task force but the request was turned down because of lack of time. The task force is slated to leave Adak sometime in March or April.

Military strength of Frigid is some 1,500 officers and men, while Williwaw has just under 800.

From the standpoint of military operations because of its distance from the United States and the lack of transportation facilities (other than air and water) Alaska may be considered an island. The Alcan Highway provides the only existing through land communi-

cation with the Continental United States. This highway will require considerable improvement and extensive continuing maintenance if used as a supply route.

Colonel Frank A. Bogart, director of logistics for the Alaskan Department, indicated to this writer that the Alcan Highway is primarily of value as a means for emergency supply. Running from Edmonton, Canada, to Fairbanks, Alaska, through hundreds of miles of muskeg which is entirely uninhabited, it is now in daily use, even in the recent sub-zero weather.

"To supply Alaska by truck over the Alcan Highway is not economically feasible," said Colonel Bogart. He stated that The Alaska Railroad ran a convoy of trucks over the Highway during the recent West Coast shipping strike. The shipping costs were so high that the use of the route would be prohibitive from a commercial standpoint.

"Rail connection with the United States through Canada is possible," says Colonel Bogart. "Such a route has already been surveyed." He could give no other information on the proposed rail link with the U.S., but said that in his opinion the railroad would be primarily of strategic value and would have to be built and initially maintained by the government, since at first it would not be commercially profitable.

The land area of Alaska is about one-fifth the size of the Continental United States, but because it is comprised of numerous widely scattered islands it occupies a relatively larger area of the earth's surface. The distance from Juneau to Attu is approximately the same as that from Savannah, Georgia, to Los Angeles, and from Juneau to Point Barrow is about as far as from Fort Worth, Texas, to Duluth, Minnesota.

**Task Force Frigid has developed specially constructed ice bridges for moving large vehicles over ice and snow. Here a M-26 tank rolls across Tanana Creek near Fairbanks, Alaska, without difficulty.**

Signal Corps Photo





# Tactical Interrogation

*by Sidney Weintraub*

CARDED

**Interrogation played an important part in the U. S. Army Intelligence system in World War II. Divided into two classifications, strategic and tactical, the bulk of our effective interrogation was done at division, regiment or even battalion level. Strategic interrogation cannot compare to the value of that done right at the scene of the action. The author of this article was an interrogator assigned to Headquarters Seventh Army and later to the 12th Armored Division in Europe. His approach to the subject of tactical interrogation is a practical one.**

NAME, rank and serial number." Every American soldier had that impressed upon him time and again, but German interrogators wormed out far more than that basic information. The German army had the same training, but American interrogators almost always managed to get more information than that. A comparison of the interrogation of both armies would undoubtedly show that the American system was by far the superior.

The United States was fortunate in that many of the most intelligent of the Germans were forced to leave Nazi Germany. These refugees formed the nucleus of the United States prisoner-of-war interrogators. Germany had no such men. Our numerical superiority of men who knew the enemy's nation and language gave us an advantage that the army was quick to utilize.

Interrogation was broken down into two large classifications, either strategic or tactical. Generally, questioning done at corps level or higher can be considered strategic, and division downward as tactical. Germany, limited in its number of trained men, usually had only strategic interrogators. The bulk of our effective interrogation was done at division, regiment or even battalion level. Strategic interrogation cannot compare to the value of that done right at the scene of the action.

The purpose of strategic interrogation, as the name implies, is to gather information about broad plans of strategy. An interrogator at army headquarters is interested in order of battle of the enemy, troop morale and

the latest weapons in use. The man at regimental headquarters wants something of a far more immediate nature than that. His questions are likely to be "How many men are there in your unit?", "How many machine guns have you got?", "Where are your machine guns, antitank guns set up?", "Where are your mine fields?", "How many 88mm guns do you have and where are they?" and so forth. Information garnered by a tactical interrogator can be immediately turned into value by the front-line troops. Morale and order of battle information will be gathered only insofar as it may be valuable in securing tactical information. A regimental interrogator will leave strategic information to division, corps, and army men.

Techniques of tactical interrogation differ from those employed by men at higher headquarters. A regimental interrogator pits his training and his wits against the elements of time, place and his prisoners' resolve to keep silent. He must gather his data as quickly as possible. A man at army may have days to get what he wants; at regiment you have only minutes. The situation is dynamic and stale information is past history. The 88mm gun may have been behind that farmhouse 20 minutes ago, but that does not guarantee that it is still there now. The multitude of tricks and techniques developed by regimental interrogators are for getting information and getting it accurately and quickly.

Probably the best method used by tactical interrogators where prisoners were reluctant to talk, was the



show of knowledge. Psychologically, this is extremely effective and it does not take too much time. When speaking to a prisoner, an interrogator will take notes on the man's unit—jottings not important enough to incorporate into a regular report, but extremely valuable when he speaks to another prisoner from the same unit. Prisoner after prisoner is amazed when you tell him the name of his company commander, his platoon leader and let slip the nicknames of the various men in his platoon.

One of the best and most amusing instances of show of knowledge that I ever saw occurred around Christmas of 1944 on the Seventh Army front in Alsace-Lorraine. The Germans of this particular unit had received a special Christmas meal consisting of noodles and cheese. The only fault with the noodles was that they were so cold when they came that the men had to use their forks as ice picks in order to have their meal. The interrogator had picked up this information from a prisoner the night of Christmas. The next morning he was questioning a prisoner from the same unit, a prisoner who was somewhat reluctant to talk. The interrogator learned the man's unit from his Soldbuch (all German soldiers carry a Pay Book with them and it contains much information about the man, including his unit) and immediately recognized that he had an opening wedge. He casually asked the German how he had enjoyed his Christmas noodle meal. This struck a familiar chord and the prisoner started to gripe in the manner of all soldiers. When the prisoner left the interrogation room he had left much valuable information behind.

Another bit of incidental intelligence which stirred up griping and brought forth much data occurred when the interrogator received some information about a company commander of one of the units in the line. The men didn't particularly like this officer as he was never in evidence while the shooting was going on. A master sergeant who was being interrogated stuck to name, rank and serial number. Casually, the questioner asked when the prisoner had last seen his captain running towards the rear. The sergeant started to curse and began to detail incidents of how his captain always managed to be somewhere else. The interrogator directed the man's griping and was able to submit a very valuable report.

The show of knowledge is only one of the methods used. The important factor is to get the prisoner to start talking—talking about anything at all. A little skillful handling will turn mere conversation into valuable military information. A prisoner's accent will tell you from what section of the country he is. (The Soldbuch will usually tell you the exact town.) Most interrogators knew Germany and they could often display a familiarity with the streets, buildings and landmarks of the prisoner's home town. The two men can thus find a common ground and before the prisoner realizes it, he is discussing military topics.

I never saw an American interrogator use force in order to make a prisoner talk. He may have threatened, cajoled, warned and verbally frightened him, but he never hit the prisoner. Violence was generally unnecessary. Anything short of actual violence is legal. In fact, practically every German prisoner reminded the interrogator of the specific rules of the Geneva Convention.

When we entered the last war, most officers were unfamiliar with prisoner-of-war interrogation and, as a result, placed little value in it. As soon as a division commander had an interrogation team for a short while, he realized how valuable a source of information it was to him. Not too long after we were in the war, most commanders were clamoring for interrogation teams.

The interrogator was a highly trained man. He spoke the language of the enemy fluently and knew the German habits. He knew the enemy soldier slang and idiom. The interrogator knew the German army, its organization and composition, better than the American soldier knew the organization of his own army. He knew the enemy's weapons, could recognize them by sight and often by sound. He was familiar with the internal politics of Germany and knew the organization of the SS and SA. When a man from a specific division was captured, the interrogator knew just what regiments and battalions were part of that division. When an artilleryman was captured, the interrogator knew the normal weapons of that unit, knew just how many of them that type of unit had and knew just what the effectiveness of each artillery piece was. In short, he knew the Germany army and Germany.

Each interrogator was familiar with American military maps as well as those of all other nations on earth. He knew the signs and symbols used on the enemy's military maps. This was extremely valuable as maps were often found on the person of prisoners and the interrogator might interpret them better than the prisoner himself. In addition to maps, every interrogator knew how to use aerial photographs. Aerial photographs were invaluable in tactical ground forces interrogation. The prisoner might give you enough information to place an 88mm gun on a map, but the aerial photograph enables you to pinpoint it. A prisoner might say that a weapon was behind a house and the map might show two houses in that same area. But the photograph gives you an opportunity to accurately describe both houses and learn definitely to which house the prisoner is referring.

During the fighting along the Siegfried Line, most interrogators had aerial pictures of the entire front on which his unit was engaged. By use of these pictures he could often mark off the exact spots of various emplacements. The photograph is invaluable in that it blows up small areas which a map can only show in outline.

Some of the methods used in preparing prisoners for interrogation are interesting. Let us suppose that five prisoners are brought in for questioning. Only one man



will be interviewed at a time because prisoners will rarely talk while comrades are near by. What is done immediately is to separate the officers from the enlisted men. It might also be desirable to separate the non-commissioned officers from the enlisted men. This segregation is done for various reasons. Psychologically, it is helpful in inducing men to talk when they see no superior officers. More important is the fact that officers in the German army were generally more security conscious than enlisted men. If they were left together, the officer might give the men a little pep talk and ruin them as sources of information. When the actual interrogation is done, the officers will generally be held until some basic information has been secured about the unit. In that way, the interrogator can put up a wonderful show of knowledge.

Let us further suppose that, instead of five, fifty prisoners were captured at once. The tactical interrogator has no time to question all of them, but he does want to speak to representatives from all the units among the prisoners. Once again he would separate officers from enlisted men. He would then, as quickly as possible, try to separate the men according to units, usually by company. There were various ways of doing this, from merely yelling the command "Line up by companies" to having one of the Germans do it for you. This latter method is a very efficient one and can be extremely rapid. Pull out the highest-ranking noncommissioned officer, explain to him exactly what you want, and have him do it for you. What ordinarily follows is a loud, booming voice to which the prisoners hop. Once the prisoners are lined up by company, the interrogator can choose likely prisoners from each unit to interrogate.

The interrogator is not as interested in a stupid prisoner as he is in one who appears to be fairly intelligent and observant. While the stupid man may talk more freely, he is not as likely to have as much information or be as accurate about his information. Accuracy is a vital factor and data received from a single man cannot usually be relied upon in itself. The interrogator tries to verify all information.

Tactical interrogation was done under a variety of conditions. Since the interrogator is with the front-line troops, he cannot always secure the ideal room in which to do his work. The ideal is a room not too far from headquarters so that any valuable information can be passed on immediately. The next best bet is anywhere where you can talk to the prisoner without too much interference or interruption. This might be a tent, the side of a road, the hood of a jeep or truck, or simply a field.

The queries are directed by what the G-2 wants to know and, of course, by what the prisoner is likely to have knowledge of. There are certain basic things which every intelligence officer wants to know. He would like to know the unit opposing him, its strength, weapons and dispersion along the front. These items will usually be asked in direct questions. Naturally, a

prisoner from an artillery unit would not be asked the same questions as one from an infantry unit or one from a signal outfit. There is certain material that each would be expected to know, and the interrogator frames his questions to arrive at that information as quickly as possible.

How freely did the German prisoner give information? As I have already indicated, the skilled questioner almost always managed to extract a good deal of information, even from the most security conscious of prisoners. Willingness to talk varied with the ups and downs of warfare. During the American advances across France, most prisoners talked quite freely. During the Ardennes offensive, when German troop morale was somewhat higher, prisoners became quieter. From about February 1945 to V-E day practically every prisoner spoke freely.

Similarly, the value of tactical interrogation varied with the shifting of battle. During a rapid advance, interrogation, although still valuable, was not as important as during a temporary lull in the forward advance. The reasons for this are self-evident. During an advance a good deal of information obtained would be past history by the time it was disseminated. During a quiet period, information remains valuable longer. After the original landings in France, but before the rapid advance across that country, there was an extreme need for trained interrogators. During the month of April 1946, just before the war in Europe ended and prisoners were being taken by the thousands, there was little need of tactical interrogation.

Interrogators did not always limit themselves to questioning soldiers. Very often, especially in friendly countries such as France and Alsace-Lorraine, civilians would be valuable sources of information. During the fighting in Lorraine, an interrogator with a combat command of an armored division received some information from a native as to the extent of the German preparations there. He had been in the area for a long time and had observed the German activity. His information seemed to indicate that, if the proposed plan of attack were followed, one American division would be mousetrapped between two German divisions and division artillery. The interrogator quickly passed this information to the S-2 of the combat command, who directed it to the G-2 of the division. The facts seemed so valuable that the interrogator and the civilian were both sent to the corps G-2. This type of valuable data often came from observant civilians who were not in sympathy with the Germans.

On the whole, one of the most valuable services rendered the intelligence officer of a tactical unit was that of the interrogator. This tactical interrogation, because it is of immediate value to the fighting troops, is of more service than rear echelon strategic interrogation. The German army lacked any effective tactical interrogation and for this reason, the American system was the superior.



# 26TH CAVALRY (PS)

by Lieutenant Colonel Wil

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(Editor's Note: Here is the first complete and authentic history of the 26th Cavalry's (Philippine Scouts) heroic action against the Japanese on Luzon Island in the Philippines. Colonel Chandler, the author, was S-3 (plans and training officer) of the regiment during its entire campaign from December 8, 1941, Pearl Harbor Day in the Philippines, until he was wounded the night before the capitulation on April 9, 1942, when the men of the regiment elected to trust to the jungles rather than surrender to the Japs.

After his capture, Colonel Chandler spent two months on Bataan in a Jap hospital from which he was transferred to Cabanatuan where he remained until October, 1944, when he was sent to Bilibid Prison in Manila en route to a prison camp in Japan. He arrived in Japan on January 28, 1945, and remained in a prison there until April, 1945, when he was sent to another Jap prison in Mukden, Manchuria. In August, 1945, he was liberated along with other American prisoners by Russian forces.

While at Cabanatuan, Colonel Chandler started making notes on the 26th Cavalry's part in the war. Several officers of the regiment were with him and they helped with the details and dates. When he was transferred from Cabanatuan Colonel Chandler left his notes with a brother officer, Major H. N. Archer.

When it came Major Archer's time to leave Cabanatuan he buried the notes. He was sent to Bilibid Prison where he remained until liberated by American forces in February, 1945. As soon as possible after his release he returned to Cabanatuan to get the notes he had left behind. Upon his return to the United States, Major Archer turned the notes over to the War Department, who made photostatic copies of them. The original notes were then turned over to Mrs. Chandler just prior to Colonel Chandler's return to the United States.

This history of the 26th Cavalry, which will appear in three parts in the ARMORED CAVALRY JOURNAL, is also being published as a daily serial in the Manila Times in the Philippines.)

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## PART ONE

### They wrote their names in Filipino history with blood.

WHEN the Japanese delivered their long-expected blow on December 8, 1941, the 26th Cavalry, Philippine Scout regiment, was, with the exception of a few units, at its home station, Fort Stotsenburg, Pangasinana, about 60 miles north of Manila. Troop F of the regiment was located at Nichols Field and various small detachments were on outpost duty at Baler and Dingalan Bays on the east coast of Luzon. Within a matter of days the regiment was to take part in one of the bloodiest and most desperate military campaigns to be recorded in history.

The 26th Cavalry was a unit of the Regular Army of the United States, a part of the 12,000 Philippine Scouts authorized by Congress to be maintained in the Philippine Islands. The men were Filipinos and the officers were Americans except for two Filipino graduates of the United States Military Academy who had been commissioned in the Scouts upon graduation. This regiment was not in any sense a militia outfit, but was a Regular Army unit with all the tradition and *esprit de corps* that that designation implies.

Some of the noncommissioned officers in the regiment had seen well over 30 years of service. The Scouts

held an enviable position in Philippine life. Theirs was an honorable and fairly prosperous position in the prewar society of the islands and the men were extremely proud of their unit and intensely loyal to the United States and to the American officers under whom they served.

The prewar peacetime organization of the 26th Cavalry consisted of two squadrons of two troops each, Machine-Gun Troop and a Headquarters Troop; a total enlisted strength of about 575 men. Early in 1941, however, the regiment was reorganized (in conjunction with the other Scout regiments) and recruited to about 789 enlisted strength. The new Tables of Organization provided for two squadrons of three troops each, a Headquarters, Headquarters and Service Troop, and a Machine-Gun Troop. This organization was considerably smaller than a Tables of Organization for a Cavalry Regiment in the Continental United States.

We lacked mortars, antitank weapons and many other essential elements of modern equipment that were prescribed for the cavalry regiments then being trained in the States. Our total enlisted strength was approximately 789 as compared with slightly over



# BATTLES TO GLORY

*by E. Chandler, Cavalry*

1,400 men for a Stateside regiment. At the time war began, our officer strength was 54, of whom 19 were on detached service with the Philippine Army, or serving with staffs of higher units.

Although our material strength was low, as compared with similar units in the U. S., our state of training and morale was extremely high. Our commanding officer at that time, Colonel Clinton A. Pierce, had inspired the entire organization with his driving energy and a realization of the immediacy of the impending Pearl Harbor. There was never a period of more than a week when part of the regiment was not in the field. In addition to the constant field exercises ordered by the Regimental Commander, there were other serious tasks directed by higher headquarters.

A reinforced troop was stationed at Makinaya, Zambales, as anti-sabotage guard for the U. S. Naval Base at Olongapo from July 1, 1940, until it was relieved late in 1941 by a detachment from the Harbor Defense Command of Manila and Subic Bays. The First Squadron was at its M-Day position on Lingayan Gulf from April 1, 1941, until the rainy season was well underway in July. Observation detachments from the Second Squadron were constantly at their posts at Dingalan and Baler Bays on the mountainous east coast of Luzon. Troop and squadron marches and problems were held twice weekly by troops remaining in garrison, and regimental problems were held at least once a month. The state of individual and organizational training was of a high standard and the condition of the men and animals excellent. In spite of our weakness in numbers and equipment, it is not believed that any unit in the U.S. Army was in better state of training or more ready for active service than the 26th Cavalry in the late fall of 1941.

Men and officers were convinced that combat was not far off and were thoroughly imbued with the offensive spirit, traditional to the United States Cavalry and so well personified in their dynamic leader, Colonel Pierce.

Pearl Harbor Day (December 8 in the Philippines) found the regiment fairly well concentrated at Fort Stotsenburg. Troop F was at its normal station at Nichols Field, a detachment of Troop B, with a section of the Scout Car Platoon of Headquarters and Headquarters and Service Troop, was on observation duty at Baler and Dingalan, and Troop A was on a practice march and tactical problem a short distance north of the post. Overnight passes to the local barrios had been cancelled some weeks before and all men were sleeping in barracks.

## NEWS OF PEARL HARBOR

The Regimental Commander was notified by telephone from General Jonathan Wainwright's headquarters at about 5:30 A.M. on December 8, that Pearl Harbor had been attacked. Colonel Pierce immediately informed his staff and Squadron Commanders and issued orders moving the regiment (less Regimental Headquarters and a detachment of the Machine-Gun Platoon designated for air defense of the Regimental Command Post), to a concealed bivouac in the valley of the Bambam River, about a mile and one-half north of the main post. Regimental Headquarters remained in the headquarters building in order to maintain close contact with Headquarters North Luzon Force which was still located at Post Headquarters. By 11 A.M. the regiment, less detachments mentioned, but including all trains and complete field equipment, was established in bivouacs secure from air observation and ready to move out without returning to Fort Stotsenburg for equipment and ammunition.

Troop F, automatically released from its assignment at Nichols Field by the start of hostilities, was on the road moving to rejoin the regiment by forced marches. Observation units at Baler and Dingalan were alerted and the regiment settled down to await orders from Headquarters North Luzon Force.

Readers of General Wainwright's book well know that he had not been long at Stotsenburg on December 8, and had not yet had time to organize thoroughly his North Luzon Force Headquarters.

This force had been assigned him and the units composing it designated but as yet no allotment of enlisted specialists had been made for his headquarters. With the news that the war had begun, something drastic had to be done and the General called on his old friend, Colonel Pierce, who immediately offered his communications officer, Captain Paul M. Jones, as Headquarters Commandant North Luzon Force, and instructed him to organize the enlisted component of General Wainwright's headquarters from the trained communications and other personnel of Headquarters and Headquarters and Service Troop, 26th Cavalry. Captain Jones entered upon this task with characteristic energy and efficiency.

After selecting key men from all sections of Regimental Headquarters and the Communications Platoon, he merged them. And with those few specialists already assigned to the North Luzon Force Headquarters and such men as the Chief of Staff was able to obtain from other units the nucleus was formed of what was to be



come not only North Luzon Force Headquarters but eventually Headquarters I Philippine Corps.

This, of course, left the 26th Cavalry short of trained personnel in various headquarters sections, but due to the foresight of the Regimental Executive Officer, Lieutenant Colonel Lee C. Vance, it was not as bad as it might have been. Colonel Vance, a veteran of World War I, knew the value of replacements for trained personnel in these vital categories and had insisted that every man, including scout-car drivers and pack-horse drivers, in the Scout Car and Communications Platoons be trained as radio operators and that all clerks in Regimental Headquarters be trained to fill one or more other jobs than their own.

Such foresight enabled us to supply North Luzon Force Headquarters with some of our most experienced men without entirely crippling ourselves. Fortunately, we were able to later relieve Captain Jones with a younger officer and Captain Jones returned to weld our depleted communications personnel into a most dependable and efficient unit.

Clark Field, some 60 miles north of Manila, as all the world knows, was bombed at 12:35 P.M. on December 8, 1941, and the best of our heavy bombers were destroyed. The Japs devoted most of their attention to Clark Field and what few planes attacked Fort Stotsenburg did little damage. Our troops were safe in their concealed bivouacs north of the post.

The somewhat confused situation began to clarify itself on December 9. Further news of Pearl Harbor was received and rumors of enemy landings in North Luzon were investigated and found to be false. Information was also received of hostile attacks on Nichols Field and Iba Field. It was rapidly becoming apparent that the enemy had almost wiped out our small air force with his first attack.

General Wainwright issued instructions that the 26th Cavalry constitute a mobile reserve for the North Luzon Force and remain in the vicinity of Fort Stotsenburg in close contact with his headquarters until further notice.

Disposition of the regiment remained unchanged. Word from Troop F, en route from Manila, indicated that it would arrive at Fort Stotsenburg the next morning.

Shortly before noon on December 10, Troop F arrived on schedule. Just about this time North Luzon Force Headquarters received word from somewhere (source unknown by author), that enemy paratroopers were landing in the vicinity of Cabiao, about 25 miles northeast of Stotsenburg, and the regiment was directed to send a combat group to that area to locate and destroy the paratroops and to establish a defensive screen northeast of Clark Field.

The regiment's Second Squadron, reinforced by a platoon of tanks, a platoon of self-propelled 75mm guns and one section of scout cars, all under the command of Major T. J. H. Trapnell, was dispatched immediately

to find and smash the alleged enemy paratroopers near Cabiao. The balance of the regiment, less Troop G, established the screen from Mabalacat to Wardville. Troop G had left earlier in the day to relieve the detachment of Troop B at Baler and Dingalan. Troop G's headquarters was to be at Bongabong and it would be in radio contact with observation detachments at Baler and Dingalan and Regimental Headquarters at Fort Stotsenburg. The Second Squadron got away on its mission shortly after noon, but because of the dispersed positions of the other troops, the screen was not completely set until 4:30 P.M.

Negative reports had been received by the early morning of December 11, from the Second Squadron, which had thoroughly combed the Cabiao area and found no trace of enemy paratroops. Reports from natives in the area were also negative. By mid-morning the Second Squadron had been ordered back to the post and the screen east of Clark Field was relieved. This time the regiment took up somewhat more congested bivouac positions on the southern outskirts of Fort Stotsenburg proper, at Tacondo Hill, and the Baluga Village. These positions were neither as safe nor as comfortable as those in the Bambam area, but it was decided that some safety must be sacrificed in order that the regiment might be immediately available in case of another and more serious hostile paratroop alert. This decision cost a few casualties in men and animals during the ensuing day-and-a-half of bombing.

#### FIRST HOSTILE LANDING

Information that the first hostile landing had been made at Aparri on the northern tip of Luzon was received on December 12. General Wainwright ordered one section of the Scout Car platoon to report at once to Colonel Townsend at Tuggerao in the Cagayan Valley to locate the farthest Jap advance and for other reconnaissance and communication duty. Colonel Townsend was in command of such units of the Philippine Army as had been mobilized in the area.

All officers of the regiment were assembled at 10:30 A.M. at Regimental Headquarters for a special officers' call when the most severe air attack since the original attack on Clark Field was received. This time the attack appeared to be launched at Fort Stotsenburg, with the Quartermaster and 26th Cavalry areas receiving the worst of it. Regimental Headquarters especially was severely bombed. The assembled officers and men were safe in foxholes about the building, and although somewhat crowded as the shelters were not constructed to hold all officers of the regiment, no one was seriously injured.

However, the last car of the detail en route to Tuggerao, under the command of Lieutenant Cunningham, was hit as it passed the headquarters building and the driver was killed. He was replaced and the car proceeded to join the balance of the section before the second wave of planes struck. Several of the barracks



and stables were hit, but as they had been evacuated earlier by the regiment few casualties were suffered. The Machine-Gun Troop stable was being used to house the animals of the Regimental Staff and the elements of the Machine-Gun Troop protecting headquarters. The animal casualties in this stable during the attack were heavy. Troops bivouacked at Tacondo and Baluga Village escaped with minor casualties.

As a result of the raid, it was decided to request permission of General Wainwright to move the entire regiment to a more concealed position at Bartio Pangpang, just south of Fort Stotsenburg and Clark Field. This permission was granted and the regiment moved by echelons on the morning of December 13, beginning at 9:12 A.M. Severe enemy air raids were made during the movement, but the dispersed formations and alert air guards prevented casualties.

While this movement was taking place, Captain Jones, Regimental Communications Officer, who had been engaged in organizing the North Luzon Force Headquarters Detachment, was relieved by Lieutenant William P. Liesenring. Captain Jones then resumed his duties with the regiment. He also brought the news that the Japs had made another landing, this time at Vigan and in strength; that General Wainwright was moving his headquarters to Bambam, a small sugar refining town several miles north of Fort Stotsenburg on the Manila North Road; and that Captain Alva R. Fitch was to be attached to us with Battery A, 23rd Field Artillery (pack) and would join us the next day.

The regiment received orders on December 14, from General Wainwright to move to Bambam and to go into bivouac there as Force Reserve. In accordance with these orders, we moved out at 7 P.M. and marched toward Bambam under cover of darkness. The march was completed at 1 A.M. on December 15, without incident, and the regiment bivouacked with Battery A, 23rd Field Artillery about a mile from North Luzon Force Headquarters.

While camped at Bambam information was received that the Quartermaster in Manila had a surplus of new motorcycles and that we could have as many as 13 if we wanted them. The regiment had all the motorcycles normally allotted to it and few extra drivers. However, it was determined that the mortality rate of these vehicles would be high where we were going and that their value for messengers and liaison was great. Therefore, a group of junior officers and a few men of Headquarters Troop were dispatched to Manila for the motorcycles. It was planned to get these vehicles to the combat area by relays and train the drivers en route. This proved to be a fortunate decision, as the mortality of motorcycles did prove to be high in days following. The vehicles proved to be of inestimable value to staff officers and organization commanders as a quick means of individual transportation and communication over our rather wide area of operation during the next two weeks.

The regiment remained in Bambam through December 15 and 16, while events moved rapidly in the north. The hostile landing at Vigan was found to be so strong that our green Philippine Army troops were unable to cope with it. General Wainwright instructed the 26th Cavalry to move northward to Rosales on the Agno River in order to be in a better position to launch a counterattack at any breakthrough in the North Luzon Force line from the southern arm of Lingayan Gulf to Vigan. He, of course, was particularly concerned with the landings at Vigan, but could not discount the possibility of other landings farther south if all our troops were pushed north to counter that threat.

Two other events occurred at this time that were to be long felt in the regiment. Captain Fitch and his battery of pack artillery were relieved from attachment to the regiment and were sent south. The reasons for this order, doubtless excellent, were never quite understood by the regiment and many times in the next few weeks we mourned the loss of this experienced officer and his highly trained unit. He proved his worth and that of his outfit a thousandfold later in Bataan and we needed him badly in our subsequent actions in the Northern Luzon Campaign. It left us entirely without artillery support throughout the action.

The other event of importance was the detachment of Captain J. C. Blanning, an officer of considerable service and great ability, to relieve Lieutenant Liesenring as Headquarters Commandant North Luzon Force. It had been decided that an officer of greater experience was needed there until the headquarters was completely organized and running smoothly. We did not get Captain Blanning back until late in January and had meanwhile lost our senior Squadron Commander, Major Hubert W. Ketchum, and sorely needed Blanning's experience and proven ability. However, these things are the minor troubles of all wars and we managed without both artillery and one of our best officers. I truly believe that our regiment would have been almost twice as effective, however, had we had Captain Fitch's artillery support and it certainly would have operated more effectively after Major Ketchum's death had Captain Blanning been available to take over his command.

The move to Rosales was broken into two marches with a stop at Gerona. The regiment left Bambam at 11:30 P.M., December 16, arriving at Gerona about 2:36 A.M., December 17. It moved out for Rosales at 7:30 that night, arriving at 1:30 A.M., December 18, where it remained until December 21. While at Rosales a section of self-propelled 75mm guns was attached to the regiment, but these too were relieved before we moved on.

Orders were received on December 20, to send one troop by bus (dismounted) to Bontoc, Mountain Province, with the mission of covering the road through Cervantes from the Jap-held western coastal plain and to prevent the enemy from using the road to attack



Baguio from the rear. Troop C was assigned this mission and left Rosales about noon, December 20, by bus with a pack radio for communications.

#### JAPS EXPAND BEACHHEAD

By December 21, the Japanese had expanded their beachhead at Vigan and pushed back our Philippine Army defenders in that area. Lieutenant Colonel Moses and Major Noble with a battalion each of the 13th and 12th Infantry (PA) were struck hard by the enemy just north of San Fernando, La Union. Their untrained Philippine Army units, though well led, were overpowered by the superior enemy forces and were dispersed and forced to take to the mountains. General Wainwright planned a swift counterattack up the narrow coastal plain and ordered the 26th Cavalry north to Rosario to participate in the attack. The regiment moved out by road from Rosales at 1:30 P.M. on December 21. This necessitated another daylight march subject to enemy air attack, but there was no choice. The situation permitted no delay.

En route, Colonel Pierce received orders attaching the regiment to the 11th Division, Philippine Army, commanded by Brigadier General W. E. Brougher, and was directed to halt at Pozzorubio and await orders. It must be noted here that the section of self-propelled 75s did not accompany us on this march. They had been detached just before our departure so that we headed for our first ground contact with a well armed enemy without artillery support and no antitank weapons larger than 50 caliber machine guns.

The regiment arrived at Pozzorubio at about 7 P.M., December 21, and bivouacked to await orders from General Brougher. At about 2 P.M., December 22, Major H. J. Fleeger, Regimental S-1, arrived from General Brougher's headquarters with orders and grave news. The regiment was to move on Rosario at once where we would receive further orders. The news was that the 71st Infantry, Philippine Army, under Colonel Donald Bonnett, and some artillery had moved up the coastal plain to attack the enemy north of San Fernando, La Union, and to delay them until a full-scale counterattack could be launched. The Japanese, however, had landed more troops at Bauang and a heavy force at Agoo and things looked serious for Colonel Bonnett's force.

The regiment moved out of Pozzorubio at 5 A.M., December 22, en route to Rosario. The Scout Car Platoon (less detachments) under Lieutenant George was sent to Damortis to contact the enemy in the vicinity of Agoo and notify the regiment by radio of enemy strength, disposition, and composition. It was also directed to contact all friendly units in the area and to notify the regiment of their numbers and disposition.

The regiment arrived at Rosario about 8 A.M. without having heard from the scout cars. But while halted in Rosario, word came from Lieutenant George that he had arrived at Damortis, had encountered oppo-

sition north of that town, and was unable to proceed farther. He had sighted, however, at least 12 transport and six naval craft off Agoo and the enemy was thick just north of there. He was able to find only scattered groups of Philippine Army troops in the area with no unified command.

This dispatch from Lieutenant George had no sooner arrived than Major Fleeger returned from General Brougher's Headquarters with more definite orders. Colonel Bonnett's column had been hit from the front and flank by the enemy and most of it cut off. The rear-most portion of the column was retreating southward but nothing was known of Bonnett and the majority of his command. It was later learned that he had managed to move up the Naguilian Trail to Baguio with most of his force intact. Major Fleeger had received orders for the regiment from General Wainwright through General Brougher. The regiment was detached from the 11th Division and attached to the 71st Division, commanded by Brigadier General Clyde A. Selleck, with which General Wainwright intended to relieve the pressure on the 11th Division's right flank. The mission of the 26th Cavalry was a hard one, to hold the enemy north of the Damortis-Rosario road and, if forced to withdraw, to execute maximum delay along the axis Damortis-Rosario thereby protecting the north flank of the North Luzon Force.

A moment's study of the map will reveal that this mission was quite a large order. The regiment, 789 strong, was weakened by the loss of about 85 key men and officers who had been detached to Philippine Army units and the two complete troops which had been detached on separate missions, Troop C at Bontoc and Troop G at Bongabong. A section of scout cars was still in the Cagayan Valley under Colonel Townsend. This meant that each squadron was reduced to two troops and the Headquarters Troop was reduced by radio and scout car sections at Tuguegatao and Bongabong. With this reduced force, unsupported by other arms, we had to hold back the entire Japanese strength of a major landing on Lingayan Gulf.

#### ORDERED TO HOLD ENEMY

The road from Rosario to Damortis was a well surfaced road running through the foothills. To the north rose the mountains of Northern Luzon and to the south lay rather broken wooded country. The road was extremely winding, with few suitable places for delaying action because of the difficulty in finding a position offering a good field of fire on our approaching enemy. The distance from Rosario to Damortis is about 10 miles, rather a long line for our reduced forces to carry out the assigned mission to "hold the enemy north of the Rosario-Damortis road." Five trails through the mountains led from Agoo area, now in Japanese hands, to various points on the Rosario-Damortis road offering excellent opportunity for enemy outflanking movements as we moved on to Damortis.



A short discussion of the situation was held by the Commanding Officer and his staff at Rosario. Colonel Pierce decided to move at once to Damortis and contact the enemy as far forward as possible. Troop F would be divided into three strong combat patrols of a platoon each reinforced by a light machine-gun squad with one patrol placed on each of the major trails leading northward from the Rosario-Damortis road with orders to push forward until opposition was encountered and then to delay the advance of enemy units to the utmost, meanwhile notifying Commanding Officer Troop F at Rosario of the situation by messenger. Small patrols were placed on the other two trails. As will be seen later, this diversion of a strong part of our already weakened force, though seemingly extravagant, actually saved the regiment from being completely outflanked early in the day and possibly destroyed. Colonel Pierce and the S-3 moved forward by motorcycle ahead of the regiment to Damortis to contact Lieutenant George and the Scout Car Platoon with the intention of gaining what information was available and preparing a plan of action prior to the arrival of the regiment.

Colonel Pierce reached Damortis at about 9 A.M. and contacted Lieutenant George who informed him that his cars were in contact with strong enemy outposts about 1000 yards north of the town and could not advance farther. Colonel Pierce climbed a high hill on the northwestern outskirts of the town from which he could observe as far north as Agoo. Enemy shipping off Agoo was estimated to be 24 transports, four destroyers and one cruiser but the distance was too great to observe accurately. It was obvious that one or more aircraft carriers were near by as the air was full of hostile dive-bombers who could be observed making repeated attacks on what we feared was our column moving westward on the highway. Considerable activity was observed at Agoo, assumed to be the landing and organization of enemy ground units. Small fast speedboats were maneuvering off Damortis just beyond range of the 50 caliber machine guns on our scout cars.

Colonel Pierce, after looking the situation over carefully and comparing notes with his S-3, decided that an attack on such obviously superior forces was out of the question and determined to execute a series of delaying actions along the Damortis-Rosario road in an attempt to hold back the enemy force that was apparently forming to attack the right flank of our 11th Division. By this time the leading elements of the regiment were almost within sight and it was necessary to select a general defensive line from the observation point now occupied by the Commanding Officer and his S-3. Such long distance selection of a defensive position is not to be recommended but time was short. The enemy scouts and advance units could already be seen feeling out our scout car positions and it was imperative that some sort of position be occupied at once or Damortis would be occupied without resistance.

It was now about 10:30 A.M. and Colonel Pierce sent for his Executive Officer and Squadron Commanders, who joined him on the hill. They reported severe losses from dive-bombers on the march from Rosario in spite of dispersed march formation. The column had been constantly under attack by successive groups of hostile planes.

Colonel Pierce received this information quietly—because he had observed the planes circling and diving on the road all through his observation of the enemy. We were thankful the losses were no worse. Orders were issued at this point for the First Squadron (less Troop C now at Bontoc), with one platoon of heavy machine guns and one section of 50s attached, to take up a delaying position about 600 yards north and east of Damortis. One section of 50s was to protect the left and rear of the regiment from a position on the highway just south of the OP hill near the Regimental Command Post and Troop E would occupy a second delaying position about five kilometers to the east, on the Damortis-Rosario road. The remainder of Machine-Gun Troop would constitute the reserve in a draw just south of Regimental CP at the foot of the OP hill. Horses were to be kept mobile and delaying action by fire would be initiated at the earliest practicable moment.

Upon receipt of these orders the Squadron Commanders moved out at once and started to put their troops into position. Major Hubert Ketchum, Commander of the First Squadron, was forced to make his reconnaissance en route as time did not permit of prior reconnaissance on the ground. He put Troop A on the right and Troop B on the left with heavy machine guns and 50s attached to Troop B, which had the sector through which the highway from Damortis to Agoo ran. Troop Commanders were directed to select suitable positions along the general line and to maintain contact between their flanks.

The only positions available were on rolling ground completely devoid of overhead cover so the entire maneuver was conducted under harassment of hostile planes. Only extreme dispersion permitted its accomplishment at all. The superb discipline of these Philippine Scouts who went calmly about their business under a hail of fragmentation bombs and strafing was a source of inspiration and pride to every American officer in the regiment.

Tentative positions were occupied promptly and the fire of hostile patrols and advance elements returned. The line was gradually rectified until it bore some semblance to a defensive position although its length and the necessity of keeping the animals mobile necessitated the establishment of only one thin line.

#### ENEMY FORMS FOR ATTACK

Shortly after 12 Noon, it was obvious that the enemy was forming for a serious attack and at 1 P.M. it came. The attack was made by tanks and infantry supported



by 105 artillery, naval gunfire from the ships in the bay and by swarms of navy dive-bombers operating undisturbed overhead. It was obvious as the attack developed that our thin line could not hope to withstand this attack for long and that little time was left for withdrawal if we expected to be of use at the second delaying position now being prepared by Troop E. Therefore, Major Ketchum ordered a withdrawal by troops from the left. Before he could extricate his units, however, he had suffered heavy casualties including Lieutenant Allen of Machine-Gun Troop who with most of his platoon had been overrun by enemy tanks on the level ground on the left flank. Covered by Troop A and the Regimental Reserve of the remainder of Machine-Gun Troop, Major Ketchum managed to extricate the major portion of his force and poured through a low saddle just north of the Regimental CP at a gallop.

This is one time in history when a regimental headquarters acted as rear guard for the fighting units of the regiment. Led by Colonel Pierce in person, the CP personnel and Machine-Gun Troop prepared to hold off the enemy from the direction of Damortis until Major Ketchum cleared the area and was en route to the second delaying position. Fortunately, however, the enemy tanks hesitated to push their noses around the hill, fearing a trap perhaps, and Colonel Pierce was able to send his CP and remaining elements of Machine-Gun Troop after the First Squadron. Troop A withdrew cross country to the east. Colonel Pierce followed last in a motorcycle and sidecar driven by an extremely nervous S-3. The entire withdrawal was under heavy aerial attack by enemy dive-bombers and all in all served as a rather strenuous introduction to fire for the 26th Cavalry.

Contact with the enemy was broken off at Damortis about 3:30 P.M. and the balance of the regiment joined Troop E on the second delaying position about five kilometers east of Damortis. Troop A, the last to withdraw from Damortis, was cut off from the road by enemy tanks and was forced to withdraw cross country through the foothills to the north, but they arrived at the next position by about 5 P.M.

The regimental plan of action at this time was to hold the second delaying position through the night and as long as possible the next day. A platoon of tanks had been sent forward from Rosario by Brigadier General James R. N. Weaver to operate in front of the second delaying position which we were organizing. These tanks were to cover us and to give warning of the approach of the enemy until 8 P.M., at which time they were to withdraw through our lines to an assembly area near Rosario. This was perhaps not a true tank mission, but the situation was unusual and use had to be made of every unit in the area. This light tank platoon was operating under General Weaver. It was not attached to the 26th Cavalry, and General Wainwright states in his book that even he did not have command over it. The tanks in North Luzon were in his area

but not assigned to his command. This situation caused many mixups in the ensuing two weeks, the first of which was about to take place in our own sector.

Contact with the enemy in our front had been lost in our withdrawal and had not been regained just prior to dark. However, reports from Troop F were that its patrols on the mountain trails to the north were heavily engaged with strong enemy groups attempting to outflank the regiment and our patrols were being slowly forced back by superior numbers and weapons.

Just prior to dusk, Captain Paul M. Jones, who had been on a quick trip to Rosario with Colonel Pierce for a conference with Brigadier General Selleck, Commanding General of the 71st Division, and General Weaver, returned to the position with a change of orders. Our second delaying position would not be held through the night, but the regiment would withdraw at dusk to the barrio of Agat where the new bridge crossed the Bued River and would take up position there covering the right flank of the 71st Division. The tank platoon, now in our front, would follow the column to prevent surprise armored attacks while en route. Colonel Pierce had been taken back by General Selleck to a conference at his headquarters and would meet the regiment at Agat.

As it was getting dark when Captain Jones arrived with these orders, the regiment was immediately pulled out of its position and formed on the road for the march to the Bued River position. As the units were forming, the tank platoon, which had been in our front, began coming past our position. Lieutenant Colonel Lee C. Vance, Executive Officer, 26th Cavalry, stopped the first tank and discovered from the platoon leader that he was following out his original orders to withdraw through our lines at 8 P.M., he had received no change of orders. Colonel Vance told him of the orders we had received; but, as the tanks were not attached to the regiment, he could do nothing more, and the tank platoon leader continued to the rear with the 26th Cavalry S-3 following on his motorcycle to contact the tank commander at Rosario and get things straightened out.

Colonel Vance sent word of this latest complication to Captain Wheeler, Commander of Troop E, whose troop was furnishing the outposts and rear guard, but it was too late. On the heels of the last American tank came the first Japanese tank. When Captain Wheeler, who was inspecting his outpost on the road, tried to find out how many more tanks were to come he was astonished to see a Jap pop his head out of the turret. Captain Wheeler fired once, and probably missed, and then the Jap tank moved on toward the regiment. The only warning Captain Wheeler was able to give was by opening fire uselessly upon these tanks with his small caliber weapons, but by this time the leading Jap tank was already in the midst of the regiment on the road and all hell broke loose in the dark.

*(To be continued)*



# Armor and Mobility

by Colonel Hayden A. Sears\*

CARDED

**It is armor that restored mobility to military land operations and prevented stabilization in the war just past.**

ARMOR, to the modern combat soldier, quite simply means tanks and the supporting weapons of the other arms, both ground and air, that accompany these vehicles. Likewise, the term armored operations immediately evokes a mental image of tanks and their supporting elements formed into an armored combined arms team for the purpose of accomplishing a breakthrough or penetrating an enemy line to destroy vital rear installations and communications of the enemy (which it has been impossible for the air arm to totally nullify) by complete exploitation of the assets of firepower, mobility, and personnel protection embodied in such a team. The nucleus of the armored combined arms team is the tank, and in this, as in all other armored formations, additional organic weapons are assigned to roles in support of the tank effort.

It is apparent in any review of World War II that, in all theaters, on all types of strategic terrain, under a wide range of climatic conditions, and in varying types of operations (land, water, and air), armor not only played its part, but without it, conclusive successes were seldom achieved. Further consideration also reveals that in continental operations of major magnitude, strategic successes were never achieved without the powerful contribution of armor employed in a spearhead role. A comparison of the fluid techniques of the recent war with the static type of operation prevailing during World War I leads us to conclude that:

1. Armor restored the power of maneuver to the battlefield.
2. Armor prevented a stabilized war in trenches and fortifications.
3. Armor had a direct and compelling influence on the tactics and strategy employed by both sides.
4. Armor can operate on any type of strategic terrain.
5. Armored divisions are organized primarily for offensive action in hostile rear areas.
6. Armored successes are generally achieved after initial tank-supported operations have created the opportunity for exploitation.
7. Armored operations should be closely supported

by other equally mobile troops.

8. Armor, *as such*, has earned its right to ground arm status and is here to stay.

The question now arises, what is the tank? Is it a mobile pillbox? Is it artillery? Is it an armored vehicle? Is it a combat vehicle? Obviously, the tank could not be defined as a mobile pillbox since it is capable of strategic movement; neither could it be classed as artillery because it closes with the enemy. The tank is an armored vehicle, but this designation is inconclusive since it is also a fighting or combat vehicle. Webster defines the tank as "a self-propelling engine of destruction, consisting of a casement of heavy armor plates mounted on a tractor and armed with guns or machine guns or both." From the strictly military point of view, the tank may be described as an armored vehicle designed to provide mobile firepower, as well as sufficient protection to personnel to permit engaging the enemy at close range as dictated by the tactical requirements of fluid warfare. Logically, the next question is, what is armor? We may explain that it is a collection of tanks supported by all other ground arms and services, the organization being designed primarily for offensive operations. It is contemplated that tanks be used where they may be employed most effectively to win battles; armor shall be employed in the same fashion to win wars. To accomplish this, armor must be mobile if it is to be employed in strategic offensive operations and must possess the mobility of the troops it supports if it is to be employed on limited tactical missions.

Mobility is a quality second in importance only to the firepower potential of the armored combat vehicle, and is one which must be retained in these vehicles and their supporting weapons. Broadening of the powers of mobility through technological advancement is a future possibility. The ensuing paragraphs are concerned with the various aspects of mobility as it applies to armor in future concepts of warfare.

The possible means of transport for armor of the future are varied. Armored formations have been land-borne and waterborne in the past, and future development is projected to make them airborne. The recent

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war was conducted and ended on a mobile scale never achieved in World War I, and there is no reason to presume that World War III—should it occur—would not begin on a scale of mobility at least equal and perhaps superior to that so recently achieved in World War II. Greater mobility with increased firepower, is the goal for the future; any increase in armor protection to troops may become of secondary concern. With space being conquered by rocket or jet propulsion, and with transonic and supersonic speeds being reached in the stratosphere, what is the future of armor when considered in terms of the mobility of tomorrow?

That the armored successes of World War II were generally achieved after initial tank-supported operations had created the opportunity for exploitation, is a known fact. The initial question then in the matter of mobility becomes, how shall initial operations be supported with tanks? How these successes shall be exploited with armor, which has so thoroughly demonstrated its ability as the ideal modern arm of mobility to perform such missions, immediately follows.

Land and waterborne operations, using tanks in a supporting role, have been accomplished successfully. There is every reason to suppose that with the advance of technological development, armored airborne operations may be made practicable and the facility of waterborne operations increased. World War II precipitated the development of various ship-to-shore methods of transporting armored vehicles and the development of special amphibian fighting vehicles. These speculative amphibious ideas culminated in the successful waterborne invasions of Italy and France, and the island-hopping operations in the Pacific. There is no reason to presume that their counterparts, using air as an operating medium, will not be achieved in the somewhat unpredictable future.

Modern developments contemplate infantry coming under proximity fuzes, and the trend of personnel transport development is toward the fully armored carrier and the discard of the lighter open types of the last war. This trend projects an increase in load weights. This increase in weight requires increased lift if the operation is to be airborne, and therefore the infantry and tank problems in future operations will become more closely related. The matter of buoyancy pertaining to armored combat vehicles, having been more nearly solved in previous amphibious operations, poses no new consideration for armored personnel carriers to be employed in future amphibious operation, but does demand development with a view to increasing the mobility and maneuverability of the vehicles and vessels involved, and consequently the tempo of such operations. In airborne operations embracing the transport of armored vehicles for both combat and transport, however, lift is the controlling factor. Without lift, neither armor nor its supporting troops will remain truly mobile as that term may imply tomorrow. Armor of the future may be forced to

be relatively light in weight if the full advantages of available air-lift are to be realized.

The basic principles of warfare remain unchanged. Tactics of the battlefield will change with improvement in weapons, employment of higher order explosives in these weapons, and improved technique on the part of immediate tactical commanders in the handling of weapons so as to produce maximum devastation. Since it is an accepted principle that battle successes are achieved as the result of concentration as opposed to dissipation, emphasis must again be placed on mobility to enable rapid and decisive concentrations to be made, and equally rapid closing with the enemy to be effected. This rapid closing may well become a most vital consideration in warfare of the future. An equally rapid dispersion sufficient to guarantee maximum protection but not so great as to imperil security within the area achieved, must be executed after success has been attained. Armor of the future must possess superior tactical as well as superior strategic mobility.

Experiences of World War II demonstrated that it was practical to establish beachheads using armor support and to bring armored formations into those beachheads to break out and exploit. By the same token, it is feasible to envision vertical invasions and the establishment of airheads containing supporting armor; the introduction of armored formations into these airheads would follow for the same purposes as those in beachhead operations. This cannot occur today and might be incapable of accomplishment tomorrow; however, it is a possibility of the future which cannot be overlooked.

Modern organization also appears to envision increased mobility. The armored division has been given an additional combat command. This provides another tactical headquarters equal in all respects to the two already existing and should further facilitate the conduct of mobile operations. The proposed infantry division has been provided with the equivalent of two tank battalions and contains a reconnaissance company as organic armor. In addition, it will eventually possess artillery of the identical self-propelled types found in the armored division, and armored personnel carriers in sufficient numbers to transport a combat team. This makes it possible for the division commander in fluid warfare to exploit his situation immediately without waiting for the addition of armor, inasmuch as the equivalent of a combat command of identical capabilities with those of the armored division can be organized from his own organic units. The trend in the ground divisions is toward increased mobility combined with armor protection. These changes will obviously tend to prevent stabilization in foxholes, trenches, and fortifications, and will enable the infantry division of the future to engage in a more mobile and fluid type of warfare than has hitherto been possible. These potentialities indicate that it will be necessary for all infantry of tomorrow to be trained in the mobile techniques of



the armored infantry of today if the full advantage of the new capabilities is to be realized. Commanders of the future must possess that vision which will enable them to perceive their possibilities and be prepared to exploit their capabilities through the full use of surprise achieved through mobility, properly followed up.

Current developments are leading to a much more mobile type of thought. Flights in the sub-arctic are taking place daily across the North Atlantic and in the northern reaches of America, Europe, and Asia. During the summer months the waters bordering on the northern coasts of these continents are open to waterborne operations. Flights across the top of the world, while not commonplace, are no novelty and have clearly demonstrated that the shortest routes of travel between the industrial sections of both continents lie via these arctic routes and are capable of accomplishment. That such flights cannot be made round-trip is apparent, for the fuel consumption involved is in excess of the capacity of all but the largest planes, and but few, if any, with such capabilities now exist.

An over-all plan envisioning the use of identical armored formations for all the mobile purposes heretofore explored is, of course, impracticable. Just as we weighted our successful combat formations in accordance with the immediate existing situations by reducing or increasing our percentage of armor, so perhaps in the future must we vary the composition of our armored formations by combination of different weights of armored vehicles according to their capabilities in the areas of contemplated employment, as well as according to the means of transport available to carry them to their destination in the proposed theater of operations. While it is desirable and may ultimately be practicable to manufacture one family of armored vehicles for all types of operations, the attainment of

such an objective is not as yet a foreseeable fact capable of accomplishment with the means currently or immediately projected. Such development for which a demand may eventually exist, while possibly desirable, would be laborious. It should be approached from many angles. To narrow the development field to one type might well mean the exclusion of many others with admirable features. Armor must have its various types of combat vehicles, both in its principal echelons and in its supporting elements, for the day of a universal armored fighting vehicle has not yet arrived.

Despite the implications of new atomic age developments which pointed toward greater emphasis on mechanical instruments of war and less emphasis on the human element involved, it is well to remember that wars will continue to be fought by men. It is interesting to note that no less an eminent scientist than Dr. Vannevar Bush, who made numerous contributions to the war effort as Director of the Office of Scientific Research and Development, stated before a House Committee on Postwar Military Policy, "Wars are fought by men. The fighting strength of this country rests on many factors. It rests especially upon the men in the ranks, upon their ruggedness of body and mind, upon their fighting spirit, upon their belief in their cause as they come to define it." Here, we find acknowledgment of the basic principle that wars are won by the men on the ground, and a discount of the 100% automatic robot idea.

It is armor that restored mobility to military land operations and prevented stabilization in the war just past. It is armor and its armored auxiliaries that, with increased and possibly three-dimensional mobility, will prevent the stagnation of situations in the future and challenge the current tactical and strategical concepts of the employment of ground forces on a global basis.



## 106th Cavalry Squadron Officers First National Guardsmen To Achieve 100% Mem- bership In Association

First National Guard Cavalry Squadron to achieve 100 per cent membership among its officer personnel in the U.S. Armored Cavalry Association is the 106th Cavalry Reconnaissance Squadron (Mechanized) stationed at Springfield, Illinois, under the command of Lieutenant Colonel Mark S. Plaisted.

This unit which served in Panama, Normandy, Northern France, Germany, and Central Europe during World War II, has just recently been reactivated as a peacetime unit of the Illinois National Guard.



# The Future Of Armor As The Arm Of Mobility\*

by Major A. J. Wilson, M. C.

ANY paper on a military subject written at the present moment is necessarily colored and affected by the views of the writer on nuclear energy as applied to land warfare. To leave this factor out of account in considering any current military problem is to play Hamlet without the Prince with a vengeance, and leads inevitably to the formulation of false ideas and conclusions. This paper, then, is based on the thesis that nuclear warfare between any two Powers or groups of Powers in the world will not be a practical proposition for the next ten years. Only one Power—the U.S.A., is in full possession both of the scientific secrets and of the necessary industrial potential and apparatus for the conversion of nuclear energy to war purposes, and it is furthermore doubtful whether any Power would consider it either expedient or wise to launch a nuclear *blitzkrieg* without warning on an adversary Power, both because of the fear of reprisals and because of the disastrous effect such an assault would have on the conscience of the civilized world. It can therefore with a reasonable degree of security be assumed that nuclear warfare on the lines envisaged by General Taker in "Nuclear Energy and War"<sup>1</sup> will not develop at the start of a war within the next ten years.

Leaving a nuclear *blitzkrieg* temporarily at any rate out of account, we must now consider the probable pattern of the early stages of any future world war. The pattern of war throughout the ages shows that one war has nearly always begun where its predecessor left off; periods of peace between wars are seldom marked by any very novel tactical or strategical conceptions. For example, the pattern of the early stages of the 1914-18 war was far more akin to the Franco-Prussian war than to its final stages in 1918, while the similarity of the first months of the 1939-45 war in the West to the trench warfare of 1914-18 is even more marked. At the same time there was singularly little resemblance between Maginot warfare in 1939 and the patterns of the battle of Normandy and the Rhine crossing in 1944-45.

It is therefore reasonable to deduce that any future land conflict during the next 10 years between major Powers is likely to develop at first along the lines of present-day warfare, always assuming that nuclear war-

fare be avoided at the start of the war for the reasons already outlined. This is not to deny that there may be minor changes, but these are likely to be matters of degree only; the basic pattern and tempo are likely at first to be approximately the same.

Particularly up to the end of the Tunisian campaign, and to a slightly less degree afterwards, armored forces were without doubt the dominant arm on land during the 1939-45 war. The German onslaught on Poland, the collapse of France, the German victories in Russia in 1941—all these were due in the last resort to the power of armored forces. Warfare in the Western Desert and in Tunisia mainly also followed this trend, though towards the end of the period the dominance of armor on both sides was greatly reduced by the improvement in the caliber and performance of antitank weapons. Nevertheless the dominance of armor was reflected in the concentration with which commanders at all levels studied their tank "runner" states, and it became second nature to base a plan on the quantity and quality of armor available on either side. Infantry were reduced at least in their own minds if not in those of their commanders to the status of "tank followers," and were relegated to the roles of holders of a firm base and "moppers up" of pockets of resistance which had been by-passed or otherwise neglected by the all-dominant armor.

The Battle of Alamein and the stiff, dour fighting of the Tunisian campaign did much to redress the balance, which in Italy during the Winter campaigns of 1943-44 and 1944-45 even became tilted toward infantry as the dominant arm. Nevertheless, as soon as the sun shone and the mud of the Winter and early Spring developed into the dust of early Summer, it was to armor that commanders, whether in Western Europe or in the Mediterranean theater, looked for their decisive successes. The advances in Italy from Cassino to Florence (1944) and the Senio to the Alps (1945) were both predominantly armored operations after an initial infantry dogfight, while in France and Germany the pursuits from Falaise to the Seine and Scheldt and from the Rhine to the surrender on Luneburg Heath were equally operations in which armored formations played the leading role. It is thus evident that armor was the dominant arm on land during the late war, even if many of its successes could not have been achieved without a previous victory in the infantry battle.

\*Journal of the Royal United Service Institution.

<sup>1</sup>January, 1945, number of the United Service Institution of India Journal: "Nuclear Energy and War," by Major General F. I. S. Taker, C.B., D.S.O., O.B.E.



To what factor did armor primarily owe its prominent role in the war just concluded? A glance at the history and development of war, however cursory, makes this abundantly clear. During the war of 1939-45 armored forces constituted the *arm of mobility*, which whether represented by the elephants of the Carthaginians, the knights of the Middle Ages, the cavalry of Prince Rupert and Cromwell in the XVII Century or the light brigades of the Peninsular War, has always held the center of the military stage. The only exception to this tendency occurred on the Western Front during the 1914-18 war, when tactical and strategical conceptions on both sides for a variety of reasons reached a very low level. The later stages of the Palestine campaign showed that the apparent exception in the West to the law of the dominance of the arm of mobility was only occasioned by a surprising lack of military understanding, and the trench warfare of 1914-18 can therefore be interpreted not as an exception to a law of history but as the logical outcome of a lack of tactical and strategical insight on the part of the commanders on both sides of "No Man's Land."

Armor, then, owes its dominant position during the 1939-45 war to the fact that it has throughout constituted the *arm of mobility*. We must now consider how far it is likely in the future to retain this position of dominance. The recent war shows the gradual conquest of the tank by the antitank weapon. Brigadier Carver's article "Tank and Anti-tank"<sup>2</sup> makes it clear that latterly even the heaviest tank was unable to advance in face of an antitank screen unless preceded by an air or artillery barrage on the lines of 1914-18. Furthermore the well trained and determined infantryman with his bazooka in close country was able to halt a tank attack, unless the latter was well supported and accompanied by infantry. The contrast between the standard organizations of the British armored division of 1941 (two armored brigades, one infantry battalion) and the 6th British Armored Division in Italy, 1944-45 (one armored brigade, two infantry brigades) shows the decline of the power of the tank. It is in fact almost true to say that, except against disorganized opposition which has already been defeated in the infantry battle, the tank is now no longer a "matchwinner" but has been reduced to the status of a supporting arm.

If, however, armored formations are incapable of assaulting prepared positions owing to the dominance of the well sited and dug-in antitank gun, they remain the masters of the towed antitank weapon in open warfare, while with the assistance in similar conditions of infantry trained to work in conjunction with tanks they can deal also with self-propelled antitank guns. The continued dominance of armored formations in these circumstances is well exemplified by the operations of the B.L.A. armored formations beyond the Rhine and by the decisive part played in the destruction of the

German armies in Italy South of the Po by the 6th British Armored Division. It should be noted, however, that in both cases the opposition had previously been routed in the infantry battle, and in neither case had the support of an air arm which was capable of giving the Allied air forces opposed to it any great anxiety.

Armor, therefore, having been the dominant arm on land throughout the 1939-45 war, was rapidly losing its position toward the end (largely as a result of its mobility, to which it had previously owed its dominance, being restricted by the development of the antitank gun and the infantry antitank weapon). *It still retained its dominance when operations became fluid*; but, before this state of affairs could develop, special conditions were required, e.g., a perpetually open flank (as in the Western Desert) or an enemy previously defeated in the infantry battle (as after the crossing of the Rhine or the Senio). *By the end of the War, in fact, armor was only the arm of mobility in the presence of certain special conditions, whether naturally prevailing or artificially obtained.*

Let us now consider how these special conditions of fluid warfare can be obtained in the future, other than by victory in an infantry slogging match as at Alamein or in the Liri Valley in May 1944. Victory, under these conditions already expensive, becomes a disastrous luxury as soon as the casualties reach the scale of similar operations during the 1914-18 war. During the later stages of the 1939-45 war the skill of our commanders and our overwhelming material superiority combined to keep our losses in this type of operation within bounds, but we must be prepared in any future conflict in which there is approximate material equality between the two sides for the pendulum to swing toward the defender and for casualties in a direct assault to become once again prohibitive. The problem of opening up the battle other than by success in an infantry dogfight, though not immediately pressing, is likely to become so in any future war where there is approximate material equality between the contestants.

*The answer to this problem surely lies in the further development of transport aircraft.* The effect of the giant strides already achieved during the past six years in the development of aircraft for this purpose can be clearly seen in the contrast in tempo between the deployment of the five divisions of the B.E.F. in 1939 and the switch by air of the 5th Indian Division from the Arakan to the Imphal front in the 1944 Burma campaign. Air transport is still in the early stages of its development, but the advances already made show clearly its potentialities as regards both the tactical and the strategical aspects of war.

It is at present true to say that airborne forces are only suited for tactical roles because of the limited weight and bulk of equipment which can be carried by air. Arnhem showed that airborne troops are capable only of very limited advances after reaching the ground, and that they are dependent for holding their objective

<sup>2</sup>"Tank and Anti-Tank", by Brigadier R. M. P. Carver, C.B.E., D.S.O., R.U.S.I. Journal, February, 1946.



on the speedy arrival of "follow up" ground troops. Throughout the late war it was in the last resort on the arrival or non-arrival of these "follow up" troops that the success or failure of an airborne operation depended. The success of the German operations in Crete in 1941 constituted the exception which proves the rule, for the defenders in addition to being almost entirely without air support were also wholly lacking in armor. It is therefore on future advances in the deployment of these "follow up" troops that will depend the ability of airborne forces to assume with success a strategical role.

It can reasonably be assumed that the development of transport aircraft will provide in any future war for the movement by air of the troops following up an airborne operation. It is further assumed for the purposes of this paper that it will be a practical proposition to fly by transport aircraft tanks of at least the caliber and armament of a Sherman.

What then will be the pattern of the airborne operation of the future? The first phase is unlikely to differ greatly, save in degree, from the present; parachute troops being employed as during the late war with the full support of all available fighter and bomber aircraft. The principal difference will probably be found in the location of the zone in which parachute troops are dropped; for, owing to the "follow up" troops and supplies being flown in, it will be possible to drop the first flight very much deeper than at present and consequently on strategical as opposed to tactical lines. The dropping zone of the paratroops must however at all costs include an airfield, and air strip construction parties with their equipment must land at an early stage in order to construct new fields to take the great volume of air transport traffic that will follow.

In the second phase airborne "follow up" troops will arrive by transport aircraft on the airfields which have been seized or constructed by the first flight. The *second flight will include elements of an airborne armored division* which will sally forth from the firm base held by the airborne infantry of the first flight to operate against the open flank or lines of communication of the opposing army. *Their main task at this stage will be the seizing and holding of further airfields or ground suitable for development as air strips in order to speed the deployment of further airborne "follow up" troops.* The build-up during this period will follow the main lines of the development of a beachhead in any other combined operation, and a period of apparent stagnation as at Anzio and in Normandy may even supervene, though this would be both dangerous and undesirable.

In the third phase the airborne army will operate in conjunction with the ground "follow up" troops in an effort to "besiege" the enemy army on the battlefield. This has now been the ultimate object of commanders on land for over two thousand years and would be in pattern an operation no different from other land battles of the past.

This then is the pattern into which the airborne armored forces of the future will have to fit if armor is to retain its position as the arm of mobility and consequently as the dominant arm on land. It is not within the scope of this paper to discuss in detail how these forces should be constituted in order to play their full part in this pattern, but the following very general considerations may possibly be of interest.

In the first place the armored division as a formation should remain, if only because of its value in producing teamwork, cooperation between all arms, and a high standard of combined infantry and tank training. Two infantry brigades will be required—possibly one a motor brigade, mounted in light armored wheeled or half-tracked troop carriers, for working closely with the tanks in really fluid operations, the other a normal infantry brigade for restoring mobility to the armor in the face of more organized opposition. Whatever the establishment of infantry, sufficient Kangaroos to transport at least one battalion of infantry should be maintained as a divisional pool. The proportion of supporting arms will depend on the availability and lifting power of the transport aircraft and for this reason it is not proposed to go into the detail of the remainder of the organization. The guiding principle would be to retain as much of the framework of a normal armored division as possible having regard to the limitations imposed by the nature of the transport aircraft employed. It may be argued that this organization would be unduly cumbersome. However, real striking and holding power will certainly be required in the later stages to defeat attempts to break out on the part of the encircled enemy, even if in the early stages airborne armor will have to be prepared to work in combined squadron/company groups until the build-up is sufficiently complete for a full armored division to be employed.

Briefly then, to restate the conclusions reached in this paper: in the first place nuclear warfare between two major Powers is unlikely for the next ten years, while any future conflict which breaks out before international nuclear warfare becomes a practical proposition is likely at first to follow the pattern of 1945 warfare. We should therefore base our plans on improving 1945 methods and techniques, while keeping our minds open to the possibility of a new and revolutionary weapon or technique being developed. Armored forces, which remained the dominant arm throughout the war of 1939-45, are at present losing their position as the result of the development of antitank weapons. Airborne operations, however, provide a ready means for obtaining the special conditions in which armored dominance still comes about, and it therefore follows that armor will play a prominent part in future airborne operations. The further development of the transport aircraft is likely soon to make this a practical proposition. *In these conditions the airborne armored division is likely to play the same decisive part as the more normal armored formations did in the late war.*



# MODERN CAVALRY ORGANIZATION

*by Captain Stuart J. Seborer\**

ORGANIZATIONS are conceived in order to accomplish definite missions with available weapons. Three important elements must be incorporated into any military structure: control, destructive power and mobility. In other words, the sine qua non of land warfare are men, weapons and vehicles. Even in this era of the atom bomb and the guided missile, ground troops will be indispensable in taking and holding ground. Perforce, organizations should be capable of undertaking such tasks with maximum efficiency.

Experience proved that many units fighting in World War II were not properly organized to carry out their assignments efficiently. Moreover, some forces were given combat missions for which they were not trained. "Reconnaissance" Cavalry, for example, belied its name, for Mechanized Cavalry Groups in the European Theater of Operations were assigned reconnaissance missions during only three per cent of their combat days.

The reconnaissance role was described as the performance of missions employing infiltration tactics, fire and maneuver; engaging in combat only to the extent necessary to accomplish the assigned missions. I remember in 1942 when even the Tank Destroyers at Camp Hood began surreptitiously substituting for their audacious slogan of "Seek, Strike and Destroy" the 113th Cavalry battle cry, "Sneak, Peek and Retreat." Our slogan was not ascribable to caution being the better part of valor, but rather to the accepted doctrine of reconnaissance Cavalry. In fact, field problems were frequently designed to tempt the unit commander to become involved in a "fire fight"—the lure of which few could withstand. The "Critique" would usually admonish the leader for "engaging in combat when his mission was reconnaissance."

It is important to note what missions were typically assigned to Mechanized Cavalry Groups in the European Theater of Operations (frequency in decreasing order): (1) Defensive combat; (2) Special Operations; (3) Security; (4) Offensive Combat; and (5) Reconnaissance. Division Reconnaissance Squadrons received fewer defensive combat missions and performed

more reconnaissance than Groups.

In order to carry out their assignments, cavalry operated dismounted almost twice as frequently as it did mounted. In addition, the cavalry group usually had to be reinforced with a battalion of field artillery, a battalion of tank destroyers and a company of engineers.

It became clear to most cavalymen in the ETO that either our missions were ill-conceived (that is, division and corps headquarters did not employ cavalry properly) or our organization was inadequate for the many types of missions we could expect (few higher commanders could afford to hold us back for reconnaissance alone). The majority opinion held realistically that Cavalry should perform the traditional role of a highly mobile, heavily armed and lightly equipped combat force. This meant that our organization had to be revamped with a view to tackling various assignments of average difficulty with organic strength.

In the hedgerow country of Normandy, in the pursuit across France and Belgium, on the Siegfried Line, the Roer, the Rhine and to the Elbe—in fact everywhere—the 113th Cavalry learned that Cavalry had to fight for information just as it fought to advance.

On a relatively stable front (Siegfried Line 19 Sept-12 Nov 1944) dismounted patrolling was the primary method of gaining information. Almost every night Troop B sent out patrols varying in size from six to eight men. In all dismounted actions, the same handicaps were evident. The troop lacked a dismounted unit organization, such as the infantry squad, which was necessary for smooth operation. The personnel comprising a patrol consisted of radio operators, truck drivers, and 37mm gunners. Everything was improvised—even the BAR's were non T/O weapons and had to be bootlegged. (A deal was consummated to obtain a rifle with sniperscope—my first British combat jacket was sacrificed.) Perhaps the greatest obstacle of all in dismounted attacks or raids was the psychology of sneaking and peeking which we had carried over. After almost a year of combat, including four campaigns, evidences of this psychological handicap were still prevalent.

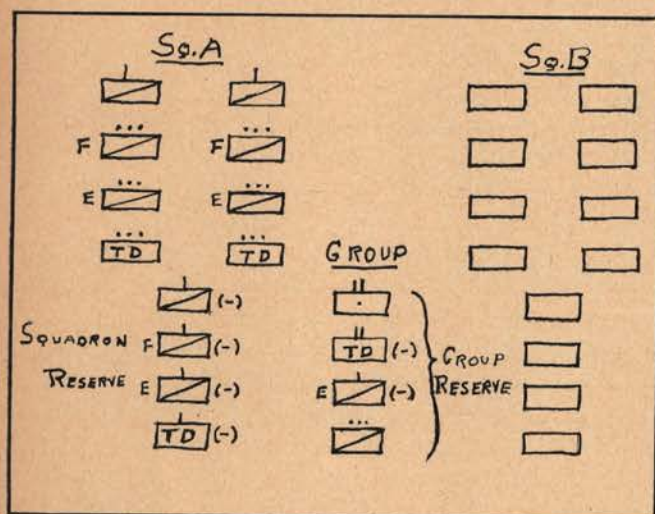
In spite of its organizational inadequacies, the 113th Cavalry Group for a period of six weeks successfully de-

\*Cavalry Reserve Officer.



fended the north flank of the 12th Army Group (Sittard Area). This allowed larger corps units to operate against the Siegfried Line until the group was relieved by the Guards Armored Division of the 30th British Corps on November 12, 1944. I shall always be profoundly thankful that no major offensive was launched by the "Jerries" during this period, since the group had one platoon in reserve and the squadrons one platoon each. Rotation of troops was impossible until the 17th Cavalry Squadron was attached to the Group on November 2.

The Cavalry at the end of the war was characterized by its great mobility, especially on roads, its superior fire power (200 per cent greater than an infantry unit of equal size), its 81mm mortar weapons (introduced by 1st and 3rd Armies towards the end of the war) organic in each Cavalry platoon, and its tank companies and assault gun troops in each squadron. A typical combat organization was the following:



Thinking in terms of a more adequate cavalry organization designed to cope with such missions as have been typical in the European Theater of Operations, the following considerations bear evaluation:

1. Maneuverability and Control
2. Destructive Power
  - (a) Direct Fire
  - (b) Indirect Fire
  - (c) TD capabilities
3. Mobility

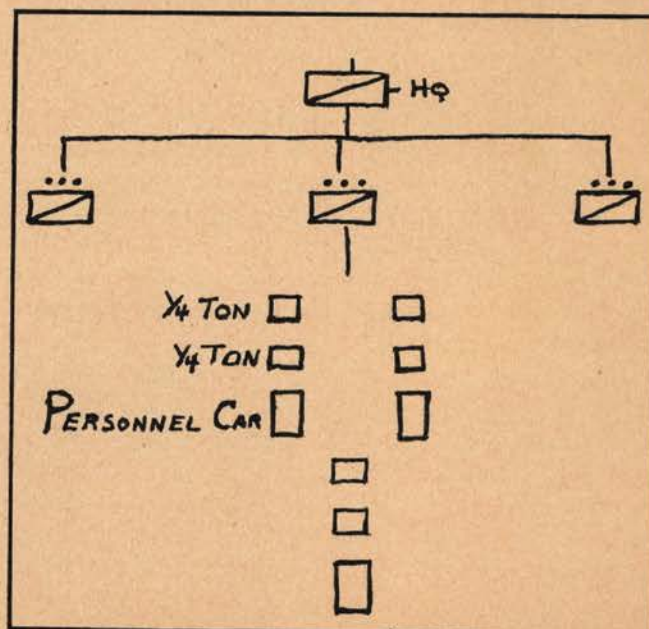
In 1945, Major General I. D. White referring to the need for riflemen in the Cavalry stated "The Cavalry mechanized unit must be trained and organized for considerable dismounted action. Our present reconnaissance troop . . . does not lend itself to dismounted action. The bulk of the troop is composed of crewmen and . . . there is little time to train them as riflemen for dismounted combat."

In order to augment the ratio of dragoons (riflemen) to vehicles, it has been proposed by others that there be two Cavalry troops and one dragoon troop in a Cavalry Squadron. This argument is based upon the premises that normally two troops are committed and one held in reserve, dragoons are more suitable for support, and relief of the Cavalry troops can be accomplished by the regimental commanding officer.

The rebuttal to this proposal contends that a triangular organization is necessary, the platoons habitually need dismounted men who should be included organically, and a dragoon troop would usually be split up between the two cavalry troops, thus losing its utility as a squadron reserve troop. (The principle of a reserve is that of holding out an integral or balanced striking force capable of being used as a unit to either develop an opportune situation, counterattack or replace a unit whose combat effectiveness has diminished.)

World War II experience showed that a Cavalry group consisting of two attached squadrons was not properly balanced. The Group Headquarters had difficulty in administration because it lacked the necessary overhead. The Squadron, normally a tactical unit, maintained personnel for administration and supply since it was frequently detached from its parent organization. Esprit was adversely affected by frequent changes in Headquarters (Army, Corps and Division), each having its own operating procedure. The lack of an equitable share in certain privileges, difficulties in processing awards and failure to accomplish proper rotation were attributable to the chameleon-like group structure. Since the group consisted of attached organizations, the detachment of subordinate units was frequent and often for the purpose of performing duties not related to mechanized Cavalry missions, for example, main-

This chart shows General White's proposed Cavalry troop structure.

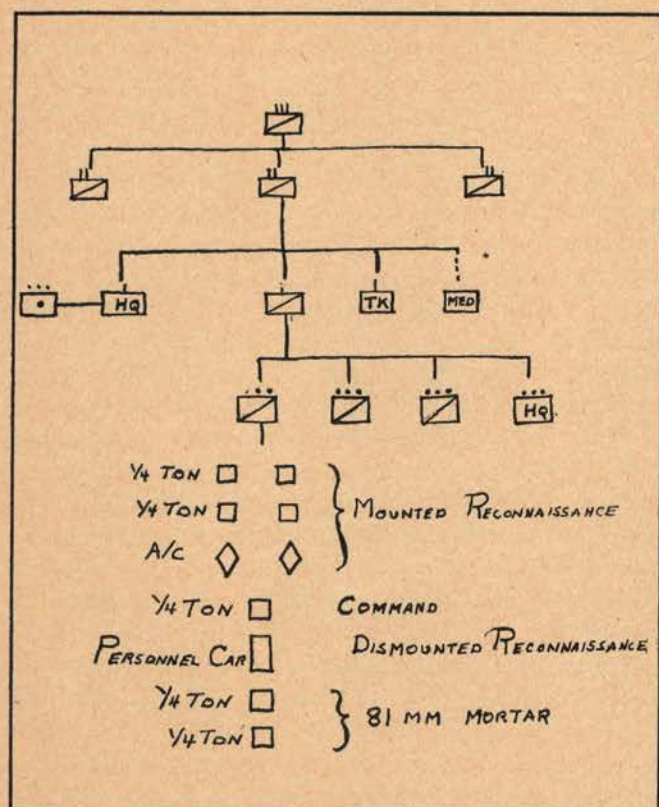




taining an army information service.

As a result of these considerations, an Armored Regiment (light) has been proposed by Army Ground Forces to replace the mechanized Cavalry Group. It would consist of three armored battalions (light), each capable of independent action. A battalion would comprise a Hq & Service Company (including an Assault Gun Platoon of 6 x 105mm howitzers), three reconnaissance companies, a tank company (17 tanks mounting 76mm guns) and attached medics.

The primary mission of the Armored Regiment



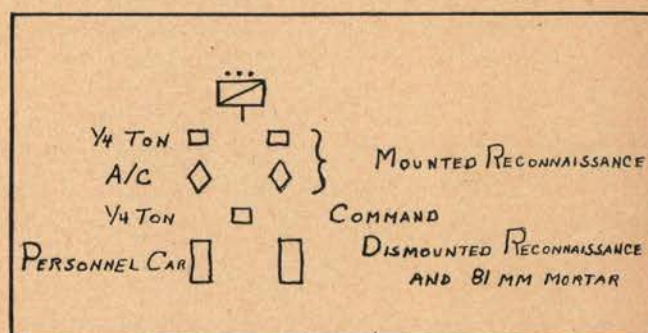
would be corps security. The desirable features of this proposed organization are:

1. The triangular regiment containing three organic battalions is reestablished.
2. The platoon includes a squad of organic riflemen.
3. The reconnaissance company armored vehicles will have a 75mm gun replacing the 37mm.
4. The assault gun platoon has 105mm howitzers whose shells have a bursting radius about twice as great as the 75mm.
5. The superior 81mm mortar replaces the 60mm in each platoon.
6. The tank company will have a 76mm gun with tank destroyer capabilities.

7. Improved mobility will depend upon the development of new vehicles.

A notable feature of the proposed platoon concerns the ratio of men to vehicles. In the old Cavalry reconnaissance platoon there were one officer and 29 enlisted men to nine vehicles. In this structure a squad of riflemen, nine men and a driver riding in a personnel carrier have been added, changing the ratio to one officer and 38 enlisted men to 10 vehicles.

My experience is more in accord with that of Major General Huebner, formerly Commanding General V Corps who wrote "There should be about 65 men available to support each Cavalry troop." This would envisage a platoon organization of the following type:



In a typical combat situation, it is expected that a platoon of tanks would be attached to each operating troop (See Chart I). This would usually add two tanks to each operating platoon. Thus, the reinforced platoon of nine vehicles would stretch out in a road column about 500 yards long. Practically all its dismounted security must come from the riflemen in the personnel carriers. In addition, the dismounted men (on a mounted mission) must check roads for mines, investigate bridge approaches and flank vehicles through woods and towns. In April 1945, a platoon of the 83rd Infantry Division was attached to Troop "B" in a mission of offensive combat. The infantry platoon worked well with our troopers, but they were hard pressed and suffered 30 per cent casualties in a few days. The platoon of infantry (about 50 men) were found insufficient to meet our need for rifle support.

It should be emphasized that in the ETO, Cavalry operated dismounted almost twice as frequently as it did mounted. At such times, dismounted patrolling was a daily task. Certainly 18 men, or two squads, out of a cavalry platoon of 38 men would be the barest minimum of trained riflemen necessary for such missions.

Many combinations and permutations of men, weapons and vehicles are conceivable in formulating a new armored Cavalry organization. However, a sound structure must be flexible and take into consideration the fact that Cavalry will receive various types of missions which require fighting. Cavalry is being redesigned to perform its traditional role of a highly mobile heavily armed and lightly equipped combat force.



# Cavalry With Armor On A Reconnaissance Mission

*by Major Owen E. Woodruff, Jr.\**

THE contact was made! American forces contacted the Russians at Torgau and Germany was split in half. Newspapers were full of the surrender talk, but to the troops in contact it seemed the Germans never read newspapers.

The actions of Troop B, 87th Cavalry Reconnaissance Squadron, Mechanized, while attached to Combat Command B of the 7th Armored Division for operations in the northern half of divided Germany are dealt with in this article.

Colonel Joseph Haskell, commanding Combat Command B of the 7th Armored Division, received orders on May 1, 1945, attaching his troops to the 82d Airborne Division. The 82d had established a bridgehead east of the Elbe River in the vicinity of Bleckede south-east of Hamburg, and was fighting against determined resistance. The Germans were not giving up an inch of ground without a struggle, and it appeared at the time that they had not felt the Russian pressure on the north.

The combat commander took his S-2 and S-3 and proceeded to the Command Post of the 82d for instructions. Upon arrival he found that the 82d wanted armor—tanks—any kind of tanks. The division commander felt that an armored spearhead could break the crust of the enemy line, and once penetrated, resistance would cease.

Colonel Haskell was given an initial order to assemble a tank battalion in the vicinity of the bridge over the Elbe during the afternoon of May 1, move the tanks into the bridgehead under cover of darkness where they would be attached to a unit of the 82d. The mission was to assist in the breakthrough. This order was changed later in the day after the combat commander saw the commanding general of the 82d and recommended that the combat command operate as a unit and make the penetration. This plan was approved and the necessary orders issued. A zone of action and a line of departure were assigned, as well as a time to jump off. The combat command objective was the corps objective, the city of Ludwigslust.

While this was going on our troops were marching to the bridgehead from an assembly area 50 miles south.

There was no time to initiate reconnaissance prior to darkness and the attack jumped off at first light so the plan for Combat Command B was made to compensate for this lack of personal reconnaissance.

The combat command was divided into three balanced task forces, and three routes were selected from a map study. It wasn't known whether these roads were passable or not because no aerial photos were available and no prisoners were available to answer questions. In an effort to give the task forces some inkling of what they could expect along their routes of advance a troop of cavalry was requested and received. Troop B, 87th Reconnaissance, was attached and given the mission of reconnoitering the routes of the task forces and reporting enemy contact. One platoon was put out in front of each task force to precede it by one hour. Troop headquarters and Combat Command B headquarters followed the task force on the center route.

The platoons were briefed and jumped off on schedule. Communications worked well. Platoons were tied in with the task force nets and with troop headquarters. The combat command had troop headquarters and the three task forces in its net, so there was a constant flow of information coming in to the combat commander.

It was surprising how the picture built up. Something had happened to the enemy because the reports for the first hour kept coming in with the same ending—"No enemy contact yet." The enemy had either pulled out altogether or had withdrawn to new defensive positions. It wasn't known which.

During this period good information of the routes was pouring in. A bridge was out but a ford had been found. A section of the north route was unimproved and would not carry task force loads. Here the reconnaissance platoons performed another valuable task by providing guides at critical road junctions and by-passes. By so doing, they avoided needless delays and kept the task forces moving.

The first contact with the enemy was made about two hours after the jump-off of the reconnaissance elements. The reconnaissance platoon leader's message stated that six wagonloads of German soldiers were parked on the

\*Faculty, The Ground General School.



side of the road waiting to surrender. Prisoners of war in this group stated that the main defenses were being set up at Ludwigslust, but they personally had had enough of the war. They wanted to give up. This didn't make sense, for only 24 hours before, the Germans were inflicting casualties on our troops and fighting hard. Soon the other columns reported that small groups of Germans were surrendering. Quick to sense that something was causing this change in the enemy's will to fight, the combat commander ordered the reconnaissance troop to cease their reconnaissance mission and begin to take over the prisoners. The task forces with medium tanks leading were ordered to move out on their own towards Ludwigslust.

The leading elements of the task forces were only a few miles from the objective just two hours after they had started. This was a tribute to the speed and efficiency of the reconnaissance platoon in selecting their routes, and warning of enemy contact. They gave the task forces confidence, and as a result, the final assault by the tankers on the city of Ludwigslust was a picture of speed, shock action and maneuver—all fundamental cavalry principles. The city was taken with hardly a shot being fired. Prisoners of war, when interrogated afterwards, confirmed the fact that Ludwigslust was to be defended, and their intelligence had reported U. S.

forces some 20 miles from the city early that morning. The sight of American tanks coming into town at 25 miles an hour without firing a shot, so disconcerted them, that the hasty defenses which had been prepared were never manned.

Troop B, 87th Reconnaissance, performed efficiently and with great speed on its reconnaissance mission. When its mission changed it had covered nearly 20 miles in two hours, reporting accurate information all the way.

The story of Troop B should end here with a brief "well done," but it cannot. These troopers were scheduled for another much bigger job. The troop was assembled following the seizure of Ludwigslust and given the mission of contacting the Russians for the 18th Airborne Corps. The details of this mission are graphically portrayed in Captain William A. Knowlton's account as presented in the *Reader's Digest* for August, 1945, entitled "Your Mission is to Contact the Russians."

#### CONCLUSION

Mechanized cavalry working with armored elements lends speed to armored action by providing timely route information and guides during movement into an action.



## Cavalrymen Appointed In Regular Army

Regular Army appointments of wartime officers that were made in January, 1947, include the following Cavalrymen: Major Frederick H. Warren; Captains: Richard K. Strauss, Lund F. Hood, Jack C. White, and Richard K. Carver; First Lieutenants: Henry Frankel, Walter L. McCaddon, Robert L. Coughlin, John C. Neff, Hugh F. Queenin, James F. Simmerman, John W. Hopkins, Jr., Thomas J. Hanifen, Howard E. Bressler, and Kenneth C. Althaus, Jr.; and Second Lieutenants: Robert C. Petit, Jr., and Harry B. Hardy, Jr.

## New Panama Reconnaissance Squadron

The 45th Cavalry Reconnaissance Squadron (Mechanized) was activated on January 16, 1947, at Fort Clayton, Canal Zone, according to information received from the Panama Canal Department.

Formed from the 1st Battalion of the 33rd Infantry Regiment, the new squadron will serve as part of the 33rd Combat Team under the command of Colonel Normando Costello.

The equipment of the new organization, according to Canal Zone information, will include the newest light tanks and armored cars. It will also be equipped with the latest type of individual arms and the most modern communication system.



# Irish Mechanized Cavalry During World War II Period

*by Captain Fergus N. Fitzgerald\**

The Irish Army claims credit for being the first military force in the world to be completely mechanized. And so they were with their Cavalry Squadrons. Captain Fergus N. Fitzgerald, an ex-Cavalry officer in the Irish Army has written this article exclusively for the Armored Cavalry Journal. Captain Fitzgerald is also author of the series that has been running in this magazine on the "Russo-German Battles — 1941-45," which is concluded in this issue.

BEFORE considering the organization of the Irish Cavalry formations, it is necessary to know something of the army to which it belongs. The National Army, or Defense Forces, as it is now styled, came into being in 1921, on the conclusion of the Anglo-Irish Treaty, which set up an independent free state of Dominion status within the British Commonwealth. Almost immediately after its formation this army was called upon to fight a civil war against irregular elements who were not satisfied with the Treaty terms.

In actual fact this civil struggle does not deserve the title of "war," for there were no serious or prolonged operations. Areas in which the irregulars were in a majority were held and administered by them until the regular forces arrived. Then there would be a brief struggle, an ambush, and, in many cases, a surrender. The stronghold of "Republicanism" in Dublin city, the Four Courts, surrendered without a casualty, according to one pro-irregular author. The "war" ended in 1923, with the complete victory of the legitimate government.

Within the army, however, the civil war created problems. To keep order in the country, and as much to prevent rioting and looting as to combat the irregular elements, a force of 60,000 men was mobilized. But during the Twenties, with talk of world disarmament and pacifism, the Irish Free State was required, both as a member of the League of Nations and (a more effective influence) by the pressure of the taxpayers at home, to

reduce the strength of the National forces. From 1922 until 1927 there were several demobilizations.

In the early Thirties the total strength of the army was below 5,000 for all ranks, with a reserve force of about 8,000 men. The government<sup>1</sup> decided to create a volunteer force of men who would do one night's training per week, with a two-week training period in camp each summer. This organization was operated on a basis similar to the United States National Guard.

When the outbreak of war caused the rapid mobilization of the reserves in 1939, the total strength of the army was about 21,000 officers and men. Before Christmas 1939, the reserves were stood-down, but in June and July 1940, the fall of France resulted in another mobilization, and in addition an immense recruiting drive. The forces thus assembled were kept on a war footing until 1946.

At its highest, early in 1941, the army totaled something over 45,000 officers and men. It was organized into two infantry divisions, each of three brigades (a brigade in the Irish Army is equal to a United States Infantry Regiment), each with three infantry battalions and supporting arms. In addition there were five infantry battalions and one infantry brigade as command troops, for the defense of the Eastern, Western, Southern and Curragh commands. Fourteen (cyclist) cavalry squadrons were deployed as frontier forces along the coasts and the border of Northern Ireland; and Armored cavalry squadrons were held as army troops in reserve. In all, the Irish Army was at the strength of an Army Corps of three divisions, with the usual corps troops. Despite journalists' tales of poor equipment, this "Army Corps" was as well armed as any United States Infantry Corps.

In second line came the Local Defense Force, similar to the British Home Guard, totaling over 100,000 men of all ranks.

## IRISH CAVALRY FORMATION

The basic Irish cavalry formation was the squadron.

<sup>1</sup>In 1932, the Fianna Fail Party, a constitutional party formed from the defeated irregulars of 1922, came into power as the Government. Its policy was "protected industry" at home (at the expense of Ireland's agricultural export market—the "economic war" with Britain was the result). Politically, Fianna Fail is Liberal-Socialist, and Nationalization is much more advanced at present in the Free State than in Britain.

\*Former Irish Cavalry officer who lives in Dublin.



In 1942, during large-scale maneuvers in the south of the country, an armored regiment was formed, but it functioned merely for the period of the exercises.

Irish cavalry had been mechanized since 1934. After experiments with the various forms of squadrons, the final establishment of 1940 laid down three types of cavalry squadrons, with three separate functions.

The first of these was the Motor Squadron. One Motor Squadron was integral to each brigade as its reconnaissance force. There were seven of these squadrons. A Motor Squadron comprised four Troops—three Motor Troops and one Armored Troop. Each Motor Troop contained five combat cars,<sup>2</sup> seven motorcycles, one combination motorcycle, with four Bren guns, one Anti-Tank rifle, one sub-machine gun, and rifles, revolvers, etc. The troop commander was a Lieutenant or Second Lieutenant. The Armored Troop had four armored cars, of various types (many were made in Ireland), armed with Vickers 303 caliber machine gun in a revolving turret. The troop was commanded by a Captain with a Lieutenant second-in-command.

A Headquarters Troop, with the usual supply and administrative echelon and defense troops, made a fifth troop to the squadron. The commander of the squadron was a Commandant,<sup>3</sup> with a Captain as second-in-command. Other officers were the Adjutant, Quartermaster and Technical Officer, all Lieutenants. Signal communication was provided by the Brigade Field Signal Company, in the form of a Radio Van for communication with Brigade Headquarters. Although not intrinsic to the squadron, lighter hand radio sets were sometimes provided for communication between the Troops and Squadron Headquarters. Motorcycle dispatch riders were used also. Medical, etc., detachments were supplied by the Brigade Field Ambulance and Service Companies.

The employment of the Motor Squadron was similar to that of the United States Divisional Reconnaissance Troop, except that there were three of these squadrons to an Infantry Division. Reconnaissance, flank protection and rear-guard and delaying action missions were most frequently given these units.

As Army Troops there were four Armored Squadrons, each of four Armored Troops of four armored cars, with motorcycles, etc., organized similarly to the Armored Troop of the Motor Squadrons. A number of Swedish Landsverk armored cars, a 50 and 303 caliber machine guns, co-axially sighted, in the revolving turret, and another 303 caliber machine gun beside the driver, were employed in the Armored Squadrons. These vehicles had many novel features—half-tracks could be fitted in

place of the rear wheels; and they could be driven from the rear as well as from the front, thus making it possible to withdraw from a defile without turning the vehicle or reversing.

The employment of these squadrons was similar to that of the Motor Squadrons, but the Armored Squadrons would do for the division or corps what the Motor Squadrons did for their brigades. For this purpose they would have needed organization into regiments or Combat Teams on the United States Army system. In 1942, a provisional Armored Regiment was formed for maneuvers, but the staff was disbanded after the training period.

Armored Squadrons were commanded by a Commandant, and a Captain and Lieutenant held the position of Troop Commander and Second-in-Command of the Troops respectively.

In addition to the Armored Squadrons, a Carrier Squadron formed part of the Army Troops from 1940 until 1943. The Carrier Squadron was equipped with British Bren Gun Carriers, used as Armored Scout Carriers. Being tracked vehicles, these were more maneuverable than the armored cars, but lacked the heavy weapon armament.

One feature of these squadrons (and of the Motor Squadrons) was their lack of artillery and assault gun support. They were not therefore fitted for serious attack. Nor did any infantry force normally accompany the Armored Squadrons, although this deficiency could have been overcome in actual combat by the attachment of one of the Command Infantry Battalions. Many of the infantry battalions had trained with the cavalry squadrons.

The Irish Army had no tank units, although a few light tanks were held at the Cavalry Depot, mainly for training purposes. In the case of a small army, however, it is necessary to choose between quantity and quality, and it was felt that one tank formation (the most the country could have afforded in prewar days) would be of less value than the equivalent infantry. As a matter of fact, the Irish terrain is peculiarly unsuitable to the employment of tanks, as the United States troops who were stationed in Northern Ireland have reason to know. Apart from a few open spaces (such as the Curragh), the country is broken up by small fields (average about 200 yards square) surrounded by earth banks, stone walls and hedges, and by peat bogs in which tracked vehicles would quickly sink and become immovable. As regards the small fields, the Normandy countryside is very similar to the Irish, and the First U.S. Army and Second British Army Tankers learned only too well how limiting to mobility small, well-hedged fields can be.

On the other hand, it would be foolish to pretend that tanks cannot be used in Ireland, or that the army would have refused any offer of up-to-date models, once the war had started.

<sup>2</sup>Known universally as "Bug Chasers," these were Ford V-8 chassis with light wooden truck bodies—equivalent of 15-cwt trucks—carrying a crew of six, armed with one Bren gun and rifles.

<sup>3</sup>The Irish Major was the same as the U. S. Lieutenant Colonel, but in February, 1947, the Irish rank of Major was replaced with that of Lieutenant Colonel, so that the Irish and U.S. are now identical on this point.









AAF Photo

☆☆☆  
Bisected view of the new Republic P-84 Thunderjet showing that the rear section of the fuselage is quickly removable to permit complete replacement of the General Electric jet engine in 50 minutes.  
☆☆☆

# JET—

# AAF'S NEW POWER PLANT

*by James A. Niland\**

NOT since the brothers Wright proved mechanical flight possible, back in 1903, has aviation experienced the major change now manifest through jet propulsion.

The development of the jet engine, basis of jet propulsion, was brought to speedy fruition by the race for speed and altitude of World War II. Its American development was sponsored by the Army Air Forces after the Englishman, Frank Whittle, called the "father of jet," had achieved success in developing the basic principles of jet propulsion.

Jet-powered aircraft look very much like any other aircraft, both have a fuselage, tail assembly and wing, but the jet plane has no propeller. The absence of this seemingly essential part is a disturbing fact to those who have considered the propeller in the same light as the cables of an elevator.

Before the advent of jet engines all airplanes were powered by reciprocating, or gasoline engines, as they are more commonly known. The reciprocating engine provided the power to spin the propeller which is actually an air screw biting its way through the air and forcing it backward, giving the plane its forward thrust.

The jet engine is a long cylinder, open at one end and tapered at the other to a nozzle. The nozzle, which juts out through the tail of plane, exhausts the hot

gases and pressure generated within the engine providing forward thrust for the aircraft.

The theory of jet propulsion is not a contemporary idea. The jet principle was a matter of common discussion among men of science 2,000 years ago. Although the fundamental principle was known and experimented with through the years, it only recently came into practical use because technical knowledge of the present day was able finally to produce the metals capable of enduring high turbine and nozzle temperatures.

During the first World War, the French experimented with jet propulsion, but made no headway. It took Frank Whittle to finally bring about its successful development. In 1930 he applied to the British patent office for a patent on a jet engine which he called the "gyrone." By the end of the decade he succeeded in getting a jet-powered plane into the air. The Italians, in 1940, also were able to fly a jet-powered plane and after a year of experimentation the Italian plane made its first flight from Milan to Rome. Hailed as "propellerless wonder," it averaged 150 miles for the entire flight. Five years later the Army Air Forces' jet-powered P-84 Thunderjet flew faster than 600 miles an hour.

With great secrecy, Whittle's engine was brought from England to the General Electric laboratories in September 1941 for final testing and redesign. GE engineers set to work to produce the first American jet

\*Headquarters Army Air Forces.



engine. Bell Aircraft at Buffalo, N. Y., started construction of the first jet plane, and working closely with both groups were the AAF's engineering and testing laboratories at Wright Field.

On the morning of October 1, 1942, the first American-built jet plane was flown by Robert M. Stanley, chief test pilot for Bell Aircraft. The next day Major General (then Colonel) L. C. Craigie took the plane into the air and thus became the first Army officer to fly a jet plane in America. The flights of October 1st and 2d were top secret and it wasn't until the late summer of 1943 that the news of a new American mystery plane was publicly announced. Described as "propellerless, swift as sound, and able to operate well above forty thousand feet," the Bell P-59A Airacomet was guided through its first public flight by the late Jack Woolams.

The Airacomet served its purpose well, being used extensively as a flying research laboratory. Meanwhile other Bell jet planes were used to train pilots to fly this new and revolutionary aircraft.

While aircraft manufacturers devoted time and space for jet-plane development, General Electric continued to improve the jet engine. Early in 1945, GE announced the completion and final testing of its new engine for installation in the Lockheed P-80 Shooting Star which was officially adopted the same year by the AAF as a fighter plane. The Shooting Star acquitted itself in admirable fashion for establishing speed records. First across the continent in 4 hours, 13 minutes and 26 seconds; then covering the 226 miles between Washington and New York in 29 minutes and 15 seconds. The same 226 miles are traversed by the fastest railroad train in 3 hours and 35 minutes.

All jet planes have an air scoop in the front end of the fuselage. The Shooting Star has two scoops, one on each side. The newest AAF jet plane, the P-84 Thunderjet, built by Republic, has one located in the center of the fuselage giving the plane the appearance of a wind tunnel with wings.

The air is sucked into the engine through the scoop where it is compressed by a swiftly moving impeller. The impeller whips the air into combustion chambers where the air mixes with the fuel and burns at intense heat. The hot air and gases pass through the turbine wheel, spinning it many thousand of times a minute, and then belch through the exhaust nozzle.

By comparison to a reciprocating engine, the jet engine is essentially a simple machine without carburetor or pistons and with only two moving assemblies. Furthermore the jet has no fuel problem, it runs on any fuel that will burn in air and can be blown through a nozzle. This permits large volumes of fuel to be prepared quickly and cheaply as compared with the elaborate and expensive process needed to produce high-octane gasoline for a reciprocating engine.

For its size, the jet engine is the most powerful in use today. One jet engine in a P-80 Shooting Star can

deliver more power than two reciprocating engines in a B-29, yet its installed weight is less than half the weight of the Superfortress engine. The reciprocating engine, including the propeller, delivers one horsepower per pound of weight at best and includes hundreds of moving parts which demand servicing and complicated controls. The jet engine delivers four horsepower per pound and has only two major moving assemblies, the compressor and the turbine.

Moreover lubrication is comparatively simple with only the main bearings requiring a lubricant. This is made more simple by the low-consumption and load-carrying requirement of the oil.

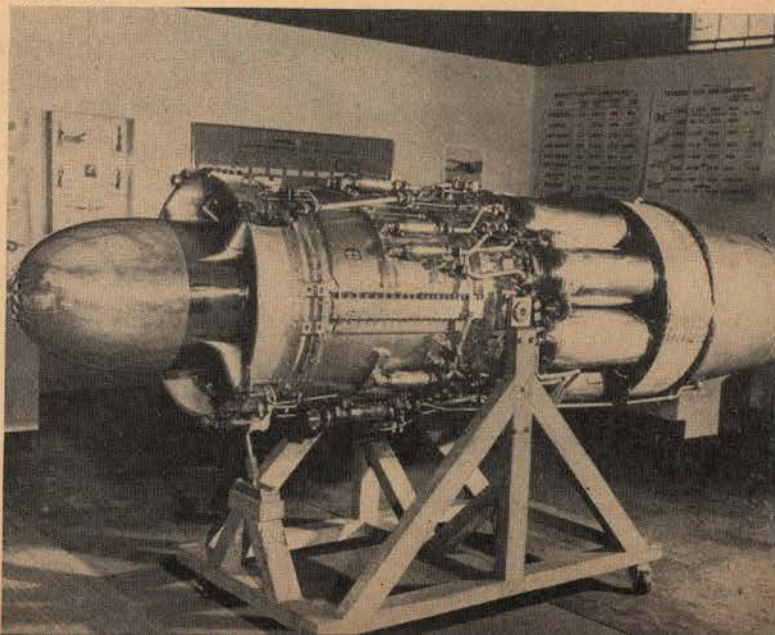
Jet propulsion to date has been the almost exclusive province of military aviation. The commercial advocates of this new power plant predict that the time is not far off when commercial airlines will cruise along at 500 miles an hour in smooth, vibrationless flight. On the latter point, they're right; AAF jet planes actually have vibrators installed in the pilot's cabin to make instruments function properly.

Engineers of Wright Aeronautical Corporation, however, say that many years of experimental work lie ahead before the jet engine finds universal application. Conventional engines will remain in demand for long-range transport indefinitely, while jets will come into use wherever operations at sonic speed are economical and militarily desirable.

Between these two groups is the Army Air Forces, pioneers in the development of jet engines in America. The AAF is making no predictions either for or against the jet engine, but has publicly announced a long-range program for the development of both jet and reciprocating engines. As in the past, American aviation will reap the benefits of the unending research and development of Air Force engineers and technicians at Wright Field and other AAF technological centers.

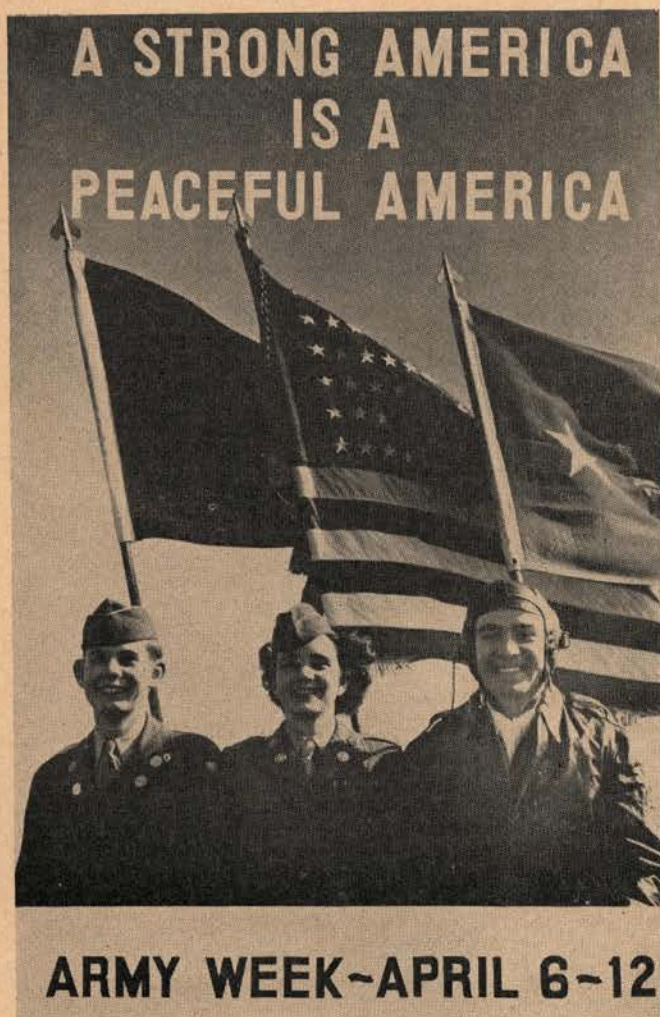
**Engine of XP-84—Streamlined like a torpedo, this G-E axial-flow "Jet" has turbine, has been developed to drive military and civilian planes to great speeds on long flights.**

AAF Photo





# Editorial Comment



## Financial Report For 1946

WE are more than pleased to submit the following financial report to our members.

Believe it or not, we actually made \$543.00 profit last year—and that in the face of a substantial increase in the cost of printing and production and the general rise in the cost of overhead.

The standard of the JOURNAL both in format and reading value has been maintained at its high level.

Our Book Department business is increasing by leaps and bounds—(Have you taken advantage of our book service lately? If not, you are missing a rare chance to save money).

As editor of the JOURNAL, I feel that special mention should be given to the members of the JOURNAL staff who are solely responsible for the sound financial status of the Association. They have worked diligently and faithfully both editorially and administratively to make the business of running the Association and pub-

lishing the ARMORED CAVALRY JOURNAL a successful, streamlined organization.

Our sincere appreciation to Major Hal D. Steward, Associate Editor; Natica A. Brown, Business Manager; and Master Sergeant William R. Rossow, Circulation Manager.

## FINANCIAL STATEMENT FOR THE YEAR 1946

Department	Receipts	Expenses
ARMORED CAVALRY JOURNAL .....	\$ 9,186.90	\$ 5,370.39
Book Department .....	1,530.02	1,090.97
Magazine Department .....	60.50	77.44
Armed Forces Digest .....	1,584.07	
Eleventh Armored Division Association .....	1,716.84	471.55
Rent and Rental Expense .....	900.00	1,853.28
Interest on Securities .....	172.43	
Salaries .....		2,176.49
Social Security Taxes .....		35.68
Withholding Taxes .....		259.50
Insurance .....		33.42
Stationery and Postage .....		847.08
Janitor .....		58.60
Office Supplies .....		306.42
Meetings and Proxies .....		66.45
Miscellaneous .....	81.51	347.99
Telephone and Telegraph .....		220.41
Bank Balance as of January 1, 1946 .....	779.89	
Bank Balance as of December 31, 1946 .....		2,796.49
	\$16,012.16	\$16,012.16

## ASSETS

Bank Balance—December 31, 1946 .....	\$ 2,796.49
Stock on hand .....	
November-December JOURNALS .....	\$ 150.00
Office Supplies .....	300.00
	450.00

## ACCOUNTS RECEIVABLE

Subscriptions .....	
132 12's Due Oct. 1, 1946 .....	\$ 396.00
302 2's Due Dec. 1, 1946 .....	906.00
55 Bulk (Due bi-monthly) .....	165.00
Book Department .....	107.80
	1,574.80

## SECURITIES

12 Shares A. T. & T. Co. ....	\$ 2,040.00
12 Bonds A. T. & T. Co. ....	200.00
2 U. S. Government Bonds .....	2,000.00
	4,240.00

## OFFICE EQUIPMENT

Depreciated Value (5%) .....	1,627.00
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**TOTAL ASSETS** ..... \$10,688.29

## LIABILITIES

### ACCOUNTS PAYABLE

Office Expenses .....	\$ 82.63
ARMORED CAVALRY JOURNAL .....	1,276.90
Book Department .....	114.07
	\$ 1,473.60

### PREPAID SUBSCRIPTIONS

415 4's 1 issue .....	\$ 91.30
282 6's 2 issues .....	124.08
588 8's 3 issues .....	388.08
536 10's 4 issues .....	471.68
221 12's 5 issues .....	243.10
298 2's 6 issues .....	393.36
	1,621.60

**TOTAL LIABILITIES** ..... \$ 3,095.20

NET VALUE OF ASSOCIATION—Dec. 31, 1945 .....	\$10,063.18
NET VALUE OF ASSOCIATION—Dec. 31, 1946 .....	\$10,688.29
NET GAIN—VALUE OF ASSOCIATION for 1946 .....	\$ 625.11



# Army Equestrian Team Once More In Action

## Will Take Part In 1948 Olympic Games

*by Colonel W. H. S. Wright\**

IF present plans are carried through, the United States Army Equestrian Team will compete in the 1948 summer Olympic Games to be held in London, according to the latest information at Fort Riley, Kansas, home of the army team.

Authorized in the spring of 1946, the Army Equestrian Team participated this past November in the National Horse Show, which is held annually in New York's Madison Square Garden. Of the five big prizes in the military competition the United States team walked off with three—the Individual Military Championship, the International Low Score Championship, and the Bowman Cup.

In an effort to foster that aggressive type of training that, in the past, has contributed to the desirable qualities so characteristic of American military leadership, the Army Ground Forces is conducting horsemanship courses for selected officers and men at The Ground General School located at Fort Riley. All members of the Army Equestrian Team are instructors with the Department of Horsemanship.

Six officers and a suitable group of horses had been assembled at Fort Riley by late summer 1946 to train for top-flight horse show competition. The officers were: Colonels Earl F. Thomson, Milo H. Matteson, Franklin F. Wing, and W. H. S. Wright, all Cavalrymen; and Lieutenant Colonels Charles A. Symroski, Field Artillery, and Roy W. Cole, Jr., Cavalry.

Shortly before the National Horse Show was to take place Colonel Matteson was injured in a training accident and his place on the team was taken by Captain Jonathon R. Burton, also an instructor in the Department of Horsemanship.

Assembling a suitable group of horses presented quite a problem. Some old campaigners, members of the team from before the war, were at the Fort Robinson Remount Depot. Other younger animals had been trained and brought along at the Cavalry Replacement Training Depot and The Cavalry School during the war. A group of twenty-one captured German horses were brought to this country in September. They were all animals that had been captured by advancing American units during the final phases of the Battle of Ger-

many. Some were known jumpers and others were believed to have ability. Unfortunately, the ship on which these German horses were sent to this country was required to turn around in midpassage to tow a derelict back to an English port. As a result, the horses were about 30 days on shipboard and many were slow in recovering from this trying experience and were therefore not ready for competition at the time of the New York Show. Of the eight horses making up the military team eligible for international competition, two were German horses, and of the two German horses, one is believed to have been originally a French horse "liberated" by the Wehrmacht from the French in 1940. For the benefit of those officers who have been stationed at Fort Riley or who may know some of the horses from before the war, the following is a list of animals taken to New York: *Rascal, Rattler, Democrat, Air Mail, Dinger, Reno Jumper, Nipper, Swizzlestick, Roll On, Two Star, Guildler, and Grey Fox.*

Since only four officers and eight horses from each nation were allowed to compete in military competition, the first eight horses listed comprised the United States Army's entry; the balance of the horses could not be used in military competition but went into "open" classes only.

Many foreign nations were invited but due to unsettled conditions and shipping difficulties, few could send teams. Canada, The Irish Free State, Great Britain, France and Italy, among others, were unable to send teams. Peru, Mexico and the United States were finally represented.

The Mexican and Peruvian teams were made up of four officers and eight horses each. Inasmuch as both countries had carried on with equestrian competition and show horse training during the war years, they gave promise of being formidable competitors. Their horses were small light animals with an unmistakable Anglo-Arab stamp, very accurate, very agile and beautifully schooled. Their riders were small, light men, experienced and keen competitors.

The New York show ran for six days with military classes both afternoon and evening except for the last two days.

The first event of the military competition occurred

\*Member of the Army Equestrian Team.



on the afternoon of November 4, in the International Military Preliminary class. The first time around the course all four American horses went without a fault—*Rattler*, *Nipper*, *Rascal* and *Swizzlestick*. Three Mexican horses went clean. However, the event went to two jump-offs and ended up with the Mexican team placing first, third and fourth, and the United States, represented in the final jump-off by Lieutenant Colonel Symroski on *Nipper*, placing second.

The first evening, November 4th, saw the first event of the International Low Score Competition. This competition is won by the lowest aggregate score for three events during the first three days of the show. It is a highly prized international trophy keenly competed for. The first event consisted of two officers from each country riding two horses each, lowest total faults for both officers to win for the nation represented. In this, Mexico was again first with eight faults, the United States represented by Colonels Wing and Wright second with 11 faults and Peru third. Of the American horses, *Dinger* went clean, while *Reno Jumper*, *Democrat* and *Air Mail* performed well but not as accurately as the Mexican entries.

The second event of the low score competition took place on the afternoon of the second day. It was a pair jumping class, each nation to be represented by two pairs of horses. It was won by the U. S. Army Team's *Democrat*, an old campaigner, and *Rascal*, one of the German horses. Riders for this pair were Colonels Thomson and Wing. The other pair representing the United States, *Rattler* and *Dinger*, ridden by Colonels Thomson and Wright, marked up four faults. Second place was taken by a very good Peruvian pair and Mexico was third. The United States now moved into the lead in the over-all Low Score Competition.

The \$1,000 International Military Stake took place the evening of the second day. Eight horses per nation could be entered, to be shown over a course which, as set up, was perhaps the most difficult of the show. Of 27 horses to start the course, only 11 were able to finish. This was due in the main to an extremely wide liver-pool jump, and odd-distance in-and-out, and to a narrow time limit. When the broken timber and smashed poles had been cleared away, it was found that Mexico was first, Peru second and the United States entry *Democrat*, ridden by Colonel Wing, was third.

The third and final event of the Low Score Competition was a class in which three officers rode a course at the same time, riding in column and at a safe distance. The three American horses were *Democrat*, *Dinger* and *Rascal*, ridden by Colonels Wing, Wright and Thomson. On the first round of an eight-jump course the American entry went without fault, but this performance was tied by Mexico. On the jump-off, a knock-down by the last horse over the last jump placed us second to Mexico, with Peru third.

The lead gained by the United States on the second day was never overcome by either Mexico or Peru

however, so the U. S. Team took the much coveted and keenly competed for International Low Score Competition Challenge Trophy.

The International Military Special Challenge Trophy was competed for on the third evening of the show. Each nation was allowed eight horses to be ridden by four officers, to be judged on a knock-down-and-out basis. The course was rather difficult, up to five feet in height the first time around, and of the 24 horses entered only four got around without fault the first time. These four jumped off, again knock-down and out, and Mexico's *Michoacano* ridden by Lieutenant Saucedo, the United States' *Reno Jumper*, ridden by Colonel Wright and Mexico's *Chihuahua* ridden by the team captain, Major Mariles, finished in that order.

The fourth afternoon was marked by competition for the International Good Will Trophy. This class, judged on a knock-down-and-out basis went to two jump-offs. By now the United States entries were beginning to come into their own and the free jumping, free galloping type of riding by our officers began to pay off. In an exciting and keenly competitive jump-off in which time counted, *Nipper*, ridden by Lieutenant Colonel Symroski of the U. S. Team, won the class in the excellent time of 27 seconds flat. Colonel Wing on *Air Mail* also went clean in the third jump-off and took second place with a time of 29 3/5 seconds. Peru placed third.

The Bowman Challenge Trophy highlighted the fourth evening's competition. Over a rather tricky course, the entry having the fewest faults and the best time wins. It may easily be seen that this is strictly a time class since four horses or more are pretty likely to go clean. All competitors realize this, and many spectacular rides, combining speed with accurate jumping, always result. Once again the American style of riding and the freedom allowed our horses paid dividends. Colonel Wing, riding *Democrat*, took the class in the phenomenal time of 29 3/5 seconds for the eleven-jump course. Major Mariles of Mexico was second on his veteran *Resorte*, Colonel Wing was third on *Air Mail* and Mexico was fourth.

The International Individual Military Championship was competed for on the next to the last evening of the show. In this class, three horses from each nation were entered and shown over a fairly stiff course going up to five feet in height. Four horses were tied the first time around; *Reno Jumper*, ridden by Colonel Wright, *Swizzlestick* ridden by Lt. Colonel Symroski, *Democrat* ridden by Colonel Wing, all of the U. S. Team, and Captain Alfaro of the Peruvian Team being contenders for the blue ribbon. The jumps were raised for the jump-off and *Reno Jumper*, ridden by Colonel Wright, got four faults as did Lieutenant Colonel Symroski on *Swizzlestick* and Captain Alfaro of Peru; *Democrat* got two knock-downs for eight faults. *Reno Jumper* then went clean in the second jump-off to win the class. Lieutenant Colonel Symroski and the Pe-



ruvian Captain Alfaro were again tied with eight faults but better time by Symroski gave him second, so the class ended with U. S. first and second and Peru third. This win marks the second time the United States has won this coveted trophy. It will be retired by the nation winning it three times.

On the final night of the show, teams of four horses from each nation competed for the International Military Perpetual Challenge Trophy, with the aggregate score of the best three horses of each nation only counting. On the first time around, the United States, represented by Colonel Thomson on *Rascal*, Colonel Wright on *Reno Jumper* and Lieutenant Colonel Symroski on *Nipper*, tied with the Mexican team, both teams having a clean score. On the jump-off however, Mexico took first, the United States second, and Peru third.

A feature of the show was the exhibition of dressage by Colonel Hiram E. Tuttle, Cavalry, retired. Colonel Tuttle gave two exhibitions daily of this difficult art, his horses performing with brilliance and precision the airs of the high school. Exhibitions of dressage by Colo-

nel Tuttle have been a popular feature of the National Horse Show for many years.

The show ended with honors fairly evenly divided between the teams from the United States and Mexico. Of the five really big and highly prized classes, the Mexican team took two—the \$1,000 Military Stake and the International Perpetual Challenge Trophy. The United States team took three—the Individual Military Championship, the International Low Score Championship, and the Bowman Cup.

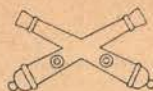
During the war years Latin American countries were able to continue international military equestrian competition, whereas in the United States such competition was stopped altogether. Now that the U. S. Army is again able to be represented by a team, it is felt that it can soon make up for the time, training and experience it was necessary to forego during the war and that the United States Army can put teams into competition which will be a distinct credit to American armed forces, not only in international military classes at National Shows, but in the Olympic Games of 1948 at London.

The U. S. Army Equestrian Team, The Ground General School, Fort Riley, Kansas. Left to Right: Lieutenant Colonel Roy W. Cole, Jr., Colonel W. H. S. Wright, Colonel Hiram E. Tuttle, Colonel Earl F. Thomson, Team Captain, Colonel F. F. Wing, Jr., Lieutenant Colonel Charles A. Symroski, and Captain Jonathan R. Burton.

Photo by The Ground General School







# OTHER BRANCHES



Major General I. T. Wyche

"As the world begins its entry into a hitherto unexploited scientific era of the atomic bomb, supersonic speed, and guided missiles we are forced to consider the inevitable complexities of strategic and tactical application of arms which scientific developments portend.

"The fact is neither new nor startling that in all great enterprises, military and commercial alike, including governments, individualism has to be subordinated to the common good. Our present efforts to create a logical and workable United Nations Organization bear witness to the fact that we believe in this truth.

"Cooperation is built upon a firm foundation of mutual understanding. Successful team play in the world of sports, for example, emerges only when each participant plays his part well—through an understanding of the duties of his fellow workers, or team members.

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"As Confucius said: 'Ignorance is the night of the mind, but a night without moon or star.' The Other Branches Section, ARMORED CAVALRY JOURNAL, augmenting actual experience, provides the opportunity for us to dissipate our ignorance of the missions and activities of the other branches of the Service and paves the way for necessary military cooperation based on mutual understanding."

Major General, U. S. Army,  
The Inspector General.





# Mission and History Of The Inspector General's Department

*by Major General Ira T. Wyche\**

THE existence of a War Department Special Staff Division known as the Office of The Inspector General is a fact known to most, yet there are many who are not familiar with the precise mission of the Inspector General's Department and its history.

Today, as from the beginning, the mission of the Inspector General's Department is to inquire into and report upon all matters that affect the efficiency and economy of the Army of the United States. The Inspector General is charged with keeping the Secretary of War and the Chief of Staff informed of the state of the Army. Accordingly, to pursue this mission, The Inspector General and his assistants find themselves engaged in inspections and investigations, as well as surveys and reviews, in Army commands and Army activities throughout the world. In contrast to a frequent misconception by some persons of the duties of inspectors general, the Department and all its members earnestly endeavor to assist commanders and other members and employees of the Military Establishment in the performance of their duties by supplying information when appropriate, recognizing and reporting meritorious conduct and performance of duty, and by suggesting ways and means to improve conditions—to improve conditions through constructive criticism is the keynote.

Moreover, it is the duty of an inspector general to inquire constantly into all matters that pertain to the efficiency of the command, including the conduct, discipline, living conditions and morale of units and individuals; the state of condition of arms, equipment and supplies; the economical, efficient and lawful expenditure of funds and property, and to report his findings to his commander with strict impartiality and to make recommendations for the correction of deficiencies and irregularities. Such reports should be accepted as representing sincere and honest intent in the interests of his commander and the service at large.

The various reports with which inspectors general find themselves concerned resolve themselves, generally, into five classifications: Reports of annual general inspections, Reports of special inspections, Action-letters, IGD, Reports of investigation, and Complaints.

There usually is nothing secret or confidential in the body of reports of annual general inspections. They are simply factual statements of conditions found during the inspection of any given command or installation. They are forwarded to The Inspector General, War Department, through normal channels of command so that all concerned will be fully informed of what those conditions are. In the body of each report of annual inspection, inspectors general must list, by subject, the number of action-letters, IGD they initiated during that particular inspection.

An action-letter, IGD, is classified according to the subject about which it is written. It may be secret, confidential, restricted, or in the clear. Such letters are written by inspectors general to report major irregularities or major deficiencies when and as they become aware of them. Such letters are forwarded through all interested headquarters and agencies to The Inspector General, War Department. Normally the indorsements thereon indicate that corrective action has been taken at the earliest practicable date by the appropriate headquarters in the chain of command. When the action-letter, IGD, finally reaches The Inspector General, War Department, he reviews it to determine whether or not the proper corrective action has been taken and makes recommendations accordingly. This procedure enables the commander on whose staff the inspector general is serving, and all other higher commanders, to become acquainted with the conditions existing within their command and gives them an opportunity to take timely action to correct matters under their control.

Reports of investigations and special inspections are normally "secret" or "confidential." They are submitted to the commander who ordered the investigation or special inspection to be made. However, once

\*The Inspector General of the Army.



such reports are submitted, they become part of the records of the headquarters where the inspector general making the reports is serving. It is the commander's decision as to who may or may not see those reports, with one very important limitation. The Manual of Courts-Martial states that such reports are "privileged," which means that they may not be introduced as evidence in a court-martial unless the parties thereto consent.

In the case of an investigation directed by his own commanding general, the inspector general conducts the investigation and makes report thereof in the manner and form desired by his commanding general. No copies or report thereof is communicated to any higher headquarters, unless such commanding general considers such action necessary and proper in his own interests or the report brings up a matter the correction of which is beyond his control.

In the case of an investigation directed by some other higher authority, the inspector general functions for his commanding general in making the investigation and preparing the report. No such report of investigation is complete until his commanding general has indorsed thereon such remarks and recommendations as he may deem necessary and appropriate. After the commanding general has made his remarks and recommendations, the report of investigation is forwarded through channels to the authority who ordered the investigation. Those reports which are to be forwarded to the War Department are transmitted through channels to The Inspector General with such remarks and recommendations as intermediate commanding officers deem necessary and appropriate. In no case is a report of investigation forwarded except through the office of the commanding general on whose staff the inspector general is serving.

Inspectors general do not ordinarily start formal investigations of their own accord but only when directed to do so by the commander on whose staff they serve. Yet, in the course of any duly authorized inspections should there come to the attention of an inspector general conditions or circumstances indicating a major irregularity or a major deficiency, it is the duty of that inspector general to find out all the facts so that the proper authorities may take corrective action. The same is also true in the hearing of complaints. Inspectors general must hear the whole story when a complaint is being made, verify the facts and then submit fair and impartial recommendations in each case. Only in this way can the Inspector General's Department accomplish one of its principal missions, which is to protect the best interests of the military service and the rights of its individual members.

Through procedures established by the War Department all personnel of the Army, both military and civilian, have an opportunity to register their complaints and individual grievances to an inspector general not less frequently than once a month. Commanders who

are thus given a new working philosophy for improving efficiency and morale within their commands are directed by War Department Circular 74, 1946, to encourage frequent contact between their personnel and the inspectors general and to keep all individuals acquainted with the procedures for seeking redress for alleged grievances "through the generous use of bulletin board notices, posters, training talks, or other information media." They are further directed (1) To follow through on each complaint to see that appropriate corrective action is taken; (2) To see to it that no retaliatory action whatever is taken against any complainant for having made a complaint; (3) To inform each complainant in writing of the final action taken on his complaint; and (4) To keep a record of all complaints received in order that apparent or potential defects in command and administration may be determined and corrected before they reach major proportions.

Every soldier now can be sure that his grievance, however large or small, will be handled immediately, either by his commander or by the local inspector general. He may go directly to the inspector general, without seeking permission or applying through channels; and he will not be discouraged from doing so whenever the need arises.

An inspector general should have the confidence of the entire command under all conditions. He should never be placed in a position nor permitted to conduct himself as a "super-snooper." He is distinctly a member of the command on whose staff he is serving and should be permitted and required to share in the responsibility of the accomplishment of its mission.

Surprising to some will be the fact that the Office of The Inspector General began its historical activities over one hundred and sixty-nine years ago—on December 13, 1777, to be exact. It was during this period that General George Washington assembled a council, whose final decision, signed by every member, was that "such an office was desirable." As a result Congress, on December 13, 1777, created the Office of The Inspector General of the Army. This action of Congress made The Inspector General independent of every authority except that of Congress itself, but that was not of long duration. On February 28, 1779, The Inspector General was made answerable to the War Board, the Commander in Chief, and Congress.

In March, 1778, about a month after Baron Frederick William Augustus von Steuben had reported to General Washington, the latter published an order announcing that the Baron had "obligingly undertaken the exercise of the Office of The Inspector General of the Army." Therefore, it may be properly said that Baron von Steuben was the first Inspector General of the Army. This was followed by a letter to Congress in which Washington explained the ill consequences arising from a want of uniformity in discipline and instruction throughout the Army, and the necessity for a well-organized inspectorship, explaining what had



been done by Baron von Steuben. As a result of this correspondence, Congress, on May 5, 1778, approved Washington's plan and appointed Baron von Steuben The Inspector General with the rank and pay of Major General.

Not too unlike the duties of an inspector general today, the duties of The Inspector General in those early days, in the main were: to muster the troops monthly, noting the number and condition of the men, their discipline and drill, state of arms and equipment, clothing, rations, etc., to reject unserviceable recruits, and to discharge or transfer to the invalid corps all men disabled in the service, and to report all abuses, neglect, and deficiencies to the Commander in Chief, the commander of the organization, and to the Board of War.

Shortly after the year 1865, the War Department published an order defining the duties of the Inspector General's Department to include "all matters pertaining to the military art or having interest in a military point of view." It is thus seen that the sphere of inquiry was made to include every branch of military affairs and was limited only by orders issued in specific cases.

Later, in 1874, the inspector of disbursements was required by law, and it was directed "that officers detailed for this duty should not be in any way connected with the department or corps making the disbursements." Under this ruling, inspectors general were made responsible for any defalcation or misapplication of public monies or property which "an active vigilance on their part might have detected."

The Secretary of War, in April 1876, directed The Inspector General to report on military control and discipline. Reports of inspectors general were to be forwarded, through regular channels, to The Inspector General's Office, and inspectors general were ordered to note on such reports the remedies applied, and all superior officers were directed to indorse on them their action "for the information of the General of the Army."

Subsequent reorganization of the Inspector General's Department took place in the years that followed and under the National Defense Act of June 3, 1916, in addition to all the traditionally accepted responsibilities, another duty was assumed by the Department. This involved systematic inspections of the National Guard.

During World War I, one or more officers of the Inspector General's Department were on duty with each combat division and at each of the large camps or cantonments in the United States. In addition to such inspections of camps, divisions and units as were made by their own inspectors, each division was inspected at least twice, before ordered overseas, by inspectors general from The Inspector General's Office. This was one of the most important functions performed by inspectors general, resulting in the detection and prompt correction of many irregularities and deficiencies, in the elimination of certain unfit officers and in the promo-

tion of certain others whose efficiency warranted it.

In his preliminary report to the Secretary of War, dated November 20, 1918, in reference to the organization and operations of the American Expeditionary Forces from May 26, 1917, to the signing of the Armistice, November 11, 1918, General John J. Pershing stated:

"The Inspector General's Department has risen to the highest standards, and throughout has ably assisted commanders in the enforcement of discipline."

As the Army expanded to meet the needs of global warfare, in World War II, so the Inspector General's Department had to expand to meet the demands of the War Department and to satisfy the requirements of each new command for an inspector general. This brought about an increase in the Department from 60 officers in 1939 to 1,438 officers early in 1945. Like many other staff organizations, The Inspector General experienced considerable difficulty in obtaining officers with the required background and military experience needed to fulfill the duties of an inspector general; therefore, intensive training programs were instituted.

Soon after troops began moving from their training areas to ports of embarkation, and thence by ship to overseas theaters of operations, another group of officers became necessary as members of the Office of The Inspector General. This group was known as the POM (Preparation for Oversea Movement) Inspection Group, which, by direction of the Deputy Chief of Staff, inspected units prior to departure to ports of embarkation, to give assurance to the Chief of Staff that the organization and equipment met the necessary requirements of the theater for which they were destined.

No sooner had American troops landed overseas than individual complaints, such as those regarding treatment, conditions, pay, and food, began coming back through various channels to the War Department. To meet this new requirement for inquiry and investigation, an Overseas Inspections Division was organized in the Office of The Inspector General, and its members were soon being dispatched to all parts of the world, by land, sea and air.

Also with every major unit going overseas went an inspector general, to every far-off land and corner of the earth. Several division commanders, during the combat periods of their divisions in World War II, used their inspectors general, in addition to other duties, as heads of boards or committees to inquire into, and submit recommendations for, citations and decorations. Probably no other staff member is better suited for such services than the inspector general of the command.

Inspectors general working out of the War Department, that is, Office of The Inspector General, are basically in the same category as staff inspectors general in the field. The Inspector General of the Army functions as a staff officer for the War Department and as an assistant to the Chief of Staff, as implied in the previous



discussion of his duties and responsibilities. His inspectors general are confidential agents of the Secretary of War and the Chief of Staff, or the Commanding Generals, Army Ground Forces and Army Air Forces, who may request inspections, investigations, surveys, or studies. Similarly, the inspectors general assigned to field commands are confidential agents of their commanders. Their investigations are confidential, unless a different procedure is prescribed by the authority ordering the investigation.

Inspectors, whether they represent The Inspector General of the Army directly or the commander on whose staff they serve, seek the truth without fear or favor. Their findings are immune to the influence of commanders. The high standards of personal integrity of inspectors general make it possible for the commander to be sure that the facts on the question at issue have been presented to him in a completely impartial manner.

Of particular interest in the field of inspections is the specialized inspection relating to procurement activities and construction operation on a cost-plus-a-fixed-fee basis throughout the Army. The bulk of this class of inspections is allocated to the Office of The Inspector General. Usually they are performed by the Procurement and Construction Branch of the Inspections Group which is particularly qualified to handle such assignments. Savings to the Government brought about as the result of corrective action taken upon the reports of inspections made by members of this division totaled many millions of dollars.

The Deputy The Inspector General assists The Inspector General in carrying out his mission and acts for him during his absence from the War Department; supervises and coordinates the operational functions of the Office of The Inspector General and of the Inspector General's Department as a whole.

The Assistant The Inspector General makes inspections and investigations and conducts special inquiries, studies and surveys pertaining to Negro personnel and related matters.

The Special Assistant to The Inspector General serves as consultant in special subject assignments requiring detailed analysis and technical knowledge. He is available as consultant to the various subdivisions of the office.

The Executive prepares, enunciates, and puts into effect policies of The Inspector General governing the activities of the Office of The Inspector General and the Inspector General's Department as a whole; exercises general administrative supervision over all activities of the Office of The Inspector General and acts as Chief of the Personnel and Administrative Group and acts for The Inspector General during the absence from the War Department of The Inspector General and his deputy.

Three Groups comprise the body of the organization of the Office of The Inspector General, namely, the

Personnel and Administrative Group, the Inspections Group, and the Investigations Group, each with operating subdivisions known as Branches.

The Personnel and Administrative Group supervises all matters connected with the procurement, assignment, reassignment, and promotion and reclassification of commissioned personnel of the Inspector General's Department in the War Department Special Staff and in commands, installations, and activities under control of chiefs of administrative and technical services and other War Department agencies, and of civilian personnel of the Office of The Inspector General; coordinates and supervises the activities and functions of the several branches assigned to the Group—IG Branch of the Central Officers' Assignment Group, and Personnel, Office Service and Field Service Branches; prepares office memoranda, directives and orders; maintains historical records and performs other miscellaneous work pertaining to the administration of the Office of The Inspector General.

The Inspections Group supervises and coordinates activities and functions coming within the scope of the several branches assigned to this group—Inspections, National Guard Inspections, Procurement and Construction Inspections and Complaints Branches; formulates policies concerned with the inspectional activities of inspectors general throughout the Army, and determines inspection jurisdiction.

Finally, the Investigations Group supervises and coordinates activities and functions coming within the scope of the several branches assigned to this group—Investigations, Reviews and Fiscal Branches; determines the appropriate jurisdiction for such investigations as are referred to The Inspector General by higher authority; formulates policies concerned with investigational activities of inspectors general throughout the Army.

Although the number varies from time to time, as of February 1, 1947, there were on duty in the Office of The Inspector General a total of 59 officers. The remainder of the officers detailed in the Department are assigned to, and function as staff officers of, the commanders of the field forces—armies, corps, divisions, Air Force units, army areas, training centers, and other key installations.

The Army operates under laws passed by Congress and under regulations issued by the War Department implementing those laws. While it is a command function to see that such regulations are followed, it is the function of the Inspector General's Department and its members to see that the enforcement of such regulations is done lawfully, in the best interest of the service, and in a manner which guarantees justice to all.

Justice is not a matter of opinion; it is the result of law. Therefore, no man can be punished for reporting an injustice to himself because it is his right and privilege to do so. It is the duty of The Inspector General to see that his proper rights are preserved.



CARDED

# LAWYER — SOLDIERS, Inc.

*by Colonel William J. Hughes, Jr.\**

**M**ORE than 2,800 officers, including one major general and 10 brigadier generals, administered the American Army's legal system when the Army was at its peak strength in World War II. Although the Judge Advocate General's Department is smaller in numbers today, it still has a big job.

Headed by Major General Thomas H. Green, The Judge Advocate General, who as legal adviser to the Secretary of War communicates with him directly on all legal matters, the Judge Advocate General's Department is composed, in peacetime, of approximately 125 officers of the rank of Captain or above. The present emergency strength of the Department is 408 officers broken down into the various ranks as follows: 90 Colonels, 112 Lieutenant Colonels, 95 Majors, 89 Captains, 15 First Lieutenants, and seven Second Lieutenants.

Every officer exercising general court-martial jurisdiction has a staff judge advocate; during the war each Service Command, each Division, Corps, and Army and each Theater of Operations, and, of course, SHAEF and SCAP. Besides these organizations, hundreds of judge advocates were legal advisers to various branches of the War Department, ports of embarkation, ordnance depots and arsenals. All these officers come under The Judge Advocate General and except in the Air Forces and in foreign theaters, are assigned by him at Army level to their respective duties.

A serious duty of the staff judge advocate concerns courts-martial trials. No case is referred to a general court without his advice; no sentence is approved by the commanding officer until he has read the judge advocate's review of the evidence and considered his recommendations. Subsequent to approval the case goes to the Judge Advocate General's Office in Washington. If the sentence involves a dishonorable discharge and its execution is not suspended, the case is examined by the statutory Board of Review of three officers of the Judge Advocate General's Department, which has power in the event it finds it illegal to hold the record legally insufficient, in which event if The Judge Advocate General concurs, the findings and sentence are set aside. All records of trial involving death or the dismissal of officers are likewise reviewed by the Board of Review, which has in general the same legal powers in this type of case.

In cases wherein the reviewing authority suspends

the execution of the dishonorable discharge, and in all other cases of conviction by general court-martial, no matter what the sentence, the legality of the record of trial is determined by the Military Justice Group in the Office of The Judge Advocate General. If on examination the record of trial appears legally insufficient, the case is transmitted by the Military Justice Group to the Board of Review, which has the final say.

An important branch of the Judge Advocate General's Office is the Clemency Branch, which examines all cases of general prisoners for clemency, correlating psychiatric and other data, prison behavior, possibility of rehabilitation, and makes recommendations accordingly for reduction of the sentence. As might be supposed, the Clemency Branch is in almost constant communication with wives, mothers and members of Congress.

The staff judge advocate's duties in special court-martial cases are somewhat similar to his activities in general court cases, except that the legality of the record of trial is determined finally, on his advice, by the officer exercising general court-martial jurisdiction.

Records of trial by summary courts-martial appointed by company commanders or otherwise, are likewise transmitted to the staff judge advocate who checks the charges, findings and sentence for legality.

The military justice duties of the staff judge advocate account for over 50 per cent of his time. The remainder is devoted to matters involving military affairs, claims, contracts, litigation, etc. He advises his chief as to proceedings of Disposition Boards, Line-of-Duty Boards and various investigative boards. A large part of this time is involved in keeping the work of the headquarters in line with Army regulations, which the War Department sends him on occasion. The staff judge advocate is also the liaison officer with the civil authorities and negotiates the surrender to the Provost Marshal of men held in the town lock-up. In time of war, on the civil side, a judge advocate spends considerable time passing on claims arising out of the Army's occupation of either friendly or enemy territory. It is not generally known that an Army is not the rent-free guest of a friendly country; it pays for everything it gets and the judge advocate passes on the bills or the contracts resulting from the Army's occupation. He is required to be a real estate and contracts expert and to know the law of the foreign country in which the Army is stationed.

The judge advocate is also an expert in domestic re-

\*Office of the Judge Advocate General, War Department.



lations. On the march, all those in marital trouble, or looking for it, consult him. He frequently refers the matter to the chaplain and vice versa. Also, he runs a sort of Legal Aid Bureau to which any member of the organization can apply for free legal advice.

During the war The Judge Advocate General advocated and obtained decentralization of his Department. An Assistant Judge Advocate General, armed with a Board of Review and a Military Justice Group, was appointed for each foreign theater. Final action on court-martial cases could then be taken in the theater without the necessity of transmitting the record of trial to Washington for action. Even in death cases the legality of the findings and sentence could thus be determined overseas in the foreign theater. There were 146 executions in the United States and all the theaters combined during the war and only one execution for a purely military offense, an aggravated case of what amounted to desertion in the face of the enemy in the European Theater of Operations. From July 31, 1940, to September 30, 1946, 1523 officers were dismissed, counting the United States and all theaters.

The Judge Advocate General's Office seldom hits the front pages. It is always the unusual case which makes the headlines. Thus, when Weber, an alleged conscientious objector in California, refused to obey an order to drill and a court-martial sentenced him to death, the hue and cry against severity of court-martial sentences reached astronomical proportions and caused indignation meetings from here to China. In contrast, the sentence finally approved, dishonorable discharge and five years' confinement, was not news and no one heard of it. Similarly, the McGee case caused furious protests from veterans' organizations all over America. McGee got two years' confinement for striking some German prisoners of war. Public protest made McGee out as a martyr and a hero, the victim of the iron severity of a discredited system. The fact that he had 13 previous convictions was not given much publicity at all.

The Judge Advocate General's Office in Washington has two main branches, the Military Justice Group, just described, and the Military Affairs Group. Each group is under an Assistant Judge Advocate General, a brigadier general. The Military Affairs Group strives manfully with Army regulations, legislation, opinions of the Comptroller General, and is the last word on matters of pay and allowances, promotion, discharge and retirement.

The International Law Branch of this Group prepares opinions on questions of international law, including the laws of war, prisoners of war, enemy aliens, relations with our Allies, military government, and maintains close liaison with the Department of State, which, on a parity with the Supreme Court, is the fountain source of international law in this country.

The Legal Assistance Branch supervises the operation throughout the Army of the legal aid plan put into effect during the war. It provides legal advice and as-

sistance to military personnel with regard to their personal legal affairs. No one who has not had the experience can realize the worry caused the soldier who finds out in a foreign land that his domestic or business affairs require immediate legal attention. The War Department plan was designed to and did solve this problem by giving the soldier individual legal advice on all matters relating to his personal affairs, business or domestic. The judge advocate, for better or for worse, takes over.

The Claims Group deals with claims for damage, for loss or destruction of property or for personal injury or death caused by military personnel or otherwise incident to activities of the Army. The story that it is still settling Civil War claims is a canard, but an occasional payment of a Spanish War claim brings a quiet smile of achievement to the Group Chief. Recently, the Claims Group has added the enormously wide jurisdiction conferred by the Government Tort Claim Act which for the first time permits suit against the Government for death or injury to person or property arising out of the negligence or wrongful act or omission of any employee of the Government while acting within the scope of his employment. A 48th Wrapper Indorsement on one of these claims caused a mild stir, as the Act only became effective last August, but it turned out the claimant was insane and had forged the 48th Wrapper Indorsement as he said, "just to give the claim a good start."

The Litigation Group handles all War Department litigation through liaison with the Department of Justice. Thousands of suits are filed against the Government as a result of War Department activities involving claims based on contracts, suits in admiralty, tax suits, etc. Certain suits are likewise filed by the War Department to recover money rightfully due from individuals. A large volume of business arises out of cost-plus and fixed-price contracts made during the war, to which have now been added the portal to portal pay controversies.

The Contracts Group of the Office supervises War Department contracts in all their aspects and surety bonds required by the War Department in connection therewith.

War Department interests pertaining to patents, of enormous value and extent, are handled by the Patents Group.

Lastly, the Military Reservations Group takes care of the real property in which the War Department has an interest, passing upon all questions of title, and the acquisition and disposition of real property under War Department control. During the war, the War Department took the title to 33,000,000 acres of private lands and "borrowed" 28,000,000 from the public domain, leasing an extra 9,000,000, mostly in the South.

The Judge Advocate General's Office is thus one of the largest and busiest law offices in Washington.



# The Air Transport Command

*by 1st Lieutenant Robert M. Sherman*

**It is difficult to grasp the full implications of the vital role which the military air carrier will play in this era of atomic weapons, guided missiles, and long-range bombers like the 10,000-mile B-36. One is forced, however, to agree that strategic air transport must unceasingly improve and strengthen itself toward the day when its full energies may be sorely needed in the preservation of our national security.**

**T**HE Air Transport Command of the Army Air Forces, which had reached a strength at its peak in World War II of 3,000 aircraft and a quarter of a million personnel, represented a military air machine stemming directly from the lessons of modern warfare. Conceived, born, and nurtured in World War II, it was tested and developed in all theaters of operation.

Established on May 29, 1941, as the Air Corps Ferrying Command, it was given the responsibility of ferrying aircraft for the British from U. S. factories to transfer points and transporting essential passengers and mail between the United States and the United Kingdom. Under the pressure of war needs its activities had been expanded inside of a year to include the operation of a world-wide air transportation system and the delivery of aircraft to all Allied forces. By June 20, 1942, when the Ferrying Command became the Air Transport Command, it had accomplished or supervised the delivery of 13,513 aircraft to final domestic destinations and 638 aircraft to final foreign destinations, as well as transporting 1,920 tons of passengers, cargo, and mail. Brigadier General Robert Olds, the first Commanding General of the Command, was succeeded in April, 1942, by Lieutenant General Harold L. George, who continued in this capacity until 20 September 1946, when Major General Robert M. Webster assumed command.

In December, 1942, ATC was given the hazardous job of flying the "Hump"—transporting supplies over the Himalayas from Assam to China. Previously, the greatest load carried to China in any one month had been 1,136 tons. ATC vigorously attacked this problem, and air-carried 2,278 tons in March, 1943; 18,975 in

July, 1944; and finally the record total of 71,042 tons in July, 1945. Elsewhere, other ATC services were expanding. As the Allies advanced on fortress Europe from North Africa and across the channel from Britain, ATC followed. In the Pacific, as the Japanese were forced back toward their home islands, ATC routes moved northward, until the main line no longer ran to Brisbane, Guadalcanal, or Saipan, but to Tokyo.

In addition to ferrying aircraft and operating regular transport services, ATC conducted from the time of its origin a wide variety of special missions. The President of the United States was flown to international conferences, whole troop units with full equipment were flown into battle areas, and thousands of troops were redeployed to this country from the Mediterranean and European Theaters. Of notable significance was its air evacuation of the sick and wounded.

Today, in the Air Transport Command, there is the repository of the experiences, skills, and methods which are its wartime heritage of this global air supply operation. A future war will make this nucleus the core of an Air Transport Command far larger and with duties immeasurably greater than those imposed by World War II. The demands of a future war will make it imperative that the forward echelons be supplied with matériel which in tonnage alone will dwarf any previous logistical problems. Such a conflict would require huge tonnages to be flown to the Strategic, Tactical, and Defense Commands. Only an air transport organization able to support the scope and intensity of future warfare would be adequate to such an emergency.

How atomic warfare may come to this nation has, of course, been the subject of numerous studies. But no



matter whether it would come from the north with a thousand bombers crossing the Polar Basin and laying waste our industrial centers, or from some other direction, or by some other means, it would undoubtedly have as its main objectives our most vulnerable points. And admittedly we are open to the menace of the atomic weapon, for our American civilization, which knew no such threat when it was in the building, exposed itself in every quarter. Our lines of communication may be cut, our nerve centers made useless; war potential will be bottled up in production centers, which, if not themselves damaged beyond usefulness, will be without the means of distribution. National morale will be dealt a reeling blow from which recovery would be difficult if not impossible.

The suddenness of such an attack makes air power one of the best ways in which it can be fought. Especially will the role of air transport be a vast, complex problem to be handled with understanding and efficiency. The effectiveness of rapid aerial supply was dramatically demonstrated during the last war when, during a critical phase of the North African campaign, a hurry-call came from Field Marshal Montgomery. Urgently needed were several tons of 37mm antitank shell fuses. Quickly, Air Transport Command flew this vital ammunition to him from this country in time to hold Rommel until Montgomery had amassed enough reinforcements to repel the Nazis.

Then, too, there will be factories which may have to be dismantled and later re-assembled at some safe location. Air lift, which for speed of movement is unchallenged by any other carrier medium, will be vital for such an operation.

#### AIR AGE IMPOSES NEW TACTICS

During the last war, besides carrying essential war cargoes, ATC was called upon to carry an amazing variety of cargo, including such things as horses, insect powder, airplane tires, and bicycles. For a future war, its cargo list will continue to grow; there must be no product that cannot be air-lifted. Product engineers, who saw how ordnance built many of their weapons in conformity with air cargo size requirements, must have such needs in mind when they are called upon for new designs and styles. The requirements of air lift are a part of the new thinking which has been imposed upon us by the Air Age.

The supplying and movement of offensive forces by air, an undertaking which in this last war had come to be of constantly increasing value, had been developed by Air Transport Command to a point where no obstacle, natural or man-made, was allowed to interfere with this operation. Carrying guns, bombs, rifles, mortars, and jeeps, Air Transport Command skirted mountains and defenses, reduced days to hours, and made even the most isolated Pacific outpost as accessible as the nearest airfield. In southern Okinawa, during the battle of Shuri Ridge, an urgent request for mortar

shells by the late Lieutenant General Simon B. Buckner was filled by air with 200 tons sent from Hawaii. This would have taken precious days by surface vessel; air carrier accomplished it in 28 hours.

Cargo more precious by far than war matériel were the sick and wounded which air evacuation with its speed and comfort flew from battlefields to inland medical centers. Begun in 1943, air evacuation reached its greatest volume in 1945 when the Command carried a total of 212,819 patients, nearly two-thirds of them on international routes.

Today, nearly 15 months after V-J day, our occupation forces are tied together by this rapid and reliable air bond; our overseas forces receive their necessary supplies rapidly and efficiently.

#### SKELETON WORLD NETWORK STILL EXISTS

The world-wide scope of ATC has shrunk from 10 wartime divisions to the present three, the Atlantic, Pacific and European, but in this March of 1947, three planes a day are still winging their way into Tokyo, with two planes a week going to Shanghai. Daily, six flights go westward to Hawaii from California, with four to Guam. Five times a week flights go to Manila.

From our East coast the Command's planes are still plying the Labrador routes to Iceland and the Newfoundland route to the Azores, then proceeding on to Europe. From the European continent, ATC planes still fly the routes to Casablanca, Dakar, and Roberts Field, Liberia.

The supply depots for the armed forces in the United States are also linked to the aerial ports of embarkation

From the shadow of a wing of Air Transport Command's giant cargo carrying "Skymaster," are seen three of the fleet of these aircraft which served so well to make the aerial highways of the world one continuous supply path for the unceasing demands of the war just won.

AAF Photo





by a vast network of routes. The Command's traffic is lighter than at any other period in its history, but the routes maintained are still a healthy, smoothly integrated supply network.

As vital as this supply service is to our occupation forces, it is secondary today to the importance of the training operations it engenders. A minimum of trained personnel must be available to man all the key positions in order to maintain a state of emergency readiness and meet the need for sudden expansion in the face of air transport requirements. Especially is this true of capable pilots. To train a pilot takes almost a year. At the end of that period he is still incapable of flying today's huge transport aircraft under all the conditions encountered in such operations. It is in the Air Transport Command that his initial transition is translated into the vital day-to-day actual experience so essential to producing a finished transport pilot.

#### EXPERIENCE MUST BE MAINTAINED

Additionally, the Command must keep in its organization a certain number of experienced crews. These crews, instructing and supervising, will enable the Command to expand its strength in an emergency.

The piloting of the aircraft is only one phase of an air operation, although its importance cannot be denied. In a global air carrier picture, the bases which make up the whole are essentials in the working of the route proper. Qualified operations men are needed to check the loading and flying of aircraft at their particular locations. There must be experienced engineering officers to supervise maintenance of the planes. Traffic men must put their specialized knowledge to work making the smooth flow of cargoes and the proper allocation of priorities a characteristic of this operation. There should be sufficient officers trained in ATC administrative methods and with enough maturity and executive ability to command properly the bases which such a future expansion will dictate.

At its peak, Air Transport Command consisted of over a quarter million personnel, comparing favorably with some of our larger industrial establishments. Like those industrial giants which depend upon close coordination between management and labor for their greatest effectiveness, ATC, too, depends upon the high skills and specialized knowledge of its personnel. Although contracted in size and reduced in physical plant, the Air Transport Command has the important temporary task of air-lifting essential cargo to our occupation forces, thus furthering its operational, administrative and executive skills in order to be instantly operational in the event of a war emergency.

An analysis of future trends shows that the present small size of the Air Transport Command is completely inadequate to handle the vastly expanded range of tasks for which it will be called upon in the event of a future conflict. New jobs, dictated by the relentless demands of modern warfare, will be set before it. Its

World War II role will be but a pale shadow alongside the looming demands which such a future conflict would engender. Obviously, a firm foundation for such an undertaking is an absolute necessity.

Just as an ocean-going vessel of any moderate draft requires a fair harbor with adequate dockage facilities, so land-based aircraft need airports. While facilities at airports can be quite meager and still supply those certain bare essentials which will enable aircraft to land, be serviced, and leave again for their destination, there is a certain irreducible minimum below which safety and health are endangered.

Today, under the impetus of enforced economy measures, many Air Transport Command bases have been reduced to such a minimum condition. However, their value as links in the chain connecting our occupation forces remains as great as ever. But their future worth extends beyond this important function. It is as stepping stones to the outer rim of this country's defenses that they will play their most important role should a war emergency arise. No single base should be relied upon solely, just as no one route can be considered adequate. There must be alternate routes and bases to make for complete reliance and to guarantee that after leaving the Port of Aerial Embarkation the aircraft will reach their destination.

Air evacuation of the sick and wounded, an Air Transport Command operation begun on a significant scale in 1943, reached its greatest volume in 1945, when the Command carried a total of 212,819 patients, nearly two-thirds on international routes. Seen here is the method of administering plasma to the wounded while in flight.

AAP Photo





## CHAPLAINS ROLE IN THE ARMY

*by Chaplain (Major General) Luther D. Miller\**

CHAPLAINS do not fight, but they do get killed in battle. Only the Air Forces and the Infantry have suffered a higher proportion of casualties among their officers than the Army Chaplain Corps. Peak strength in World War II was 8,171 Chaplains and of this number 77 were killed in action, five met death in Japanese prison camps, 78 died from natural causes while on duty, 235 were wounded in action, and 37 were released from enemy prison camps.

The Chaplain's field of action depends, of course, upon the type of organization he is assigned to. The base hospital is the field of action for a chaplain serving with a medical regiment. A river where a pontoon bridge is being repaired under shellfire is the field of action for the chaplain of an engineer regiment. The area from which the batteries are firing is the artillery chaplain's place. The foxholes, jungles or swamp where the men of his unit are fighting, being wounded and killed, is the field of action for the chaplain of an Infantry organization. In short, the chaplain is where his men are.

The Chaplain Corps has been linked with our Army since the beginning of our Nation's history. It was not long after the first mustering of American Army Forces that the office of Chaplain became a regularly established position in its organization. The first blood of the American War for Independence was shed at Westminster, Vermont, on 13 March 1775. There followed in succession the battles of Concord and Lexington (19 April 1775), Ticonderoga (10 May 1775) and Bunker Hill (17 June 1775). In all of these engagements, clergymen joined their parishioners to be present with religious ministrations. Their services were formally recognized and honored and the office of Chaplain legally established when the Continental Congress on July 29, 1775, included a rate for chaplains in its schedule of pay for all services.

Four Army chaplains wrote their deeds in history when the troop transport SS *Dorchester* was torpedoed off Greenland. According to affidavits of the SS *Dorchester* survivors, fear of the icy water had made many aboard almost helpless, convinced as they were that such a plunge could bring only death. The chaplains calmed their fears, and are given credit for saving many men by persuading them to go overboard where there was a chance of rescue. Many of the survivors reported seeing the chaplains standing together on the SS *Dor-*

*chester's* forward deck, handing out life belts from a box. When the box was empty, the chaplains removed their own life jackets and gave them to other men, and in so doing, sacrificed their own lives. Two of the chaplains were Protestant; one was Roman Catholic; the fourth was Jewish. The ship was sinking by the bow when men in the water and in the lifeboats saw the chaplains link arms and raise their voices in prayer. They were still on the deck together, praying, when the stricken ship made her final plunge.

Now that hostilities have ceased, the occupational hazards of the Army have decreased. Army chaplains no longer need share with their men the emergencies of battle. Today the chaplain does his part in solving the problems of reconversion and the winning of the peace.

Qualifications (as stated in Army Regulations 605-30) for clergy applying for commissions as chaplains in the United States Army have been frequently modified to meet the demands of the National Emergency. At the present time, with the need for additional chaplains continuing, chaplain applicants must possess the following qualifications: (1) World War II service as Chaplain; (2) college graduate (from a college recognized by the War Department); (3) have had a seminary course in a religious seminary of recognized standing; (4) transcripts of college or seminary credits, either accompanying application or on file in the Office of the Chief of Chaplains; (5) current ecclesiastical indorsement from denominational agency recognized by the War Department; (6) active engagement in ministry as principal vocation in life in the same denomination as served in the Army if on inactive status.

The Chaplain Corps provides the Army chaplain with all equipment necessary for the completion of his mission. As every Army man knows, chaplains are provided with assistants, soldiers who strengthen the hands of the chaplain and help him in the work of his office.

The Chaplain Corps' objectives are essentially three in number: (1) to provide for the spiritual welfare of all troops by conducting or making arrangements for religious services; (2) to make men increasingly aware of the presence of God and the reality of His moral law, thus providing the breath of justice without which peace cannot live; (3) to contribute to the effectiveness of soldiers by strengthening within them a living faith which is the heart of excellent morale, and preparing them to render rich and sacrificial service to their country and their comrades both in war and in peace.

\*Chief of Chaplains.



# Relationship Between Officers and Enlisted Men

## A GROUND SCHOOL LECTURE

*by Colonel Hamilton H. Howze\**

**M**Y subject is "The Relationship between Officers and Enlisted Men." It is a "hot" subject, since it is one which closely affects all of us, and since it has been the cause of much bitter controversy in the recent past.

If you are not genuinely interested in this subject, you are making a serious mistake. The accurate understanding of the proper attitude of officers toward their men, and of men toward their officers, is of vital importance to the Army. It is one of the fundamental ingredients of discipline, and discipline is a fundamental requirement of a military force.

Since this subject is inextricably mixed with the subject of leadership, discipline, rank, and military courtesy, I must therefore touch somewhat on those matters in the course of this talk. I advise you here, however, that it is not my purpose merely to justify the officer's privileged position, although I shall express some specific opinions on that issue, also.

Between us, I hope that we can clarify our minds on all these kindred matters and arrive at reasonable conclusions, at least to our own satisfaction. If we, as a group of officers, do arrive at sound conclusions, and are personally convinced of what is correct, we must accept certain educational obligations in regard to other officers and men who may serve under us. The need for such education (or such indoctrination) among the junior officers of the Army is widespread. Only if an officer has the courage of his own convictions as to his position, in respect to the men he commands, can he properly fulfill his function. A lack of conviction leads first to uneasiness, and then to indecision, laxness, and a failure of discipline.

The relationship of officers and men has been evolved, with many changes, through the national military experience. In our country, the problem arose at the very dawn of our national history. In the Revolutionary War, in the War of 1812, in Andrew Jackson's Cherokee War, in the Mexican and Civil Wars, numer-

ous difficulties and problems existed, and not all were satisfactorily solved. I cannot find time to give you details, but certainly you remember stories of the thousands of desertions which threatened the success of our early campaigns, of the disgraceful abandonment of the battlefield (in 1812) by the militia charged with the defense of the City of Washington, of draft riots, of elected officers, and of other incidents indicating that a proper relationship and good discipline frequently did not exist.

Now let's get down to cases. What is the aim, or purpose, of developing among officers and their men a workable relationship?

The ideal relationship must satisfy one great requirement—it must serve to build an efficient Army, sufficiently efficient to fulfill its national function, i.e., to win wars. The aim is *not* to build happiness, per se, for the members of that Army.

Certain difficulties confront us in our effort to attain that ideal relationship. One is the inborn suspicion, natural to every American man, which makes him wary of any rules or regulations which interfere with what he considers his God-given right to do pretty much what he pleases. We in the United States have made a hero of the man in the street; it is that sympathy for the common man which is largely the basis of our democracy. During the war, the "forgotten man," as he came to be known during the depression years, enlisted in the Army, and in fact in many cases eventually became an officer in the Army. As long as he remained enlisted, he was set up by the American public as being incontrovertibly right in his relationship with what became known as the "brass." The public chose to put the enlisted man in the light of an underdog (and therefore the favorite) in a conflict which many civilians believed existed between the officers and the enlisted men in the Army.

Of course, the Officers' Corps itself can hardly lay claim to perfection. Part of the blame can be put, certainly, at the door of the Regular Army. I am a Regular Army officer. Officers are selected and maintained in the

\*Director of Instruction, The Ground General School.



Regular Army exactly according to the rules made for that Army, by civilians. Sometimes, unfortunately, politics gets into the officer ranks of the Army. During the years which preceded the war, there were a certain number of grossly inefficient Regular officers—and some of them are still on duty—who could have been pointed out at will. Those officers were, in many cases, put up before boards to get them out of the Army, but through pressure, or because of an antiquated system of forced separation, their cases were dropped.

A second root of trouble lay in expansion. To fight World War II, the Army jumped in strength from 200,000 to 11,000,000 in a very short time. Figure for yourself the difficulties of even a civilian business—which is always held up to the Army as a comparatively efficient organization—in making such a terrific expansion. Remember, also, that war is not something which is normally practiced. A civilian firm in business gets daily practice in the consummation of that business, and perhaps continues that practice for 150 unbroken years, day by day. In war, practice is always in the nature of a “dry run,” and the business part of the military art takes place only in a very relatively short space of time—fortunately, of course.

We have discussed the aim of a proper relationship: to build an efficient Army. I have indicated some facts which have been barriers to the full attainment of that proper relationship. I now want to delineate that relationship; I have tried to keep it simple:

First, there must be mutual respect.

Second, there must be disciplined loyalty, willing obedience, by the soldier.

Third, there must be a deep-rooted, well-developed sense of responsibility on the part of the officer.

I can't believe—or say—that this relationship prevailed everywhere during the war. There were many unforgivable abuses of authority, many cases of inconsiderate and improper use of the Army disciplinary system, which occurred. I'll run over one or two of them, very briefly.

The matter of “Off Limits” was a constant irritation to combat soldiers. All too often troops under my own command would take a town, only to be confronted a day or so later with “Off Limit” signs posted in every direction. The “Off Limit” sign is, in itself, a rude announcement, and very irritating to soldiers.

Often officers' clubs were inconsiderately located, and the use of certain buildings by officers exclusively had the result of imposing a hardship, by omission, on the enlisted men. In my own outfit, I eventually made it a rule that the officers' club was established only *after* facilities were made available to the men; it was a good rule.

Officers would abuse the use of available military transportation, and the enlisted men resented it.

The officers had a liquor ration—the enlisted men did not. I think it was a mistake, and it caused much resentment.

In many cases, the distribution of decorations and medals was poor, favoring officers beyond what it should.

There were many instances of poor leadership, in rear areas and in battle. Not pulling my punches, I will say that poor leadership was especially prevalent in the rear areas, where officers who were not undergoing any hardship, and had not the necessity for privilege that combat officers did, often abused their authority. Many of you know yourselves the arrangements in the rear areas—(I was in Italy)—whereby officers in the SOS would set themselves up in big villas and live off the fat of the land.

Finally, I mention rudeness and inconsiderateness. There was many an officer who was extremely rude—and without reason—to enlisted men. There was many an officer who was inconsiderate in his actions, and in his references to his men, putting himself insultingly separate from them. Mind you, I'm not saying that an officer should not, for proper cause, vigorously and pointedly upbraid a soldier, but I do contend that in his normal dealings habitual rudeness is inexcusable.

Partly because of these very real abuses, and partly because of a poor element inevitably found in an enormous body of men, there sprang up just after the war a bitter resentment against the officers of the Army (and the Navy). It was fashionable, in the Services and out, to berate the dreadful “caste system.” It is my personal belief that this resentment was especially prevalent among troops that were not in combat units. Let's look into the case.

During the war, 980,000 officers held commissions. Of those, 637,000—that is, 65 out of 100—came from the ranks. The offer and the privilege to take advantage of the Officer Candidate School was extended, certainly, very broadly throughout the Army, and those that chose to take it got the chance. As I said before, it is my opinion that most complaints of the privilege of officers over enlisted men came from the rear areas, and those in most part are the ones that have been publicized. In some cases they were undoubtedly justified, but on the other hand I believe the majority of those individuals, in particular, had ample chances to get officers' commissions. In Italy we were told toward the last that if we wanted additional officers we had to produce them by battlefield promotions. None additional were coming from the United States because the barrel had been scraped: there was nothing left. As a result, we were almost begging men to accept commissions. The rear areas were combed for men who would take special training courses in schools which were set up, in an endeavor to get commissioned officers to take the places of those lost in the battle ranks. There were comparatively few takers. I think the fact that there *were* so few takers is a very good answer to the complaints, recently so evident. Any man of ability and courage could have had a commission, had he wanted it; the actual fact is



that the danger of the line was apparently sufficient to cause most rear area soldiers to turn down the chance of becoming line officers.

We have said that the ideal relationship between officers and men demands a disciplined loyalty on the part of the soldier. Can this be attained by the officer becoming a back-slapping pal of his men? Should an officer of the modern Army deal with his men as a Boy Scoutmaster deals with the Red Fox Patrol? I don't ask that question lightly: I truly believe that many young officers do indeed take the Scoutmaster's attitude. I am as fully convinced that that attitude is a dead wrong one.

The other day I attended a class of officers discussing the subject of Military Courtesy. There was considerable talk of how military courtesy is obtained in a group of enlisted men. To my considerable consternation, the class as a whole came to this conclusion: military courtesy in a unit should come through the example set by the officers. "By one officer showing respect to another officer, the men will come to respect that officer too." Certainly that was a well-meaning idea, and of course it has a modicum of merit—but that is what I mean by the Scoutmaster attitude. I don't like to be cynical, but of course my mind instantly conjured up the picture of all the officers whisking about being excessively polite to one another so the men would, too.

Well, how is military courtesy attained?

First, by indoctrination. Men must be told, in plain, certain, unabashed terms, what is expected of them, and why. Perhaps they should be told twice, or three times, why, but it is *not* necessary to explain *why* forever. Military courtesy must be *enforced*. It is a mistake for officers to feel that every order they give, or job they require, must always be verbally justified. It can soon become a burdensome nuisance, and it also weakens the officer's position, if it is overdone.

Second, by reserve. It is extremely important that officers and enlisted men off duty be separated from one another; this reacts to the benefit of both officers and men. There is no question of the truth of the old, hackneyed phrase "Familiarity breeds contempt." The separation of officers and enlisted men in their social activities—not in their social status, but in their social activities—has been found to be a vital necessity in any Army. The Russian Army, at the beginning of the war, when the enemy was Finland, had almost erased the differences between officers and enlisted men. As Russia progressed in the war, against Finland and then against Germany, the differentiation was made greater. The necessities of battle demanded it. The Officer Corps was permitted to wear distinctive uniforms, was granted privileges, and the Red Army ended up much less "democratic" than our own!

Perhaps you read, in a magazine, an article by an officer who wrote that he had come out of the battle line in the company of his platoon sergeant. The two men, according to the article, were very fine

fighting people. They called each other Tom and Joe. They drove back to a hotel at Florence, I believe it was, and there a sign said "Officers only." The officer was embarrassed, and he said, "Tom, I hate to do this but you can see what that sign says," and they were both very unhappy when they separated and the sergeant went to his own place, which may or may not have been adequate. The author (who was the officer, incidentally) takes the position that the two men, wedded by the danger of battle, should not be separated by a social distinction. My contention is that they *should* have separated at the hotel, although I will freely acknowledge that if the officer's hotel was luxurious while the enlisted accommodations were inadequately fixed up, a basic error in leadership occurred.

Pertinent questions are, "Why should an officer need help on his personal duties?" "Should an enlisted man ever dig a foxhole for an officer?" You remember the Doolittle Board, which met on this general subject, had a witness before it—an ex-sergeant—who said that there was no democracy in the Army and that it was patently necessary to revise the whole system. In the course of his testimony, the board asked him, "Should a general shine his own shoes?" and the sergeant flipped back the answer, "Why not?" That answer got a great deal of publicity. My feeling is that the general had other and more important things to do than shine his own shoes. On the surface, it is a difficult thing to justify, but we must reflect that the general's decisions and instructions will have powerful influence on the lives and fortunes of thousands of men, and it would therefore be wise to allow him all of his time to meditate on them. If the general had to take care of himself altogether—if he had to stand in line for his chow, if he had to put up his own tent, if he had to polish his shoes, if he had to take his turn daily in the latrine—he could not find the time to run his division or corps.

But let's consider again the junior combat officer.

No combat officer needs to be told or lectured on the intimacy which springs up between good officers and men in battle. That comradeship is a compliment to the officer and an asset to his leadership, but it need properly stop at a certain point. The "sir" due an officer should not be dropped, even in the most difficult situation, and believe me, it wasn't dropped in good units. The salute can be rendered in difficult circumstances, and frequently was. Even under enemy fire, and in bad weather, men can be made to shave, and to keep themselves and their surroundings clean, and they will fight the better for it.

It may shock you a little, but remember, too, that *fear* is a very compelling power in battle. I speak not of fear of the enemy, but fear of the consequences of bad action on the part of the soldier. Don't believe that that is necessarily an unhappy state of affairs, because it isn't. Actually, religion, Christianity, plays on fear very strongly, and every priest and every minister will acknowledge that that is the case. A few years ago, it



used to be quite habitual for a man to boast of himself by saying, "I am a God-fearing man." The force which makes Christians behave themselves, and live proper, moral lives, is very largely fear of the Almighty. In the same way, men in battle many, many times do what they do against a dangerous enemy because of fear of the consequences of doing otherwise. That is an important point and one which we, as professional soldiers, must thoroughly understand and frankly acknowledge.

How should we handle the noncommissioned officer? He is an essential cog in the military machine, and it is a truism that if the NCOs are good, the unit is good. The catch to that statement, of course, is that the NCOs will not be good under poor officers.

All too often our officers treat their NCOs only as high-paid privates. No attitude could be worse: the noncommissioned officer simply cannot and will not function in such an atmosphere. The NCO must be treated as a leader; remember his title—he is an officer, a noncommissioned officer. Demand of the NCO an efficient performance of his duty: hold him responsible for the training and the discipline of his men, but for Heaven's sake, give him opportunity to fulfill those responsibilities!

The noncom can only give you what he's got to give if you treat him properly. An officer's attitude toward an NCO should be polite and pleasant, and by his attitude the officer should plainly indicate that he respects the NCO's position, and values his opinion. Never should the noncommissioned officer be humiliated, for that emotion can destroy loyalty, and respect, and friendship, in less time than it takes to tell it. Especially should the officer be careful not to criticize an NCO before his men so strongly that he lessens the NCO's authority and stature. If the noncommissioned officers of your unit have their jobs put squarely up to them, if they are trusted and respected by you, they will rise to your assistance in every instance and in face of any difficulty, and you cannot fail to have a magnificent unit.

Finally, of course, the officer commands the respect of his men, and therefore receives their courtesy, if he is thoroughly worth it. He must not be rude and inconsiderate. By his neatness, bearing, demeanor and dignity, he must show his right to the title of officer and gentleman. By his actions—not his explanations—he must prove that he has the welfare of his unit at heart. By his leadership he must demonstrate that his judgment is to be trusted. By *enforcement*, he must require positive and unhesitating obedience to his orders. He cannot be a Scoutmaster. He must be—I cannot think of a better definition—an Army Officer. If you live up to that title, with all that it infers, you need apologize to no man.

In a combat unit, now, what are the fruits of this that we have defined as a proper relationship? If you add to it the ingredients of good training, the end product becomes esprit de corps. The first indication we have of esprit is the appearance of organizational pride. That

pride will come only to a militarily efficient unit; it springs from the knowledge of every soldier in it that he belongs to a well-oiled, highly professional machine, capable of bringing down swift, efficient, and violent damage onto an enemy which opposes it. Esprit is hard to define, but easy to recognize: your men will show their pride by their appearance, their alertness, and their general satisfaction, and you will overhear complimentary or envious remarks by men of other units about your own. When and if this happens to a unit you command, your heart will swell with pride and happiness.

In spite of our earnest efforts towards orientation, it was my impression that most of the men in the Army—certainly those in my outfit—were not too well aware of what they were fighting for, as far as the broad view was concerned. I believe that a man fought very largely as a part of his unit, rather than as a citizen of the United States. I don't mean to say that he was oblivious to his national duty, but at the same time, it was a demonstrable fact that men, even individually, fought best for an efficient unit. We may assume that over-all national patriotism was the same everywhere, yet there was a tremendous difference in the way men behaved in one unit and in another. I contend that an objective is bravely assaulted more because of organizational pride and esprit (a large part of which is attributable to the quality of leadership within the unit) than because of the conviction that the national aims of the United States are correct and proper.

In closing, I want to speak of the responsibilities of an officer. You have heard the expression, "noblesse oblige." The privilege of command carries with it the responsibilities of command. An officer who properly and thoroughly discharges those responsibilities is *not* resented. I cannot here go into great detail, but generally, we may say that an officer's responsibilities include his obligations to see that his men are properly and impartially administered, fed, and clothed, in garrison and in the field; that his men are carefully and efficiently trained to enable them to best discharge their duties in combat at a minimum cost of life to themselves; and, finally, that his men are skilfully and bravely led in battle. The proper discharge of those duties demands of an officer a personal dignity and a disciplined behavior, which become corollary (and previously discussed) responsibilities.

Finally, we as officers must acknowledge that we must conscientiously, continuously, develop ourselves, professionally. This must be done by frequent study, and reading, and reflection. I tell you that many, many officers have lived for years in the Army without ever making the slightest endeavor to improve themselves physically or mentally. These are military vegetables, and there is no good in them. To develop oneself in the soldier's art requires not only an overweening interest in the science of tactics, troop administration and leadership, but also curiosity, imagination, and pride.



# Red Army Discipline

*by Lieutenant Colonel William R. Kintner*

THE battle proven Red Army is a subject of growing interest to every military man. Its brief, dynamic history is full of lessons concerning weapons, technique and strategy. It is the evolution of Red Army discipline, however, which probably offers the most fruitful study to the American soldier. At this time, when the validity of many time-honored principles of discipline are being challenged, it might be well to examine the process by which the Red Army changed from a mass of revolutionary comrades to the most tightly disciplined Army on the face of the earth.

This story begins before the Communist revolution. One method employed by the Soviets to seize power from the Kerensky government was to spread dissatisfaction within the Army. The Soviets of Petrograd took a powerful step to dissolve army discipline when they issued the famous General Order No. 1. This unique order set up a system of military committees to govern the army, took the control of arms and equipment from out of the hands of officers, and abolished all outward symbols of discipline, including exchange of salutes and the standing at attention in the presence of superiors. Although the order accomplished its immediate purpose, its spirit long remained to plague its instigators in their later efforts to introduce necessary discipline into the new Red Army. Although the proponents of the scheme frankly recognized that advocating of self-government within the ranks was a Trojan Horse created to wrest power from the Provisional Government, many idealistic Bolsheviki jubilantly acclaimed these opportunistic measures as the foundation of a truly revolutionary and democratic army. It took these gentlemen many years to return to reality.

The Red Army was born early in 1918 a few months after the Soviet seizure of power in the October Revolution. In the beginning it was a chaotic organization. The official Soviet history comments on this period, "Discipline was built on shaky foundations; meetings and discussions of orders were of frequent occurrence." During its first three years of existence the Red Army was ceaselessly engaged in Civil War. Combat requirements gradually forced changes in disciplinary routine, in spite of intense opposition from more idealistic revolutionaries. The first few Red Army cadets, filled with revolutionary fervor, were disillusioned by their contacts with the more conventional type of discipline

gradually reappearing at the fronts. One of them wrote, "You taught us to introduce among the Red Soldiers a conscious comradely discipline. Unfortunately, here people insist on something else." This something else was needed to keep the straggling lines of the Red Army actively in the field. Desertion rates in 1919 were phenomenally high—almost three million men, a number approximately equal to the total army strength during that year.

To meet these irregular conditions discipline was strengthened by the Code issued in 1919. The introduction to this Code stated that "despite completely comradely equality necessity has shown the need for strict military discipline." Severe discipline had to be maintained because some Red Army soldiers "did not understand the necessity of obedience to a single will." Subordinates were now told to execute "without hesitation" all orders except those directed against the Soviet Government. Increased power was given to command personnel to award summary punishment for discipline infractions. Complaints against particular punishments were not permitted as long as they were not made contrary to the spirit of the Red Army.

This code also gave commanders (officers were no longer legal in the Red Army) considerable powers of coercion. However, because of active communist political cells in every army formation, there is evidence to indicate that this code was more honored in the breach than in the observance. Nevertheless in itself it was a remarkable transformation from the Decree of December 1918 which asserted "that all power in each military unit belongs to the respective soldiers' committees." In spite of a new code, it was to prove no easy matter to restore satisfactory discipline among men who had previously eagerly participated in the creation of military anarchy. Consequently, there was no such thing as uniformly enforced discipline in the ranks of the Red Army during the Civil War. One Czarist General left these impressions of the then Red Army soldiers—"With unshorn hair, caps thrust on the back of the head . . . sentinels, at their posts, sit on stools or on steps of porches, with rifles between their knees, talking peacefully with the passer-by."

When the end came to civil fighting in 1921 the Red Army had a chance to review its experience and chart its future course. Concerning discipline, there was a



strong tendency to abandon the revolutionary theories which scorned the need of command, and maintained that military effort could be developed solely by personal authority and persuasion. The initial task of reorganization fell upon the capable shoulders of Commissar Frunze. Among other reforms he campaigned vigorously for better execution of orders, and for improvement in personal dress and appearance. Likewise, at the same time the Red Star reproved commanders who disregarded "their rights and obligations in matters of discipline."

Upon the death of Frunze in 1925 Voroshilov took over the reins of the Red Army. He continued to work along the lines of his predecessor in strengthening discipline. In analyzing the common flaws of many commanders he especially cited the fact that certain of them were too familiar with their men, which, he contended, led to a lack of respect and a loss of discipline. More and more it came to be recognized by responsible Red authorities that democratic principles had to be adjusted to the peculiarities of army life. In the twisting logic of Soviet propaganda it even became apparent that there was no real contradiction between revolutionary discipline and regulations which demanded smart appearance and bearing. Nor was fault found in the specified drill deemed necessary to achieve high standards in this respect.

As a further indication of the direction toward which the Red Army was turning, the Society for Promotion of Defense, in 1927 listed discipline as the first quality required of commanders. The socialist hope of easy, familiar relations between officers and men was gradually going by the board. At the same time stress was laid on the "class character of discipline" in the Red Army which supposedly differed as day and night from the discipline of the armies in capitalistic countries.

The Red Army man was becoming a regular soldier. He was subjected to a strict system of rewards and punishments like any other soldier. In addition he was held in line by an unrelenting stream of propaganda which exhorted him to give his all to the socialist fatherland. Furthermore, his discipline was firmly based on excellent morale, which in turn arose from the privileged position the Red Army occupied in Soviet society.

All during the thirties the Red Army was growing in size, in armament, and in the cohesive bonds of discipline. The most notable advance toward a professional military force was brought about by the Decree of 1935 which reestablished certain grade titles, granted greater differentiation in pay between ranks, and strengthened command authority. The effects of this decree were partially offset by the famous purge of 1937 and consequent liquidation of untold thousands of Red Army commanders. Immediately following the purge commanders of all echelons were restrained to act against flagrant infractions of discipline for fear of reprisals. There were instances of easy denunciation of unpopular commanders with a resultant dissipation of authority.

A correspondent reported that there were units in which soldiers knew that they could violate regulations on duty with impunity. It was not uncommon to observe soldiers talking and laughing while at attention and in the presence of their commanders. In spite of this apparent military retrogression the rising tension in international relations made it more and more mandatory that the Red Army become a finished instrument of war.

It took the Finnish War in 1939 to mark the end of a cycle. Notwithstanding the steps already enumerated the Red Army was an amorphous mass compared to the tightly disciplined troops of Finland. During this bitter campaign entire Russian divisions were cut off and decimated. Only the brilliant leadership of Timoshenko and overwhelming mass enabled the Russians to salvage a costly victory. Timoshenko used the stimulus of this near disaster to accomplish drastic reforms, including introduction of the salute in June 1940. The Red Star stood squarely behind him in affirming categorically that "without discipline there is no army. The more numerous the army, the stronger must be the discipline in all cells of the army organism."

A few months later, in October, a new disciplinary code was promulgated. With but few modifications, prompted by the fierce demands of the Nazi struggle, it still guides the Red Army. The Red commander was granted new sweeping powers to back up his authority. Commanders were no longer responsible if they were forced to resort to arms to enforce obedience. As a matter of fact a commander was himself subject to court-martial if he failed "to exhibit firmness and decisiveness" or stopped "short of taking all possible measures to bring about compliance with his orders." The Russians did not go halfway at this time. They prided themselves on possessing the strictest discipline. They made it a point of principle to make the new Red Army disciplinary code more severe than those found in other armies. Insubordination must be punished unmercifully for "every case of softheartedness and liberalism, even the smallest indulgence with respect to violation of discipline, results in great harm." The commander's order now became the subordinate's law and all army personnel were required to "fulfill incontrovertibly" all military orders.

The old pleas for conscious discipline were discarded. Compulsion was recognized as an essential factor in military control. The last vestiges of the revolutionary influence in the structure of the Red Army were cut off by the Decree of July 1943, which established for the first time a distinctive Officers' Corps, and ended once and for all the Russian experiment in "free, voluntary, comradely discipline."

Even more significant, however, was the change last summer of the name of the Red Army to Soviet Army. Thus was severed the final sentimental attachment between the revolutionary cadres of 1917 and the professional Russian forces of 1947.



# Foreign Weapons Exhibit At The Ground General School

*by Captain Frank C. Fyke\**

THE Ground General School Center at Fort Riley, Kansas has a Foreign Weapons Exhibit which includes approximately 300 selected small arms of the world's armies. This collection includes the principal small arms that have been used in the past half century in virtually every army in the world.

The exhibit is a School instrument for instructing students and giving them a general orientation on military small arms. The Ground General School believes that every ground officer and man should have some knowledge of the various foreign weapons and at least a general recognition of those that were used by all of the nations' armies during the past war. The School does not predict that these same weapons, without modifications, will be used in future wars. However, their characteristics might be a tip-off on what can be expected of future designs in small arms of the particular country they represent. In addition to the characteristics as to capabilities and limitations, the students are oriented on the historical and political background of the individual weapons and groups of weapons. This enables the students to understand just how and why certain of the earlier weapons, directly and indirectly, influenced the designs of some of the later models. It is also noteworthy that characteristics peculiar to certain weapons can be attributed to their anticipated use in a particular type of terrain or climate.

The lack of adequate training of U.S. forces in foreign weapons was evidenced during the past war. Front-line soldiers were baffled by the high cyclic rate of fire and the speedy barrel change of the German MG 42. In spite of its many disadvantages, the psychological impression created by this weapon on our troops was difficult to counteract. Out of the early battles in the Pacific in 1942, came various rumors concerning the "Jap supermen and their superior individual weapons." The concave base plate of the Japanese Model 89 grenade discharger caused many of our soldiers to think it was made purposely to fit the outer

thigh just above the knee. Rumor had it that every Jap soldier carried a "knee mortar" in addition to his rifle. Our men had neither seen nor heard of a mortar type weapon smaller than the US 60mm mortar. It was easy, therefore, for them to form the mistaken idea that the Model 89 had recoil so slight that it could be fired from the knee. Some of the soldiers who tried to fire it from the knee found themselves with broken thighs.

The Foreign Weapons Exhibit of The Ground General School Center occupies an entire building with a floor space of 6,000 square feet. The weapons are attractively displayed in the following groups: Machine Guns, Aircraft Machine Guns, Sub Machine Guns, Bolt Operated Rifles, Carbines, Mortars, and Pistols and Revolvers. Descriptive charts and placards are utilized throughout the exhibit, with weapons displayed on tables, boards, racks, and platforms. The exhibit is appealing to civilians and military personnel in general, as well as students. A tour of the display is enjoyed from a recreational standpoint in addition to the educational benefits to be derived.

In modern ground warfare, machine guns are the weapons which probably deserve the greatest emphasis. These are the weapons which have increased the firepower of modern armies to such a great extent. The exhibit of machine guns includes most of the popular "light" and "heavies" that have been standard issues in most armies since the turn of the century. These guns are displayed in eleven distinctive groups. In some instances they are grouped according to their family of origin, but, most of them are grouped according to their relationship in functioning (locking).

In describing a display such as that at The Ground General School Center, it is only possible to briefly discuss a few of the more interesting weapons in the exhibit.

Display number one has the principal machine guns of the Maxim Family. It is fitting that these should make up the first display because the Maxim was actu-

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ally the first true automatic machine gun to make an appearance. Although multiple shot weapons such as the Billingham Requa, Union Battery Gun, Mitrailleuse, Gatling and Gardner preceded the Maxim, such hand-operated weapons cannot be called true automatics. An American, Hiram Maxim, invented his gun in 1884. Five years later the Maxim gun was adopted by the British Army. However, the actual introduction of the machine gun as a decisive weapon in a major war occurred when the Russian Army used the Maxim machine guns against the Japanese in the Russo-Japanese War of 1904-1905. The Japanese were using their newly adopted French Hotchkiss. It might be said that the battlefields of this war were to become the proving grounds for machine guns. In the few years that followed, enthusiasm over reports of the value of a good machine gun in war caused other nations to adopt such weapons.

Among the Maxims in the display are the following: German 08 HMG, Russian 1910 HMG, German 08/15 LMG, Dutch 09/32 HMG, and the Czech Skoda Maxim LMG. The German Maxim 08 was used as the standard HMG of the German Army under the name of Spandau from 1908 to the end of World War I. The extremely heavy weight of this gun and its sled mount inspired German Ordnance to design the lighter bipod mounted 08/15 in 1915. This 30-pound weapon was well liked in the German Army. Although it was a second-line weapon during the past war, it held its own as a first-line light machine gun as late as the middle 30s.

Russia kept the Maxim as her standard HMG for many years. In fact it was still being used as late as the World War II.

Germany was forced to pay reparations to Czechoslovakia after World War I. Included in these reparations were Maxim tools and parts. By using these tools and parts the Czechs gave birth to the Skoda-Maxim LMG. It is ironical that a few years later when the Germans occupied Czechoslovakia, those parts in the form of Skoda-Maxims went back into German hands. Germany then used the weapon as an aircraft gun and also as a bipod mounted ground weapon in second-line units.

The Dutch 09/32 is an example of the many models of the Maxim gun which were adopted by more than a dozen different countries at one time or another.

All Maxim guns rely on the toggle joint for their locking. This action, which resembles that of the human knee, furnishes a very positive lock at the instant of firing. Maxim machine guns have always performed efficiently and have been well liked by the various armies using them.

The Schwarzlose heavy machine guns are shown in a separate display, since they are not functionally related to any other machine gun. The blow back principle gives the Schwarzlose an operation like the submachine guns and machine pistols. To insure that the bullet leaves the muzzle before the bolt starts its rear-

ward motion, the Schwarzlose, having no lock, has a short barrel (20¾ inches), extremely heavy bolt assembly, and an unusually powerful recoil spring.

A German, Andrea Schwarzlose, patented his gun in about 1905. German Ordnance doubted the practicability of this gun, but Holland, Greece, and Rumania adopted it. Mannlicher of Austria improved the gun in 1912 and it became the standard HMG of the Austrian army. The Schwarzlose was used in World War I and also in World War II when the Germans employed it in North Africa.

Another distinctive operation found only in one family of machine guns is the hinged-bolt lock which the Danish Madsen light machine gun uses. A similar action can be found, however, in some non-automatic arms such as the American Spencer shotgun. In the Madsen LMG, designed by the Danish engineer Shouboe in 1890, is found a bolt hinged at the rear so that its head moves up and down when the weapon operates instead of the bolt moving back and forth as in other weapons. It is noteworthy that this weapon was the first light machine gun to be designed. The Madsen has been used widely among European and South American countries, and during World War II, it was still being used by Holland, China, Chile, and other South American countries.

The group of automatic weapons relying upon the camslot and stud lock includes the Lewis gun, Chau-chat, Mendoza, Johnson, and Fallschirmjaeger-Gewehr

The family of Maxim machine guns is shown in the foreground. A display of submachine guns is visible at the rear left of the above picture.





42 and 42/44. This system of locking consists of a round bolt which has a slanting slot cut in it lengthwise, and a stud working in the slot which causes the bolt or bolt head to rotate partially and attain its locking by having bolt lugs seat in recesses in the receiver or rear of barrel. In about 1908, Colonel Lewis of the U. S. Coast Artillery invented the first machine gun using this system of locking. His gun has been used by the U. S. Army and Navy, the British Army, and the Japanese Army. The 1915 model was the standard British LMG during World War I.

The newest automatics in this group are the Johnson LMG and the German Fallschirmjaeger-Gewehr 42/44. The Johnson LMG was introduced in 1941 by Captain M. M. Johnson of the U. S. Marine Corps Reserve, and was used by the Marine Corps and Netherlands Forces. This 14.5-pound (with bipod) weapon was improved in 1944, while its light weight was increased to 15.5 pounds. The German Fallschirmjaeger-Gewehr 42 and 42/44 are automatic rifles that were used by German parachutists. These two weapons, though gas operated, have much in common with the short recoil operated Johnson LMG. In addition to having the same type of locking (rotating bolt), both are lightweight, automatic shoulder pieces, which can be used as light machine guns or as rifles. These weapons fire from the open bolt position when firing full automatic. This, of course, is desirable in an automatic

which should emphasize fast and smooth operation. By setting the change lever of either of the weapons on the semiautomatic position, they fire with the bolt in the closed position. This lends to accuracy which is the prerequisite in rifle firing. The Johnson has many other good qualities which are too numerous to mention here.

An invention by Alexeyevitch Degtyarov represented the first machine gun to evolve out of a series of Russian small arms developed in the 1920s. The first models of this MG were unsuccessful. They were later improved to the extent that the model 1939 is one of the simplest machine guns available today. This pincher lock weapon, which is a variation of the flap-lock system, employs only four working parts inside its receiver. Any soldier can thoroughly understand the functioning of this simple, gas-operated weapon after only a few minutes of study. The simplicity found in the standard light and heavy MG of the Russian Army does not impair the reliability of the weapon when in action.

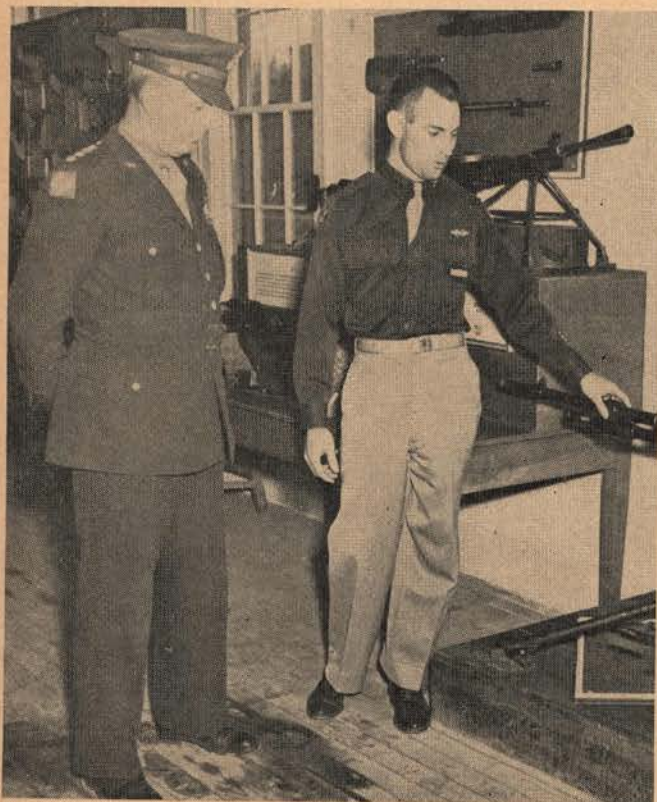
Other MG's displayed which have locking means remotely related to the above method are the French Hotchkiss, Japanese Hotchkiss Model 92, Japanese Nambu LMG, and the BAR, both U. S. and Polish.

One of the world's best LMGs is the Czech ZB30. It is displayed with other MGs which rely upon the prop-bolt lock. This excellent little weapon is the invention of Holek, a worker in the Czech small-arms works. It became the standard Czech LMG and was also purchased by Britain. In the Enfield factory, British experts improved upon this already good LMG, and started producing these improved weapons under the name of Bren. In the last war, Bren light machine guns were highly efficient in all parts of the world where British soldiers fought. The exhibit displays the Mark I and Mark II.

One display of the exhibit shows the principal machine guns in the German line of development from the end of World War I to the end of World War II. This is one of the most interesting chapters in Machine guns.

In 1919, the Germans were successful in scaling down the Austrian heavy machine gun, Dreyse MG 13. The result was the Dreyse MG 13 (light) which was a 23-pound, air-cooled, bipod-mounted LMG with a shoulder stock. It was issued to the German Army late in 1918. Then came the war's end and the Versailles Treaty which described in detail the limitations to which any future German machine guns would adhere. The treaty specified that in the future, Germany would neither use nor manufacture a machine gun weighing more than 30 pounds. It could be neither tripod mounted nor water cooled. Apparently at that time, it was believed that any gun made to these specifications would be so inferior that Germany wouldn't dare attempt to wage another war. In connection with water cooling, it was thought that only water could provide an automatic weapon sufficient cooling to per-

Captain Pyke, author of this article, shows General Jacob L. Devers, Commanding General of the Army Ground Forces, the Foreign Weapons Exhibit at Fort Riley, Kansas. Captain Pyke is curator of the exhibit.





mit sustained fire. Also, it could not have a feed capacity for more than 50 rounds. With these specifications set forth, the Dreyse MG 13 (Light) became the standard LMG of the German postwar Army of 100,000 men.

The German Rhein-Metal works bought the Swiss Solothurn factories and out of these factories came good light machine guns including the MG 13, MG 15, and finally the MG 34, as the future standard LMG. At first the MG 34 was entirely according to the provisions of the treaty. Shortly after the middle 30s, Germany became quite bold and modified the MG 34 with added features which were direct violations of the provisions of the treaty. These modifications provided a metal belt feed with unlimited capacity to replace the 50-round drum, and a 42-pound multi-purpose tripod mount. The gun retained its bipod mount, however, to be used when tactical requirements dictated. The MG 34 was an excellent machine gun weighing only 26½ pounds, made to fire at a cyclic rate of 800 to 900 rounds per minute, and equipped with a quick barrel change facility. It was well liked and was the standard MG during the War until late 1942.

With the increased losses that Germany sustained in the field and in her bomb-torn industries, it became necessary for her to design a new MG which could be largely stamped out and would use a minimum of large forgings requiring extensive machining. Out of this necessity the MG 42 was born. To minimize confusion that might be caused among troops in the field by changing from one model gun to another, stocks, grips, mounts, and belts of the MG 42 were made identical to those of the MG 34. The new gun did, however, have some new features relative to its performance. The cyclic rate of fire was increased to the insanely high rate of 1,200 to 1,500 rounds per minute, provision for faster barrel change was provided, and it was made to fire full automatic only. This weapon was given the extremely high cyclic rate of fire for the psychological effect it would have on enemy troops and to increase its effectiveness as an antiaircraft gun. By carrying three spare barrels and having the quick barrel change facility, sustained fire was possible without having water cooling.

The display of aircraft machine guns shows many such guns of various countries. Perhaps, one of the most interesting among these is the Russian Shkas. This weapon employs a circular feed and very intricate parts to insure smooth operation at the high cyclic rate of 1,500 to 2,000 rounds per minute. Moving parts and barrel are chrome plated.

The principal submachine guns and machine pistols of the various armies can be seen in the submachine gun display. This assortment includes virtually all military weapons of this type from the very first one to be designed, through the modern German Schmeisser MP 40 and the US M3. The extremely capable German arms designer, Theodore Bergmann, introduced

the first weapon of this type in 1918. It had the following characteristics which have marked all of its followers in the field of submachine guns: fired pistol ammunition, blow-back operation, short barrel, and relatively heavy bolt.

In the SMG display, we find the name Pietro Beretta, the one good name in Italian Ordnance. His is one of the world's best performing submachine guns. Its good compensator permits this weapon to fire in long bursts with little tendency for the muzzle to rise. Moreover, it is accurate at ranges greater than most weapons of this type are usually fired. The 9mm Luger Parabellum round is used in the Beretta. Attention should be called to the simplicity found in the Russian Federou. To field strip this weapon the soldier is required to make only one move of the right thumb and one move of the index finger; the cover latch on top of the receiver is pushed forward to allow the stock to break down from barrel and receiver cover, then the one-piece bolt assembly with drive spring and guide rod are removed by pulling the bolt handle to the rear and up. This weapon fires a 7.63mm (.30 cal.) cartridge. When discussing the different good submachine guns, it should be remembered that the big soft .45 slug fired by the U.S. SMGs is much more effective upon its short-range target than any of the others, most of which are 9mm.

The unique German weapon that fires around a corner can be found in the Carbine display. It is the Machine Karabiner 42/44, and it is of the standard German small-arms caliber, 7.92mm. Its bullet, however, is stubby. This fact explains how it was possible for a 30-degree curved barrel to be even partially successful when attached to the standard straight barrel. The soldier could hit his target without exposing himself from the protection of a tank or the corner of a building, by using a prismatic sight provided for the weapon. The life of the rifled curved barrel attachment was about 150 rounds.

In the display of 54 bolt-operated rifles the German Volksturm-Gewehr can be seen. This little weapon which made its appearance shortly before the German surrender, clearly defines what a defeated nation was forced to produce. One look at the weapon tells a story of bomb plastered industries and the lack of materials, time and skilled workmen. This weapon is probably the crudest piece ever issued a modern army. Its stock is made of the poorest type wood while the receiver and barrel were very roughly cast. The movement of the bolt is quite audible, giving a rough scraping sound similar to the sound emitted by rubbing two rough bricks together. This weapon certainly does not typify the excellent weapons that usually came out of German arsenals.

One has to make a tour of the Foreign Weapons Exhibit to fully appreciate its educational potentialities. The many weapons in the display of pistols, mortar, antitank weapons and semiautomatic rifles are equally interesting as the ones discussed in this article.



# Ground School Demonstration On Air-Ground Cooperation

*by Major D. H. Cowles\**

SUCCESS in battle can be assured only when there is complete cooperation of all arms."—This dictum is demonstrated forcibly to the students of The Ground General School at Fort Riley, Kansas, in a joint air-ground operation, an attack of associated arms against an incompletely prepared defensive position. The students from a centrally located observation post witness all phases of the attack as it rapidly develops before them.

A mechanized cavalry reconnaissance troop, appropriately reinforced by a platoon each of light tanks, armored riflemen, and howitzers, moves into view 4000 yards south of the student observation post. The troop, with three platoons committed over a 7000-yard front, is screening the advance of a regimental combat team. As the leading platoon on the center axis approaches the Observation Post, the students are given an excellent opportunity to observe the proper employment of the point team.

When the leading one-quarter-ton truck reaches a position 100 yards from the students, it is first seen by the enemy and draws heavy fire from a camouflaged antitank gun, forcing the crew to hit the ground and crawl hurriedly to cover.

The point immediately forms a base of fire and is soon augmented by the balance of the platoon. Armored car commanders select primary and alternate firing positions. The one-quarter-ton truck crews locate firing positions and dismount their machine guns to provide more stable and accurate firing positions from adequate cover.

The troop commander, upon hearing the heavy volume of fire up ahead, hurries forward to investigate. En route, he orders the liaison aircraft, which has been assisting a flank platoon, to move to the critical point.

By the time that the troop commander reaches the forward positions, the platoon leader has coordinated his base of fire and committed his rifle section as flank security. (Each cavalry platoon in the proposed Tables of Organization has two scout squads and one rifle section.) Preliminary estimates by the platoon leader indicate that a sizable enemy force of infantry supported

by antitank guns is dug in along a ridge line 1000 yards to the north.

Detailed reconnaissance, greatly facilitated and expedited by the employment of liaison air, reveals that the enemy holds the ridge line with perhaps 100 infantry, at least two 75mm antitank guns, and a few medium tanks. The liaison plane also locates unidentified enemy activity in a wooded draw 700 yards northwest of the ridge line. Ground and air reconnaissance together determine that the terrain on the east flank is rough and cut by a deep ditch; whereas, on the west flank a shallow draw offers a possible avenue of approach for ground troops to within 500 yards of the enemy positions.

Reconnaissance reports lead the troop commander to the obvious conclusion that he needs assistance to crack the enemy resistance. From the Regimental Combat Team he requests, and receives approval for, the support of fighter-bombers.

(As a result of previous high-level planning, fighter-bombers of the Ninth Air Force are on air alert in direct support of ground troops in this area.)

Fifteen minutes later, the advance guard commander for the main body arrives at the Cavalry troop Command Car with the Tactical Air Central Party attached to his force.

From an observation post the advance guard commander, air controller, and troop commander plan the attack. They decide that the tank and rifle platoons will make a carefully coordinated assault on the objective from the west under cover of an air strike. The cavalry and howitzer platoons are to support the assault from their present positions.

As the tank and rifle platoons begin to deploy, the P-51 fighter-bombers hit the target. Four planes, armed with two 250-pound general purpose bombs each, soften up the objective and are followed swiftly by four more planes each armed with six 5-inch high-velocity rockets. The eight planes in turn then make a final pass, strafing targets of opportunity. Before the air strike is completed, the tank and rifle platoons have reached their attack positions some 500 yards to the west of the objective. As the last plane strafes, the troop commander launches the ground assault by radio command. Followed by the armored rifle platoon at 100 yards, the

\*Instructor, Department of Tactics, The Ground General School.



tanks sweep on to the objective with all weapons firing. On the near edge of the ridge the personnel carriers halt, and the riflemen pour out to cover the tanks, mop up, and consolidate the objective.

While the tank and rifle platoons reorganize, the fighter-bombers provide air cover, prepared to attack enemy reserves or enemy efforts to displace to the rear. Ground and air reconnaissance immediately push forward in pursuit.

The students are moved to the demonstration area along the axis of advance of the regimental combat team. The troops employed in the problem were lined up for inspection in their respective tactical formations along the route. Where elements of the Regimental Combat Team were simulated, flags marked the locations of separate units comprising the RCT. Thus, the students were able to visualize clearly various time-space aspects of the problem before it commenced.

From the student observation post, which was located 1000 yards from the objective in accordance with safety regulations, the approach march of the ground troops, their deployment, the assault of both air and ground elements, the reorganization following the assault, and the pursuit were easily observed.

Student briefing prior to the commencement of the problem was minimized. The tactical situation and the safety measures employed were explained, and the capabilities and limitations of P-51 aircraft, aircraft weapons, and ammunition were reviewed briefly. In order that the students might appreciate more fully the problems of planning, coordination, and execution of such an attack, pertinent radio transmissions of all tactical units were amplified. The students thus heard, as well as observed, first enemy contact, orders of the platoon leaders and troop commander, the direction of the air strike, the ground assault, and liaison air reconnaissance. This method of "reading" the students into the demonstration proved to be most effective.

Because live ammunition was used, the problem required a high degree of cooperation and coordination. The amount of rehearsal time necessary to achieve the desired standard was determined directly by the state of training of the demonstration troops. Six hours of rehearsal for ground troops and four hours of joint air-ground rehearsal proved to be adequate.

To control the problem, an elaborate communications system was devised. Radio was the basic means of communications for both tactical and administrative control.

To supplement radio communications for emergency purposes, flares, wires, and panels were ready for instant use. Each safety officer with the separate firing units was equipped with a ground signal projector and colored flares. By this means the firing could be stopped, or ordered to commence, as the situation required. The howitzer platoon and the mortar platoon (the troop employed its three 81mm mortars in battery) operated a joint observation post. A single telephone wire was

laid from the OP to the mortar position and thence to the howitzer firing position. An open circuit telephone net was maintained by these elements; in the event of radio failure these units were able to control the firing of their batteries with no difficulty. A set of air-ground liaison panels (AP30D) was held at problem control headquarters in the event of radio communications failure with either tactical or liaison air. Panels also were used to mark the direction of flight for tactical air and the emergency drop area.

With the exception of dismounted riflemen and bow caliber .30 machine guns in the light tanks, all units fired live ammunition. Riflemen, least subject of all elements in the attack to immediate control, fired blanks. This substitution was not discernible to the students. The bow guns of the light tanks fired blank ammunition to minimize the danger to dismounted riflemen, who might inadvertently get in the field of fire of these guns and still not be visible to the bow gunners, who were "buttoned up."

The enemy was represented by silhouette targets (type F) and by obsolete tank hulls. Each tank hull was equipped with twenty pounds of waste wool saturated in salvage crankcase oil and gasoline. Preparations were made to insure that the tank hulls could be electrically set on fire should air or ground hits not ignite the inflammable mixture.

Thirty 2-pound charges of TNT were spotted throughout the area occupied by the base of fire, mortars, and howitzers. These were staked with white flags as a warning to ground troops. They were fired electrically from the control OP to represent enemy artillery fire.

The problem was controlled from the student observation post by an instructor who, by virtue of the communications setup, was in contact with each element of the tactical force at all times. During the execution of the problem, the instructor's role was entirely supervisory. The problem was executed by troop officers who called upon the instructor only for decisions affecting safety.

The elaborate precautions taken to make the execution of this problem safe were in no way visible to the spectators. To all appearances the tactical force seemed unfamiliar with the terrain, free from instructor interference, without additional communications, and unrestricted by exaggerated safety zones. The fact that ground troops did not approach closer than 1000 yards to the enemy objective until after the air strike (in compliance with safety regulations) was the only artificiality injected into the exercise, and this, because of the general over-all activities of the units, was not emphasized. This tactical air-ground problem was presented after the students had completed their courses of study in both weapons and tactics. It represented a summation of all the previous instruction into one tactical firing problem paralleling closely actual battlefield conditions.



# "Operation Lewisite" Destroys Jap Gases And Chemical Munitions

*by Major W. E. Williamson\**

OKUNOSHIMA, an Inland Sea island about one mile southeast of the port of Tadanoumi, Honshu, Japan, had stored on it until recently some 20,000 tons of chemical warfare gases and munitions. Had an American plane dropped a bomb on this arsenal of poison during the war it could have affected as many as 2,000,000 Japanese.

It took the Japanese 10 years to produce and store the poison gases and chemical munitions on this small island, which is in the British Commonwealth Occupation Zone.

The task of supervising the disposal of these 20,000 tons of chemicals, which the Japanese estimated would take five years, was handed me on May 8, 1946, when I was detailed to the British Occupation Forces Headquarters as technical supervisor of "Operation Lewisite." The job was completed in six months by some 900 Japanese laborers.

Age of the steel storage housing Arsenicals and Vesicants in most cases exceeded 10 years. Corrosion and deterioration had progressed to such an extent that even mild earthborn shocks developed shell leaks. The entire installation including the island soil was thus well saturated with arsenic and vesicants in various stages of decomposition.

Being mountainous, the island necessitated construction of producing plants and storage along the narrow coastal shelf, which prevailed for approximately one-and-one-half miles on the western shore. This area, about 100 acres in size, one-fourth of the island surface, contained the most dangerous concentration of vesicants and explosives the writer had ever encountered in crowded storage. One ton each of Fulminate of Mercury and Silver Azide located a matter of yards from 5,000 tons of bulk stored vesicants left me, when I first saw it, with the impression that a New Guinea foxhole was like heaven in comparison.

The island being seabound without ship loading facilities, it was deemed advisable to institute disposal by beach and lighter loading. For this purpose, two decommissioned U. S. Navy LSTs and one 2,000-ton Jap freighter were obtained.

Under my direction, the Japanese Government was ordered on May 28, 1946, to proceed with disposal

operations. Because of attendant dangers, only Japanese personnel was permitted within the operating danger zone. I was the only Allied member present.

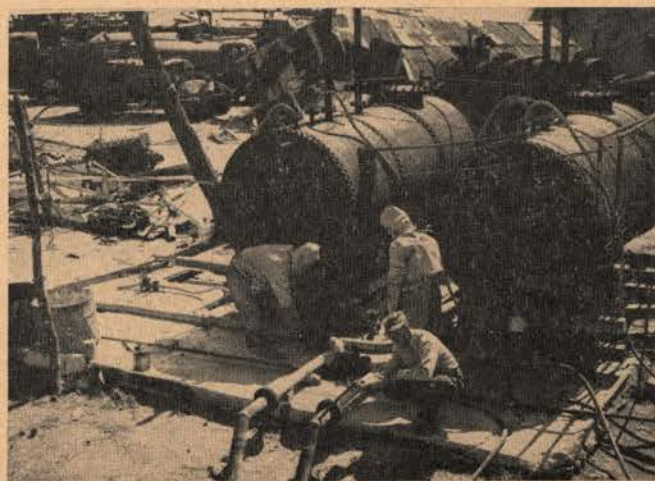
The Japanese Government retained on contract The Teikoku Rayon Company, a Japanese Chemical firm, to accomplish the actual disposal work. This contractor employed approximately 900 men for the operation, 40 per cent of whom were former Jap Army and Navy personnel with chemical training.

From the Japanese Contractor's personnel, a disposal operations organization was devised which included engineering and administrative staffs; sections to accomplish construction, transport, medical and supply functions; and a guard and security unit. Internal guard was performed by 40 ex-Japanese soldiers under the command of a former Japanese staff sergeant. External security patrols and police functions were performed by Japanese civilian police under the command of the Chief of Police of Tadanoumi, Honshu.

No instance of sabotage occurred during the entire operation. The only crime was two cases of petty thievery.

Rehabilitation of plant facilities, island hospital facilities and beachhead construction was begun on June 4, 1946. Disposal was planned in three phases: Removal of sinkable chemical munitions with early emphasis on the vesicants, disposal of non-sinkable

Beachhead vacuum transfer station boosting Lewisite gas to an LST deck.



\*Chemical Warfare Officer of the 1st Cavalry Division.



chemical munitions, disposal of explosives and decontamination of premises.

Insofar as labor and available transport would permit, these phases of disposal were planned to run concurrently, subject, of course, to safety procedure dictated by local storage conditions.

Warehouse inventories and controlled requisition procedures were instituted to conserve protective and decontamination equipment for use in the most dangerous phases of the operations. Japanese protective equipment and decontamination agents were extremely limited. Only by careful rationing and priority use, could these materials be stretched to provide for those portions of the operation making their use mandatory. Hot salt water bathing pools and salt water soap were provided as the principal means of individual decontamination.

The shortage of critical chemical supplies dictated to a large extent disposal plans. Maximum use was made of facilities for sinking at sea, and destruction by burning was emphasized as the alternate method of disposal. Chemical neutralization was considered a last resort, and took place when other means of disposal could not be devised. Sink at sea, burn, bury and neutralize were the methods of approach to all disposal problems.

Bulk storage vesicants presented the most difficult disposal problem. Arc welded pipeline systems were constructed to transport under vacuum, all vesicants from storage to LSTs beached and prepared to receive same in ship's fuel, ballast, and water tanks. This system consisted of 15 miles of pipeline, 34 high pressure steel vessels and 13 electrically powered vacuum pump stations. Lifted by vacuum from storage to LST main deck receivers, vesicants were then dropped by gravity into specially prepared ship's tanks.

Cargo loading of chemical packaged munitions to LSTs took place by truck over specially constructed beachhead bridges into ship's hold. The 2,000-ton Jap freighter was loaded offshore with 50-ton wooden Japanese barges.

During late July, the first typhoon of the season struck the area while vesicant loading by pipeline was in progress. Wind velocities of 70 miles per hour, attained during the night of July 29, broke the LST mooring anchors loose, and both LSTs were driven aground broadside on the beach. Vesicant loading lines were ruptured, and the entire beachhead was contaminated with a Lewisite-Mustard gas mixture. Ninety workmen and myself required first-aid treatment at the scene of activities that night.

One LST suffered bottom plate tears from grounding and required cementing and 72 hours of pumping to refloat her. Japanese tugs were used to refloat grounded LSTs, the beachhead was decontaminated with fuel oil torches, shore loading facilities were repaired, and loading was resumed the night of August 1, 1946.

This typhoon was the only near catastrophe during the operation. Completion of the project in late No-

vember proved fortunate because the area suffered a major earthquake in December of sufficient intensity to rupture steel storage housing vesicants.

Burial of chemicals took place in existing island tunnels and burning on various island beaches during the low tide periods.

LSTs were towed to sea for sinking in 3,000 fathoms of water by scuttling with explosive charges, after tow release. The Japanese freighter's cargo was discharged "over the side" in the same depth of water at sea.

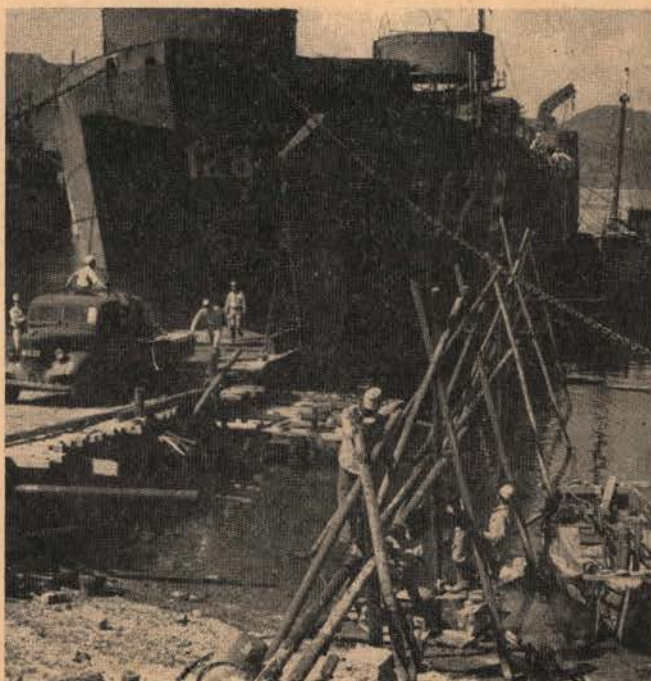
After vesicant removal had progressed sufficiently to minimize the danger of rupturing large storage by sudden shock, explosives were removed for burning and "sliming" into the sea. Explosives disposal was followed by burial of non-sinkable toxic smoke mixtures which could not be destroyed by fire because of arsenical content.

The Japanese operated island hospital successfully treated every gas casualty. Only 18 persons out of 900 required treatment for chemical pneumonia. Skin burns were not infrequent, but total absenteeism from all causes including hospitalization averaged less than one per cent of the total employed. "Operation Lewisite" was completed late in November, 1946, without a single or permanent disability.

A Japanese athletic festival in honor of the successful completion of their dangerous task was held on the final day of "Operation Lewisite."

The former Japanese Army Arsenal Commander, who cooperated fully in the disposal work, said at the festival, "We have destroyed in six short months that which we produced through 10 long, hard years. May there now be peace, food and joy for you all."

Beachhead on Okunoshima showing cargo loading of poison gases in progress. Japanese workmen shown building a pipeline for vacuum transfer of vesicant storage.





# An Epic Of Brittany\*

by Brigadier General R. W. Grow

IN the bright early morning sunshine of August 8, 1944, a quarter ton draped with a white sheet and flying a white flag sped south through the village of Gouesnou to the high ground overlooking the blue estuary and the city of Brest. The German outpost stopped the truck, blindfolded the occupants and drove it to German headquarters in the city. Here Lieutenant Colonel Ernest Mitchell, Division G-2, with his interpreter presented the demand for the surrender of Brest:

## HEADQUARTERS 6TH ARMORED DIVISION

Office of the Commanding General

APO 256, U S Army

8 August 1944

## MEMORANDUM:

TO : Officer Commanding German Forces in Brest

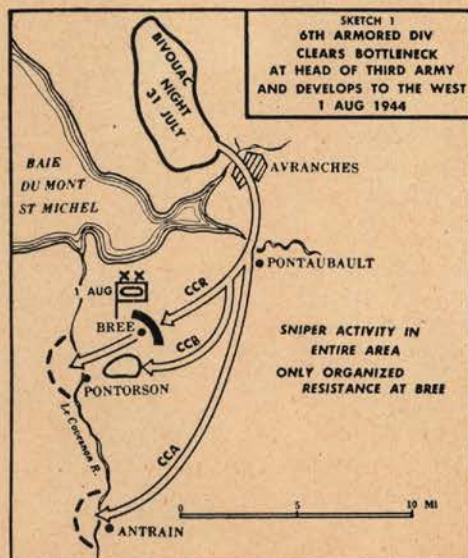
1. The United States Army, Naval and Air Force troops are in position to destroy the garrison of Brest.

2. This memorandum constitutes an opportunity for you to surrender in the face of these overwhelming forces to representatives of the United States Government and avoid the unnecessary sacrifice of lives.

3. I shall be very glad to receive your formal surrender and make the detailed arrangements any time prior to 1500 this date. The officer who brings this memorandum will be glad to guide you and necessary members of your staff, not exceeding six to my headquarters.

R. W. GROW  
Major General, USA  
Commanding

\*Military Review.



Unfortunately for us the command of Brest had passed on the previous day to General Ramcke of the German 2d Paratroop Division who had slipped in from the south while we approached from the north. He politely but firmly refused, and Colonel Mitchell was escorted to the outpost and released. The tired troops prepared to attack.

Just a week before, Tuesday the first of August, the long thin column had pushed its way through the debris of the Avranches bottleneck and "turned the corner" toward the west. The 4th Armored had captured Avranches, we had taken Granville and the coast line to the south and southeast. The 79th, 83d and other divisions were closing in. All had to form single column from Avranches to Pontaubault. During the evening of July 31, we had sent our reserve through to hold the bridgehead at Pontaubault, relieving part of the 4th Armored. At dark that Monday evening no plan for an advance beyond the bridgehead had reached the division. German air was active but it was the rubble-strewn road that slowed the Reserve Combat Command (CCR) not the bombs.

Third Army became operational at midnight and by 4 a.m. on August 1, we realized what that meant. Corps orders were simple: Not to stop at the Pontaubault bridgehead, push west up the center line of the peninsula in two or more columns, by-pass determined resistance, capture Brest. The Corps Commander's visit to the Division CP during the morning was the last we saw of him until Corps headquarters reached Lesneven, near Brest, eighteen days later. The MPs of the 6th Armored Division took over control of the bottleneck road and every bulldozer we could locate worked on the wreckage while all that day and through the night the steel column pushed on, the trains clearing by daylight. The Reserve Command that was to form a bridgehead at Pontaubault continued in the lead with a new mission of a bridgehead at Pontorson. This command bumped into real trouble at Bree where the well camouflaged enemy let the advance guard through, then opened surprise fire on the leading artillery battery. Three of our SP guns were knocked out by accurate 88mm fire before the column could deploy. In a three-hour battle the strong point was wiped out and a bridgehead secured at Pontorson with a loss to us of seventy casualties while the enemy lost an 88, three batteries of horse-drawn artillery and some ninety prisoners.

In the meantime the cavalry reconnaissance squadron



following CCR through Avranches, deployed to both flanks of the main road and paralleled the advance. Combat Command "A" (CCA) next in column, passed through Pontaubault in midafternoon and took the south route, paralleling that of CCR. The hedges were full of snipers who proved more of a nuisance than a menace. Many were killed and some captured but seldom was movement held up. After a week of action, snipers had become an old story, the men made short shrift of them.

Combat Command A made an uncontested crossing of Le Couesnon River south of Pontorson so that by midnight we had two bridgeheads controlling two good routes west.

Combat Command B (CCB), next in column, was to be the right column in the advance. Passing through Avranches early in the evening it advanced by a center route with the division artillery and bivouacked shortly after midnight east of Pontorson, prepared to pass through CCR at daylight.

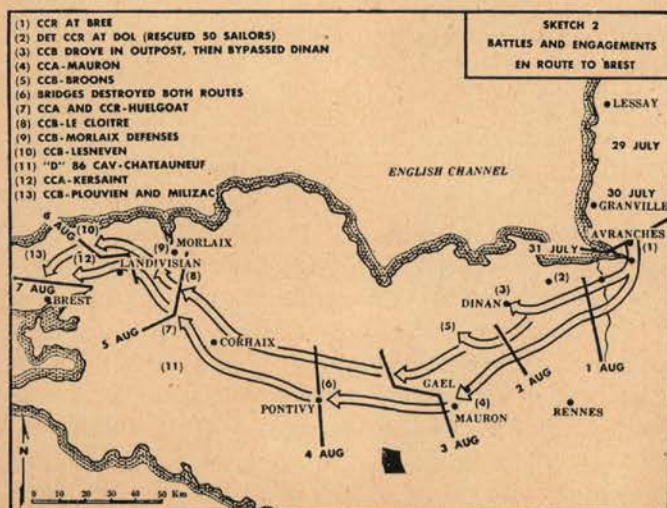
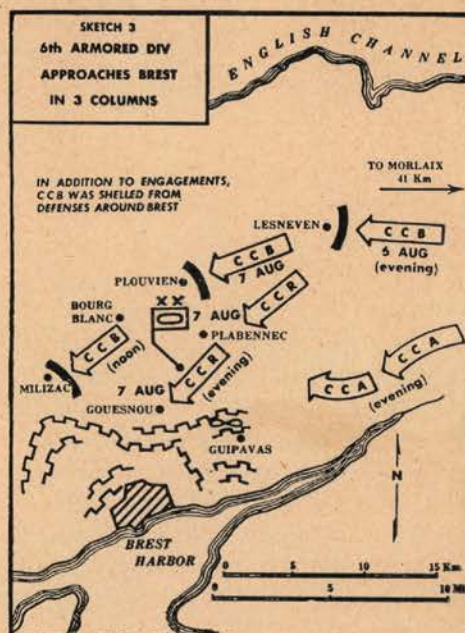
The Division CP set up in wheatfields near Bree where we had a grandstand seat for the great "fire-works" display at Avranches. All night the enemy fighter bombers strafed and bombed the bottleneck. Our divisional antiaircraft artillery accounted for six enemy planes and together with other friendly ack-ack rendered the balance ineffective. Our trains suffered no losses other than shattered nerves, and sunrise found the entire division clear and "in the open" with no division boundaries to worry about, no definite enemy information, in fact nothing but a map of Brittany and the knowledge that resistance was where you found it. Here was as wide-open a field for exploitation as was ever presented to one division operating alone, with only one string attached, "capture Brest." We thought the 79th Division would be right behind us, then we heard it was to be the 83d, but finally on August 4, the Army Commander said we would have no supporting troops. Task Force "A," working along the north coast, would get up as soon as possible. (This force actually reached Lesneven August 9, but was prevented by other

missions from approaching closer to Brest.) Our left (south) flank would be secured for a portion of the way by the 4th Armored Division, which followed us, as soon as it could come up. However our later movements were so rapid that actually during the entire operation and until arrival of VIII Corps on August 18, we had nothing on our flanks but Germans and no supporting troops within a day's motor march after Wednesday, August 2.

On this day, a new world seemed to open up to the division. We had elbow room, we could stretch. It began to dawn on us that we actually owned *all* roads in Brittany, that the constriction of two to four divisions on a single road was over. The cavalry spread far and wide. The columns sped, hit, bounced, detoured and were off again.

The French caught the spirit of it. On Wednesday they rather timidly waved, by Thursday evening groups of FFI were on the street with weapons as soon as we appeared, by Friday night, on the long night march, armed FFI road guides were posted ahead of us, and information was actually coming in from the front. By Saturday the country was rising in arms, crudely organized but willing and enthusiastic, particularly eager to accept the German prisoners that were too numerous for us to manage. It was amazing to see and feel a whole population rising to the surface on the appearance of the dirt-begrimed American soldiers.

Most of the German inland garrisons "retired" as fast as they could to the seacoast fortresses. But surprise and speed overtook them and there were daily fights by the cavalry and both columns, as shown on the sketch, and attested by the figures. On August 2, we had thirty-four casualties, captured 150 and destroyed six aircraft guns and an 88. On August 3, we had twenty-one casualties, captured 318, destroyed seven guns and two planes. On the 4th and 5th we lost about 100 men but





destroyed seven guns and inflicted double casualties. On the 6th we lost forty-four men, killed and captured over 100 and destroyed a German armored car, five guns, and three "beetle tanks." On the 7th our losses were again over forty while we destroyed a big antiaircraft warning system outside of Brest, knocked out three guns and inflicted many enemy casualties. This was all preparatory to the major engagements at Brest.

History records that we did not capture Brest. Why? It is interesting to ponder briefly over the "ifs."

In midafternoon Thursday, August 3, CCA on the left failed to turn west at Gael, continuing southwest on Mauron where it ran into an enemy battalion whose resistance forced a considerable deployment, and the subsequent attack and reassembly delayed CCA until late evening. In the meantime CCB, to the north, had struck only small resistance at Broon and by late afternoon had sped to the west some twenty miles beyond CCA. While observing CCA's attack at 4 p.m. the Division Commander received by officer courier a long-hand order written on scratch paper directing the advance to the west to halt in place; a force to be dispatched to capture Dinan (which CCB had hit the day before, driving in the outpost; then, confronted by a strong defense and an impassable river gorge, had bypassed). We never learned the reason for the order. The following day (August 4) the order was revoked at noon, but CCA had already moved out toward Dinan to its right rear and it was evening before the advance could be resumed. This loss of twenty-four hours allowed enemy reinforcements to reach Brest including a new commander.

The second "if" was a tactical incident. In order to avoid large towns which were known to be garrisoned, and to approach Brest by routes where no terrain obstacles existed, both columns cut northwest from the Carhaix area, crossed the main north coast highway be-

tween Morlaix and Landivision, turned west and struck Brest from the north and northeast. Due to terrain difficulties and some resistance CCA on the left was behind on August 7, when CCB in spite of greater distance and considerable opposition, hit the outer defenses of the city northwest of Gouesnou. As it proved later, CCB hit the strongest enemy position while the "gate" was relatively open to the northeast on that day. If CCA could have hit on the 7th the surprise would have been complete, and there is a strong possibility that it could have forced its way in along the route by which the 2d Division eventually became the first unit to get into the city over six weeks later. Before the entire division could be in position for a coordinated attack on the 9th, the Germans had "closed the door" and the 266th German Division from Morlaix was behind us as will be told later. The opportunity for a sudden seizure of the great Brittany port city was gone.

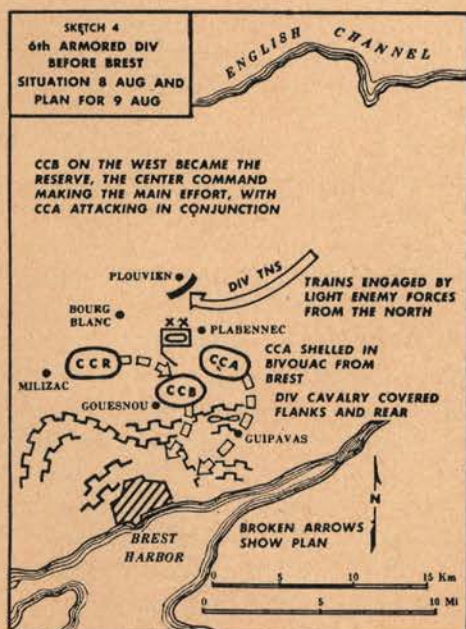
Never had a maneuver enjoyed better weather than our operations since the breakthrough. In addition, the bright full moon of the first week in August made it possible to operate in strange country at night. We would have advanced every night if it had not been for the exhaustion of the troops. As it was we marched all night August 4-5, after the delay caused by the order of the previous day, trying to make up time and get to Brest "by Saturday night" as General Patton wished. The German 2d Paratroop Division at Carhaix blocked that ambition by forcing both columns to detour that city, and both had stiff fights on August 5 and 6.

The Division CP had marched 229 miles in seven days, when just before dark it set up in the high hedge bordered fields three miles southwest of Plabennec. For two days we had carried our wounded forward because it was too far and too unsafe to send them to the rear. Army had pushed gas up to Pontivy, but for many supplies we had to go to the Avranches area. Corps was completely out of contact. We had lost all of our cub planes, mostly from poor landing fields. Even the band had been engaged in a fire fight defending a gas dump successfully. Messengers were lost, killed or captured on the long line of "communications."

Yet on Tuesday the 8th, one week after Avranches, the tired troops prepared for the assault on Brest in the morning.

CCB on the right was to become reserve and shift to the rear of the center in the morning. The commander of CCB took over the center column which had had only one battle since Bree on August 1, and was to attack through Gouesnou. CCA was to attack through Guipavas. The artillery, a total of five battalions, was posted to support all guns being able to reach the city.

One battalion of CCA suffered losses from artillery during the afternoon, and the artillery received counter-battery as it registered in the evening. In the meantime the cavalry was covering the flanks and rear. Intermittent small-arms fire to the north and northeast was heard during the day. The trains moving into Plouvién were





fired upon by small arms and artillery from the rear! Something was building up in the north. The absence of cub planes and the presence of the highest hedges we ever encountered made visual observation extremely difficult. About dark—10:30 p.m.—the mystery was solved by the capture of Lt. General Spang, Commander of the 266th Division, who drove his car into an artillery position from the rear. His division which we by-passed at Morlaix was marching toward us from the rear trying to get to Brest! All through the night small-arms fire burst from every hedgerow around the division CP, the PW cage and all along the rear.

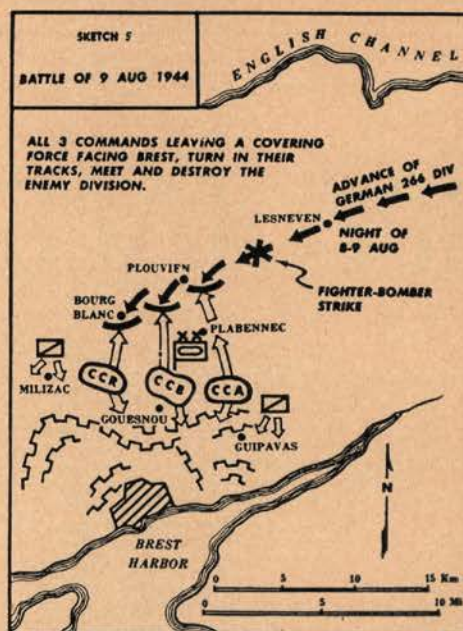
That proved to be the final "if" in our failure to capture Brest. Orders were issued during the night for all commands to leave a screen facing Brest, to reverse their directions, attack north in the morning, destroy the enemy in our rear and secure and assemble in the Plouvien area.

The battle of August 9 was a massacre. CCB in the center, led by 15th Tank Battalion and the 9th Infantry hit the enemy main body (896th, 897th, and 898th Infantry), killed over 200 and captured 1000. CCR on the west (now the left) flank struck an enemy column at Bourg Blanc where the 50th Infantry with some of the 69th's tanks destroyed the heavy weapons company of the German 851st Infantry, other mortars, machine guns, and an 88. CCA on the other (east) flank with the 68th's Tanks and the casualty-depleted 44th Infantry caught part of the enemy at Plouvien and completed the debacle. A group of our fighter bombers joined in the action and completely wiped out a column of enemy trains and artillery on the Plouvien—Lesneven Road.

The remnants of the German division were gathered in during the ensuing two days. Our artillery enjoyed the unique experience of having some batteries firing south against Brest, and some north at the same time. The cavalry which had covered the division rear during the all-night skirmishing pulled to the flanks and extended the cordon about Brest preventing the Germans from entering or leaving the city.

On the afternoon of August 9, a battalion of the 28th Infantry, 8th Division, arrived by truck from Rennes and was given the mission of securing commanding ground near Guipavas to cover our projected renewal of the interrupted attack on Brest. The same day Task Force "A," of VIII Corps reached Lesneven, and although unable to assist in the Brest operation, was a great protection to our rear and covered the debarkation of supplies at the now enemy-evacuated Morlaix. But further attack on Brest was not destined for the 6th Armored. Before readjustments had been completed, orders arrived August 12, to merely contain the fortress with a single Combat Command and move the balance of the division to Lorient.

The speed, determination and skill of the units of the 6th Armored Division in its advance on Brest August 1-7, 1944, were unexcelled, particularly when it is



realized that every man knew we were completely on our own, surrounded by an enemy vastly superior in numbers, albeit of inferior mobility. To this is added that amazing battle of August 9, when the division, in position for an attack at daylight, was reversed 180° and attacked to the rear at the same hour and completely annihilated a less mobile enemy division.

The division losses for the period of this narrative: killed: 130, wounded: 398, missing: 70. Combat vehicles lost: 50, other vehicles: 62, guns: 11. Enemy captured: 3,715.

Some conclusions which we drew from this campaign as applicable to a highly mobile unit operating against a less mobile enemy are:

*A rapid advance is automatic flank protection. Only when you halt must you specially protect flanks.*

*Deployment must be automatic when the head is stopped, it must be fast, wide and bold.*

*If you are more mobile than the enemy, never waste your time butting into stone walls.*

*Everybody must know how to fight.* Our bridge company at the rear of the trains captured many prisoners by skillful, stealthy footwork and use of individual arms. Our band leader manned a tank and drove off an enemy raiding party. All elements of Division Headquarters were in repeated fights.

Fire is terrifying, but when coupled with movement it is doubly so. That is why mounted action with guns blazing is so effective.

Falaise Gap, Mortain and the dash toward Paris held the spotlight during this period so that the isolated exploits of a single division were little noted. However the operations of the 6th Armored Division in Brittany can well be considered a classic example of a separate division in exploitation. The lessons learned were put to good use eight months later when the same battalions planted their flags 800 miles east "as the crow flies" on the Saxony hills beyond Chemnitz.



# SPECIALIZED ARMOR<sup>\*</sup>

**A**FTER the Dieppe raid there was a feeling that the time for the invasion of the Continent was approaching. But before it became possible, a great deal still remained to be done. It was imperative to be able to guarantee the success of the colossal project of putting ashore Armies able, not to hold their own against any Armies Germany could put against them, but also, in the course of a short campaigning season, to drive those Armies back into Germany. Failure to do so would have had disastrous consequences. None of the plans and preparations, however successfully contrived, would have profited the Allies unless they could, by their tactics and with the help of their special material, fight their way ashore at zero hour. It was this that presented the most sensational departure from the methods of the past.

The experience at Dieppe provided the starting point. This combined operation was planned on accepted textbook principles. Infantry and engineers were to land under heavy air and naval fire support. The former were to secure a bridgehead with the least delay while the latter worked to clear obstacles and so open the path inland for the succeeding waves of tanks. The result, as is well known, was disastrous.

### SOLUTIONS EVOLVED

The lessons were studied and solutions evolved. The necessity for the heaviest preliminary support by bombing, by supporting fire from guns or rockets on special craft out at sea and by the fire of ship's guns, was accepted. A special formation was organized in order that a new assault technique might be developed under one guiding hand. An armored division was chosen to provide the personnel.

The first necessity was to break down the obstacles and to make paths through the mine belts. Special armored vehicles were designed. Heavy tanks were converted to carry Sappers to the obstacles, where the men got out and fixed charges to destroy them, working in the lee of the tank. Others carried 30-foot bridges which could be dropped automatically by the tank to span a ditch or surmount a sloping wall. Others carried fascines, bundles of stout chestnut stakes, to drop in

ditches or craters and so make them passable by tracked vehicles. These were the Avres. "Flails," which had proved their success so well at Alamein under the name of Scorpion, were also to be employed in clearing lanes through the minefields. For the assaulting troops, yet another type of tank was evolved—the D.D. tank. Its great value was that it could swim to the shore and go straight into action. Two hundred of these tanks were to be used.

The new picture was to be radically different from Dieppe. The specially designed armor was to be in the van and to break the crust; then the amphibious tanks were to pass through; and finally the normal armor, landed from its special landing craft, were to follow. No fewer than 4,200 of these were to be used in the first fortnight in Normandy. This was the armored assault from the sea, a vital part of the Allied panoply of armored warfare.

### THE ASSAULT

On D-Day, the Allies carried out their assaults on the Normandy coast with five divisions: three in the British sector and two, farther west, in the American. Two of the three divisions attacking in the British sector were British and one Canadian. In all, twenty-eight assault teams took part in the first assault of these three divisions. The spearhead of each team consisted of special armor. The assaulting infantry were carried in L.C.A.s—small assault landing craft—and supported by Royal Armored Corps personnel in the new D.D. amphibious tanks which swam ashore.

The story of the assault teams in the westernmost sub-sector is typical. Each of the six teams got ashore and cleared a lane through the obstacles to the lateral coastal road, a distance of some 400 meters, on the average, from the beach. In all, thirty-four of the 170 special armored vehicles which composed the twenty-eight teams were permanently knocked out, and about three times that number were temporarily disabled. Nevertheless, those that remained contributed greatly to the subsequent capture of the infantry objectives by the supporting fire of their petards and guns.

### MAXIMUM PENETRATION

Each of the Brigades in the British sector obtained a firm footing, the maximum penetration being about 10

<sup>\*</sup>Royal Armored Corps Journal.



kilometers, the minimum about three. On the nearest American beach—Omaha beach—no specialized armor was used and nightfall saw their troops only 100 meters from the shore.

A new technique had been successfully exploited—that of the all-mechanized highly armored Army. The Germans won their early campaigns against unprepared enemies by the use of highly mobile armored forces, well supported from the air. They failed completely, however, to develop the tactics which they were the first to use. They produced, it is true, the best heavy tank on the battlefield. The military authorities of Britain and America did not enter into competition in this matter. Their plan was to land, to build up their beachhead, and then to drive an armored Army right across France into Germany. Reliance on very heavy tanks would have doubled their problems of restoring bridges—certain to be destroyed—over the many rivers of France and would have caused delay. They had only the short North European summer as their really active campaigning season and time was everything if France, Belgium and, perhaps, even Holland were to be freed before the winter. In the execution of this plan, the mobility and power of their armored divisions was to be backed up by the speed of the mechanized infantry and artillery which followed them. And when opposition or obstacles held up the flood, the specialized armor and mechanized equipment was brought in to their aid.

After the landing, the special armor did useful work in the fighting for the enlargement of the beachhead. The flail tanks were invaluable; no minefield not covered by antitank fire remained an obstacle for long. The Avres found a new mission in knocking holes in the big field banks of the Normandy bocage country, and the flame-throwing Crocodiles accounted for many strong points. Field-Marshal Montgomery, by skilful use of his armor, kept the Germans apprehensive of their eastern flank and tied down their armor there, facilitating the American breakthrough on the other flank. Examples of this were in his withdrawal of three British armored divisions into reserve on his left flank in July, and the attack of three British armored divisions east of Caen on the 18th of that month.

#### SPEED IN ATTACK

The speed of the British armor was well shown by their liberation of Brussels and Antwerp. The Falaise battle was not over till August 20th; on the 25th, the Seine was crossed and on the 31st, the Somme. Two British armored divisions then made a dash for Brussels and Antwerp, reaching them on the 4th and 5th of September, after having covered 500 kilometers in seven days.

When, later, the necessity arose to free the approaches to the port of Antwerp the armor and special mechanized equipment again played a vital part. Buffaloes—tracked amphibious personnel carriers which could cross water and land on soft mud—made possible tactical land-

ings on the coast in the rear of the German defenses, thereby narrowing down their positions. When the time came for the landing on Walcheren, the special armor again gave help in the assault on the western coast. The island was fortified with every known type of defense work, obstacle and weapon, and its beaches were most difficult. The bad weather had greatly reduced the possibilities of air bombardment and, as a result, undamaged coast defense batteries caused terrible losses among the landing craft giving close support. Three-quarters of them were lost. But their support had made possible the landing on the sea wall of the armor, consisting of ten flails, eight Avres, four Bulldozers and two Shermans. Of these, seven survived the landing and reached the village of West Kappelle, making possible its capture by the Marine Commandos. Four only then remained and these enabled the Commandos to clear the remaining gun positions and defenses of the western coast of the island.

Yet another chance came for this armor. Part of the plan for seizing the left bank of the Rhine, preparatory to its crossing, was the attack of the Canadian Army, southeast of Nijmegen, through the Reichswald to take Cleves, Goch and Xanten. This attack took place in February, when the country was almost impassable. Here yet another special vehicle was introduced, the Kangaroo, a fully protected tank chassis for carrying infantry to the assault. Without Buffaloes and Kangaroos, no infantry could have moved to the attack in this terrain. But with their help, in addition to that of flail tanks and Crocodiles, this attack defied the conditions and the defense, tied down to their works, was gradually worn down.

#### A FORMIDABLE OBSTACLE

The operation for the crossing of the Rhine on the British front was another ingenious combination of mechanization on land and water. This formidable obstacle was 300 meters wide, with difficult banks. The assault was more comparable to the Normandy landing than to a land attack. Its scale can be judged by the fact that the Buffaloes alone made 4,000 journeys carrying the assault elements of five divisions. Enormous numbers of D.D. tanks, and even naval craft brought overland, were used. It was preceded by artillery fire unprecedented in the war and assisted by large-scale airborne landings by day and night in the early stages of the attack. It was completely successful.

This success let the armored divisions of the 21st Army Group into North Germany. This time, most effective arrangements had been made for their maintenance and, though centers of resistance held out strongly, the Germans were completely unable to form a connected front against them. The crossing of the Elbe followed the pattern of that of the Rhine and the British Army reached the Baltic. By then, the Russians were in Berlin and the war was over.



# Armored Division Associations

## 1st Cavalry Division

The second anniversary of the liberation of Manila by American troops was celebrated in Tokyo on February 3, with a military review, in which thousands of new, young replacements for the combat veterans of the Pacific marched for the first time on the Imperial Palace grounds in Tokyo.

This review commemorated the famous "Flying Column" of the 1st Cavalry Division that pushed 100 miles in 66 hours through enemy-infested Luzon territory to smash an entry into war-torn Manila.

A new First Cavalry Division theater has recently been opened at Camp Drake, which will show the latest product from Hollywood nightly at 15 cents per person. Named the Drake Theater, the show house is the auditorium of the former West Point of Japan, where Camp Drake is located.



Signal Corps Photo

Soldiers of the First Cavalry Division, who are making a career of the Army, get a handshake from Lieutenant Colonel Willis G. Ethel just prior to their take-off by plane for the United States to conduct a whirlwind four months' tour of the country looking for volunteers to serve with the Division. Left to right, the men are: William L. Primm, Everett L. McCormich, Raymond R. Combs, James Ward, Carl R. Butts, and Henry C. Cecil.

## 2nd Armored Division

Among the growing charter memberships of the Second Armored Division Association is the name of Brigadier General S. R. Hinds, according to Captain George M. Warren, acting G-1 of the Division and secretary of the Association.

General Hinds commanded Combat Command B at the crossing of the Elbe and the capture of Madgeburg.



Signal Corps Photo

This bronze plaque, set in a massive rock in front of the Eighth Cavalry Headquarters, in Tokyo, tells the story of the famous regiment, and is dedicated to the dead of the unit.

He declared himself much in favor of the Association in his letter to Captain Warren and volunteered to assist in its growth in any way.

Letters requesting membership continue to arrive from former members of the Division, both overseas and in the United States.

Writing of the Association's constitution and by-laws is in the finishing stage. Copies will be mailed to all members for their approval in the near future, after which progress and accomplishment of the Association can proceed at a more rapid pace.

Many members have inquired as to the strength of the Second Armored Division as it now stands at Camp Hood, Texas. Combat Command A, in trim and up to strength, is made up of the 66th Tank Battalion, 41st Armored Infantry Battalion, 14th Armored Field Artillery Battalion, and a company each of medics, engineers, and ordnance.

Major General Leland S. Hobbs is commanding general of the Division and Brigadier General John H. Collier commands Combat Command A.

Membership in the Second Armored Division Association, which is open to past and present members of the Division, and information on obtaining a copy of the Division History may be had by writing Captain Warren at Division Headquarters, Camp Hood, Texas.



### 5th Armored Division

The first edition of the *Fifth Armored Division News* has been printed and copies mailed to approximately 7,000 former division members whose addresses are available. A few more are on hand for future distribution. This publication outlines the aims and policies and present status of the Division Association.

Harry Entrekin is organizing a committee in Chicago to set up a division convention for that city in September of this year. More news about this as it comes in.

/ / /

### 11th Armored Division

The officers of the 11th Armored Division Association wish to thank all members who have written the National Headquarters expressing their good wishes and enthusiasm for the Association. Thanks also go to those members who have sent in comments and suggestions on the plans outlined in the recent Newsletter.

Major General Edward H. Brooks, former commander of the Division, has written the following letter to the Association Secretary:

HEADQUARTERS SEVENTH ARMY  
OFFICE OF THE COMMANDING GENERAL  
ATLANTA 3, GEORGIA

Colonel Willard A. Holbrook, Jr., Secretary,  
Eleventh Armored Division Association,  
1719 K Street N.W.,  
Washington 6, D. C.

Dear Colonel Holbrook:

I have learned with much pleasure that the Eleventh Armored Division Association is actually in being.

We who were privileged to serve with, and guide, these splendid young Americans who formed the Thunderbolt Division will always cherish the memories of their accomplishments in training and in battle. Their deeds should be perpetuated, and no finer instrument exists for this purpose than such an organization as has been formed.

May I congratulate you and your co-workers on your accomplishments to date, and wish you all good fortune as you plan for the convention in Chicago where memories may be refreshed and friendships renewed and strengthened.

Faithfully yours,

EDWARD H. BROOKS,

Major General, USA,

Deputy Commanding General.

Among other interesting letters received was one from Mr. Paul J. Christensen, 4510 Drexel Avenue, Minneapolis, Minn. (father of Paul J. Christensen of the 63d AIB who was killed in the Rhine drive on March 18, 1945) enclosing a check in the amount of \$5.00 and asking for the privilege of becoming an "honorary" member of the Association, as a tribute to his son. He would like very much to meet and talk with some of his son's buddies in the 63d AIB.

Word has been received from former Pfc. Paul V. Thevenet of the 21st AIB, that he is attending Lehigh University and has recently taken unto himself a bride, the former Miss June E. Lewis of Maplewood, N. J. We had the pleasure of a personal visit from Mr. B. B.

Melgaard of the Milwaukee Railroad, father of Sgt. Warren H. Melgaard (22d Tank Bn.) while he was in Washington recently on business, and he has offered his assistance, together with Warren, in helping to locate the rosters of the 22d Tank, by writing to buddies of his son. At present we have only the Hqs. and Hqs. Co. of the 22d Tank, which was mailed to us by Walter D. May of Mendenhall, Miss. We have contacted former C.O.s of the other Companies in an effort to locate the other rosters. Anyone knowing how we can get the rosters of the 575th AAA Auto Wpns—the 492d AFA and the 133d ORD—please get in touch with us.

Some interesting comments in letters we have received are the following:—from Patrick J. Lisa of Hoboken, N. J. with regard to the Division History . . . "Put out a book that would make each and every one of us proud to own one. You can also include acts of heroism that were performed by the men of the Div. I mean real heroes, not phonies, where a man did something beyond the call of duty—not like getting a bronze star for fixing a flat tire within two miles of the front lines. Give us the real stuff." . . . Victor M. Burton (705th TD) of Albion, Mich. writes in part . . . "Let's stay out of politics and race riots, keep our noses clean and remain long, strong and loyal in friendship. If we must indulge in any 'isms' let us learn what real, unselfish Americanism is; then study and practice it without feeling that we have to pat ourselves on the back. There's more to it than that. Here's my dollar; the only kind of buck to pass and the best of luck toward what should be one of the sturdiest and cleanest of deeply rooted, tough fibered and well bred organizations ever founded." . . . A suggestion comes from Clif Darling of Madison, Wisconsin . . . "that consideration might be given to foreign officers who were associated with the Division for some time, also persons in France, Belgium, etc., who were particularly nice to us as a group or individuals—to offer them 'honorary' or 'associate' memberships in the association."

An interesting message from William M. Ewing who is back in Austria as an American businessman representing American Relief to Austria, tells us that "he would be only too glad to do anything we might wish in the nature of aid to the association from over here. There are still a few '11th' patches to be seen in both Salzburg and Vienna and they still say in Gmunden that times have never been the same since the Eleventh pulled out." . . . A message from Marvin H. Barnes (Trains) to Ted Cronyn reads . . . "In my opinion, there was no finer division in the ETO than the 11th and it did its job well. Never in my life have I met a finer group of men (both commissioned and enlisted) and I am proud to still be in contact with a number of them. We fellows of Finance, have been doing right well in keeping in contact with one another."

\* \* \* \* \*

Many members have inquired about the ETO Booklet and plans are being made to mail these out to mem-



bers together with paid membership cards and a windshield "sticker" advertising the "Reunion" in Chicago—just as soon as all the changes of addresses are completed in the files. About one out of every three had to be changed, which is quite some task.

We ask those of you who have not sent in your membership dues, to do so as soon as possible as the association needs all the help it can get—both financially and spiritually. We expect to get the Division History into the hands of a publisher in the next couple of weeks and should have some definite idea of when it will be available to those who want it, by the time our next Newsletter goes out.

Plans are now being made for a get-together of the Chicago members, says Bill Lipp in a recent letter. Bill has been helping with the convention arrangements and the Congress Hotel is where the reunion will be held. The hotel will shortly contact members who have indicated that they would like to attend the convention, regarding individual reservations. Bill also informs us that he is the proud papa of a baby girl born just six weeks ago.

We plan to send you other members who are interested in organizing local chapters, the names of men in your area, as soon as we have completed our changes of address—so don't think we have forgotten all about it.

Members in and around Washington, D. C. have been invited to attend a presentation ceremony of the Legion of Merit to Brig. Gen. W. A. Holbrook, Jr. (formerly Combat Commander of the 11th and now your Association Secretary) in the Blue Room of the Hotel Hamilton on March 7 at 7:30 P.M. After the ceremony, there will be a meeting of the 11th A.D. men present, with regard to forming a local chapter of the Association for this area, and we will let you know the results of this meeting in our next "news notes" in the JOURNAL.

We have had quite a volume of letters returned to us undelivered and we plan to list all of the names and include the list with our next Newsletter to members so anyone knowing of the present whereabouts of any of the men listed, can get in touch with us. We have also received requests from members for copies of various rosters of the units, and at present, there are no extras available. These requests are being filed, and if and when we have any, we will be pleased to mail them to you. Anyone wishing a friend's address may write the Association offices and we will be glad to check our files and send you the information we have.

Again, too, the ARMORED CAVALRY JOURNAL wishes to thank the many members of the 11th who have subscribed to the JOURNAL and we will be very happy to receive anything in the way of news that you think other members of the Division would like to read, to be published in this column. . . . So long . . . see you in the next issue!

## 14th Armored Division

The B-Bag of several European editions of *Stars and Stripes* served as a medium for many men to voice complaints about their officers, their units, and conditions in general. The 14th Armored Division never made these columns and the reason can best be explained by quoting an extract from a letter recently received from a veteran in connection with the Association: "Please be assured that I am very, very proud to have been a member of a darned good, fighting outfit. The 14th commanded the respect of every soldier I have ever spoken to. I know the men who died, from my own 'E' Troop, 94th Cavalry Reconnaissance Squadron, and all the many outfits of the 14th, will be pleased to learn, in their own particular Heaven, that the 'Fighting 14th' will continue to live on in the hearts of their buddies." Letters of this sort are the rule rather than the exception.

It was gratifying to learn that veterans of the 14th residing in the vicinity of Los Angeles have organized a 14th Armored Division Post of the American Legion. Al Siegel is Adjutant. Dan Iannella and some of the others are organizing small units clubs in the various cities.

It has been almost two years since the war ended in Europe. The 14th veterans are scattered around the globe. Some 17 officers have been tendered commissions in the regular army, including Bill Golden, Joe Harrison, Dick Neuman, Bob Edwards, Carl Keiser, Paul Fromer, Joe Lambert, and others. From a percentage standpoint, this is an exceptionally fine record. Dan Hudelson, Reserve Commander, has recently been confirmed by the Senate as a Brigadier General, California National Guard. All the veterans applaud this selection.

To account for the other 25,000 men that served in the Division during the war would require a complete review of the occupational and professional fields. The range extends from a New England chimney sweep to a movie actor, from a graduate law student to a circuit judge, from a small-town jeweler to a Wall Street broker. It is a real compliment to the sturdiness of our stock and the principles of our society, to see so many men who yesterday were merciless killers and who today have reconverted to peaceful pursuits. Remember the unkempt, fiery captain that led one of the first patrols into the Siegfried Line to measure the dragon teeth—he is a quiet, retiring and unassuming broker who never mentions war; or the lieutenant who took the company when the captain was killed and led it into some of the bitterest close combat of the war—he is a small-town, religiously minded, jeweler; or the artilleryman who pounded the jammed column of men, horses, and vehicles into oblivion—he is a soberly dressed judge. It could go on and on.



# THE BOOK NOOK

The Armored Cavalry Journal Book Club has met with overwhelming success. For details of the Club see the Inside Front Cover of this issue.

**I FOUGHT WITH CUSTER. THE STORY OF THE LAST SURVIVOR OF THE BATTLE OF THE LITTLE BIG HORN.** As told to Frazier and Robert Hunt. Charles Scribner's Sons. \$3.50.

The defeat and massacre of Lieutenant Colonel George A. Custer and five troops of the famous Seventh Cavalry at the fatal battle of the Little Big Horn on Sunday, June 25, 1876, will always be one of the great moments of heroism, tragedy, and mystery in American history. There was no white survivor of Custer's part of the disorganized and badly mismanaged battle.

In Captain Benteen's troop of the Seventh Cavalry, however, was Sergeant Charles P. Windolph, a German immigrant who had joined the American Army. Although Windolph did not serve with Custer in the bloody battle at Little Big Horn, he was a part of the famous expedition against the "hostiles" and saw plenty of action under Custer's command.

The first part of this new book is Sergeant Windolph's own account taken down by the authors. His story throws new light on what happened to the Seventh Cavalry, and why, on that fatal Sunday.

Following the Sergeant's story the authors have collected a great deal of absorbing material, contemporary and otherwise, about the events leading up to the massacre, the investigation that followed, and various questions about it that still remain unanswered.

**JOMINI'S ART OF WAR.** Edited by Lieutenant Colonel J. D. Hittle, USMC. The Military Service Publishing Company. \$2.50.

Modern militarists have long considered Clausewitz the preeminent European military thinker. His disciples have

so skillfully conducted their advertising campaign that it has eclipsed the memory of the very high esteem in which Jomini was held, and the brilliant contributions he made to analyzing and codifying the art of war.

Indeed, until after the American Civil War (Stonewall Jackson died with a copy of Jomini's *Art of War* in his saddlebags) Jomini was considered the premier military writer, and Clausewitz a cloudy theoretician.

Colonel Hittle here refurbishes an unjustly tarnished reputation. He disproves conclusively the facile criticisms of Jomini launched by Clausewitz idolators. With insight and candour, Colonel Hittle analyzes Jomini's *Art of War* in his searching forward. He concludes that Jomini, as a thinker and analyst, is the equal of any, and the superior to many better known writers.

The only deletions from the text have been tactical considerations that are completely invalid today. Jomini's theory and analyses have been retained entire.

**SOLDIERS' ALBUM. THE SHAEF PICTORIAL HISTORY OF THE WAR IN EUROPE.** By Colonel R. Ernest Dupuy and Lieutenant Colonel Herbert Bregstein. Houghton Mifflin Company. \$5.00.

This is a nine-by-eleven, 150-page pictorial history of the war in Europe. It succeeds in capturing the sensations of war with great clarity and for that reason well and deservedly may be more widely read and preserved than a straight text.

Beginning with the preparations for the invasion of Normandy, the story of the assault, penetration, and collapse of fortress Europe unfolds in a cascade of indelible pictures that recall with equal poignancy the sounds and smells as well as the visual scenes of battle.



# AMERICANS

## *The Story of the 442d Combat Team*

By MAJOR ORVILLE C. SHIREY

**\$5.00**



This book, written primarily for the Japanese-American members of the 442d Combat Team, deserves a place on the bookshelf of every American who is interested in how these Americans repaid the nation that very nearly repudiated them, for it is the story of why our democracy works.

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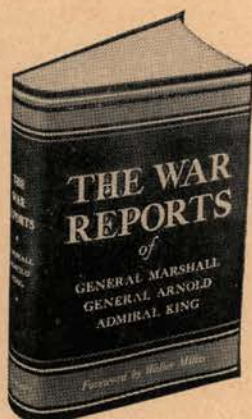
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*The War Reports* is an original war record nowhere else available in equal detail and completeness. It contains the complete running history of the war as provided by the three top commanders of the armed services of the United States in their official, illustrated reports to the American people.

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*Armored Cavalry Journal*

1719 K St., N.W.

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GERMAN SCIENTIFIC ESTABLISHMENTS. A Report by Colonel Leslie E. Simon, Ordnance Department. Mapleton House. \$4.50.

This report covers German scientific activities associated with Ordnance which were conducted in central Germany west of the Elbe River. The report was only released after some parts were blacked out, because they contain restricted information.

THE OFFICIAL PICTORIAL HISTORY OF THE AAF. By the Historical Office of the Army Air Forces. Duell, Sloan & Pearce. \$10.00.

This superb pictorial history is official, as the title indicates, but it is also far more than that—something new in the form of official history. It has been made possible by several years of coordinated work by a corps of AAF specialists, directed and counseled by veterans of the AAF from top generals on down.

As a result, this official history is several books in one. It is the first complete graphic record of the development of American military aviation. It is a story of the scientists and workers and industrialists whose "know-how" made U.S. air power possible.

ST. LO. By Historical Division of the War Department. Government Printing Office. \$1.25.

*St. Lo* is the twelfth volume in the "American Forces in Action" series published by the Historical Division of the War Department and released through the Government Printing Office for public sale.

This history gives an account of the part played by XIX Corps in the First Army advance from Normandy Beachheads to the south. *St. Lo*, a communications center on the Vire River, had to be captured to secure a favorable position for further movement. The actions of the 29th, 30th, 35th, and 2nd Infantry Divisions, and the 3rd Armored Division related in this volume form only part of an operation which eventually employed 12 divisions.

The First Army had the mission of attacking across country to the east of the Vire and penetrating a deep belt of German defenses. The ultimate goal of XIX Corps was high ground to the east and west of *St. Lo*. To reach this objective, XIX Corps had to fight through the hedgerows which crisscrossed the country and afforded the greatest advantage to German defenses.

From July 7 to July 20, 1944, XIX Corps battled through hedges, over high embankments and down sunken roads and finally seized the town of *St. Lo*.

BATTLE STUDIES. By Colonel Ardant du Picq, French Army. Translated from the Eighth Edition in the French by Colonel John N. Greely and Major Robert C. Cotton. Military Service Publishing Company. \$2.00.

This famous book on the psychology of battle was written almost three-quarters of a century ago by an obscure French Colonel. It is a luminous statement of the principles of battle.

Du Picq was a practical soldier. He died in action on the eve of the decisive battles of Gravelotte and Sedan, which



# YANK:

## THE GI STORY OF THE WAR

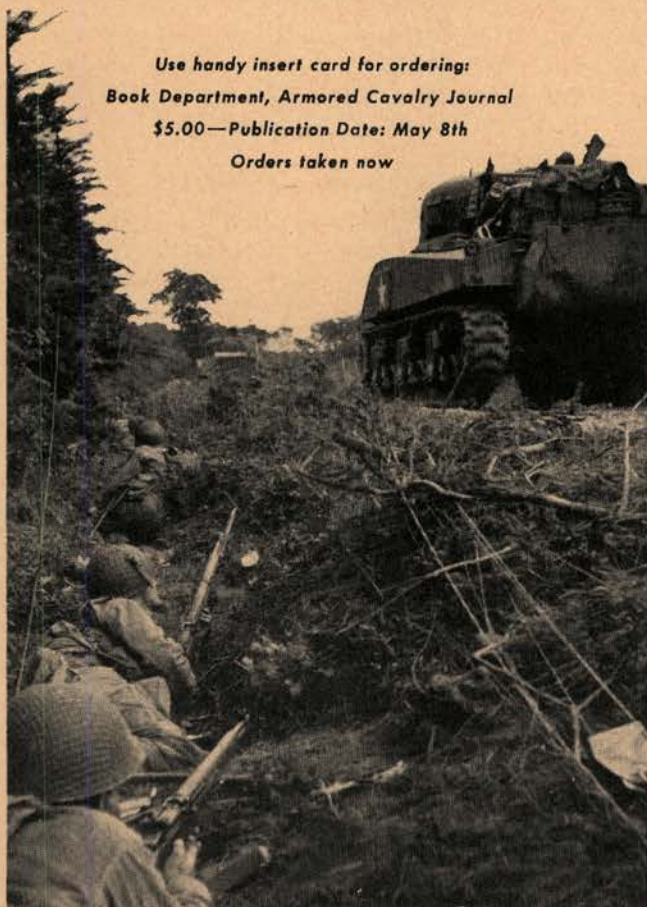
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Here for the first time since wars began, soldiers themselves have put down in powerful, simple language and captured in memorable pictures the complete story of a war.

Here is a book that will bring back with intimate and sharp etching all the blurred memories of the past for every ex-serviceman.

John Mason Brown, noted author and critic, says "No rosemary offered for remembrance was ever made of tougher, more muscular, or prouder stuff."

Use handy insert card for ordering:  
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The drama portrayed in this book is complete with all its violence, pathos, fatigue, and that incredible mixture of confusion and skill inherent in every victorious army.

Above all, *The Soldiers' Album* is a fair and vivid appraisal of the defeat of the Wehrmacht on the Western Front.

SMALL UNIT ACTIONS. Historical Division, War Department. Printed by the Government Printing Office. \$1.25.

"*Small Unit Actions*, eleventh in the series of monographs on American operations in World War II, marks a departure from earlier numbers in that series. It presents, instead of a coordinated treatment of a larger operation, four detailed narratives dealing with small units which took part in such operations," according to the book's introduction.

The book is divided into the following four sections: Pointe Du Hoe (2nd Ranger Battalion, June 6, 1944); The Fight on Tanapag Plain (27th Division, July 6, 1944); Santa Maria Infante (351st Infantry, May 11-14, 1944); and Singling (4th Armored Division, December 6, 1944).

This book of 212 pages is profusely illustrated with action photographs and maps.

MANNLICHER RIFLES AND PISTOLS. By Walter H. B. Smith. The Military Service Publishing Company. \$5.00.

Walter Smith—the world's outstanding arms writer—hits the mark again with another unique weapons book.

This time he covers in detail the 40 famous Mannlicher rifles and pistols treasured by sportsmen and soldiers the world over—the first time that a complete description of these renowned weapons has ever been made. And another first are the 119 unique Von Kromar drawings. They are based on the official records of the Steyr Armory in Austria—manufacturers of the Mannlichers—which were obtained from the factory just before the Russians took over.

Mannlicher was so far ahead of his time that his inventions have been largely forgotten. Present manufacturers pride themselves on "modern developments" that were old in 1900. Our Garand, Winchester Carbine, Browning Machine Gun, Savage and Johnson Rifles all use principles first developed by Mannlicher.

CASABLANCA TO KATYN. THE SECRET HISTORY OF THE WAR. Volume III. By Waverley Root. Charles Scribner's Sons. \$5.00.

This volume continues the fascinating account of the undercover diplomatic and political maneuvers of World War II which Waverley Root brought up to the end of 1942 in *The Secret History of the War*, the two volumes so generally acclaimed by the critics. But it is more than a mere sequel. It is a self-contained work in itself, given a particular unity both by the period it covers and by the underlying motif which dominates it. This motif is sounded in the first chapter. "Germany's 1942 Strategy," whose thesis is that, with the defeat at Stalingrad, Germany realized that the military war was lost, and turned her efforts from that time forward to winning it politically, economically and psychologically.



The book ends with a final chapter on Germany's greatest coup in this campaign, the exploitation of the Katyn massacre, which led to the breaking off of diplomatic relations between Poland and Russia.

Mr. Root presents much material hitherto unpublished in any book—the Nazi plan to go underground with defeat, the intrigues which pitted Giraud against de Gaulle in North Africa, the manner in which General Nogues pulled the wool over the eyes of American authorities in Morocco, the secret negotiations which led to the Italian surrender, the intrigues behind Admiral Standley's spectacular criticism of Russia and a thousand and one other stories, at present either generally unknown or incompletely known.

1 1 1

**AMERICANS. THE STORY OF THE 442D COMBAT TEAM.** By Major Orville C. Shirey. The Infantry Journal Press. \$5.00.

Written primarily for ex-members of the 442d Combat Team, *Americans* is a military history that will interest all.

It begins with the activation of the unit in early 1943, and ends with the unit's part in the German Occupation. In a period of less than two years, the Combat Team chalked up the remarkable record of receiving 3,915 individual decorations and 10 unit awards.

The 442d Combat Team was a great military experiment designed to prove, in the words of the late President Franklin D. Roosevelt, that "Americanism is a matter of the mind and heart" . . . and that "Americanism is not and never was a matter of race or ancestry."

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The Table of Contents includes nine sections under the headings of: 1. General Principles; 2. The Public Relations Office; 3. Activating a Public Relations Office; 4. Newspapers; 5. Radio in Public Relations; 6. The Story in Pictures; 7. Magazines; 8. Miscellaneous Activities; and 9. Fundamentals of Public Relations Writing.

Although published as a handbook on public relations it is nothing more than a booklet on how to handle and obtain publicity for the army. Publicity is but a small part of good public relations either in civilian or military life.

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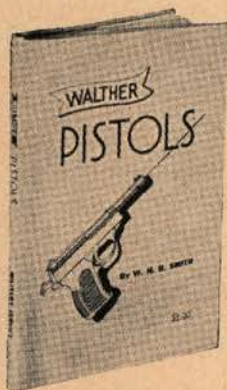
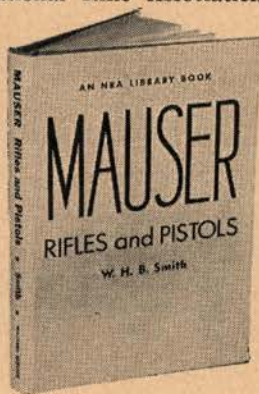
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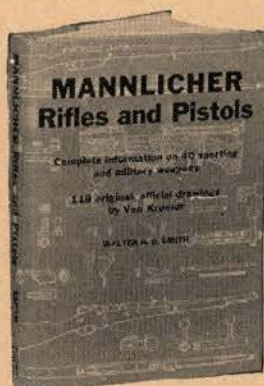


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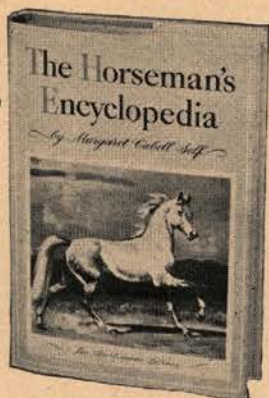


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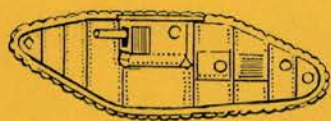
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*by Leonard J. Grassman*  
*See page 2*

MAY-JUNE, 1947



CARDED

# The Armored Cavalry

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WAR DEPARTMENT  
WASHINGTON 25, D. C. 10 April 1947

Effective until 10 October 1948 unless sooner rescinded or superseded

## EXTRACT

**II. ARMORED CAVALRY.** 1. The Armored Force was constituted as an emergency measure. Because Armor is not a permanent arm an officer assigned to an armored (tank) unit retains his basic branch while so assigned. Upon relief from armored assignment he often loses his identity as an armored officer and is assigned in accordance with his basic arm.

2. In order that armored officers may retain their armored identity, action is being taken to assign all such officers to a single arm which will have primary responsibility for armored officer personnel. Eventually, it is expected that statutory approval will be given to the formation of an Armored-Cavalry arm which will replace the present Cavalry arm. Pending such action, it is planned to detail in the Cavalry those officers of the other arms who are qualified armored (tank) officers and who do not object to this action. Letters, with a view to their detail in the Cavalry, are being sent to those officers whose records indicate qualification in Armor. At the same time, Cavalry officers who are not qualified in Armor and who do not desire service with Armor are being given an opportunity for detail in or transfer to other arms and services.

3. As the records available are incomplete in many cases, it is probable that many officers affected may not have been contacted by letter. Such officers who are qualified in Armor may apply for detail in Cavalry. Similarly, Cavalry Officers who are not qualified in Armor or Mechanized Cavalry may apply for detail in or transfer to other arms or services. These applications should state qualifications or experience and be addressed to The Adjutant General, Attention: WDGPA-O-CAV, Washington 25, D. C.

4. This action will have no effect upon the current assignment of any individual concerned.

5. The contents of this circular will be brought to the attention of all officers.

(AG 210.31 (25 Mar 47)).





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# Industry Underground?

*by Leonard J. Grassman*

**In considering going underground, it is easily recognizable that such a move is highly practicable in enhancing our national security in view of the modern type and future potential type of warfare. The underground evolution can and should be achieved gradually, and in its achievement might give the rest of the world evidence of our caution and potential strength.**

**W**ILL international distrust—the nonacceptance of U.S. good intention and the threat to peace—force the United States to undertake a policy of perpetual preparedness necessitating costly protective measures for our industrial facilities? And, will war potential and war protection play an equal role with commercial practicality in industrial planning in the future?

These questions, stimulated by the slow progress at the peace tables of the world have caused speculation on the utilization of underground sites in the United States for storage and factory facilities to reach a high point among people interested in the future invulnerability of our nation in the event of another war. This speculation, of course, is natural. Both the novelty and practicability of protected subterranean facilities grasp the attention of the curious and concerned.

The science of warfare has altered so rapidly in recent years, the military feasibility of underground utilization is still in the research stage. True, such utilization was proven practicable during the past war, but those instances were the result of emergency action rather than of long-range planned defense. Consequently, widespread utilization in the future must come as the result of careful study and planning and extensive preparation, which, naturally, takes time, and which, of course, makes the present too early to anticipate any lengthy official information on the subject.

The idea of subsurface facilities is not new. It was put into practice by many nations prior to and during the war, and proved practical to varying degrees, and, in some instances, highly impracticable. At the end of

the war, the knowledge of these experiences was part of the vast knowledge gained by U.S. Armed Forces, and with the advent of peace, this data was being weighed and evaluated by those charged with the security of our nation.

Many months ago, the Corps of Engineers, in behalf of the Army-Navy Munitions Board, which is charged with planning U.S. Industrial Mobilization against any future emergency, undertook a preliminary survey on caves, mines, and quarries as underground sites. This survey, as indicated, was preliminary in nature—the type of survey usually indicative of nothing more than to show whether or not an extensive survey is justified.

The purpose of the survey was to determine the availability of underground sites for industrial facilities, if needed, and all possible relative data concerned in the great problem of subsurface utilization—structure, strength, accessibility, humidity, etc. All such information is essential before any planned pattern for underground utilization can even be considered.

Although the report of the survey is classified and has not been made public, it is understood that the survey covered some 1,000 representative types of underground sites, determining their possible utilization value for storage and other industrial facilities.

Research has made it evident that, contrary to popular misconception, natural caves do not make the best underground sites for these purposes. Natural twists and variations in levels make a great amount of reconstruction requisite. Another detrimental factor existent



in caves is high humidity, which is harmful to stored materials and costly to control. And since many of the cave hollows have been cut by underground streams, or water seepage, conditions of high humidity usually exist and make the site unsuitable for further use.

The preliminary survey report provides a wealth of data, and a concrete picture of the value, locations, and accessibility of underground sites for potential utilization. It also furnishes data on the apparent and possible weaknesses of these sites. Other studies will be required to determine whether or not constructed subsurface facilities will provide better service and protection and prove less costly.

Quite apparent are some of the advantages manufactured sites have over natural sites. Mechanically constructed subsurface facilities can be built per specifications based on need in accordance with the latest military knowledge of the subject, where needed and with ideally chosen accessibility, and to the size desired, whereas natural sites would be limiting in most cases in each of these features except in highly coincidental cases. Constructed facilities may also prove to be less expensive than reconstructed natural facilities.

In considering *going underground*, it is easily recognizable that such a move is highly practicable in enhancing our national security in view of the modern type and future potential type of warfare. Now, more than ever before, and even more so in the future, as the Atomic Bomb and similarly devastating weapons indicate themselves as standard weapons in future warfare, utilization of below-surface protection is essential to the unhampered productivity of our industry, our populace, and material resources during any future hostilities. Effects of the strategic bombing in Europe and Japan during the past debacle proved that even in the use of the lesser weapons of the recent era, underground factories and facilities are an absolute necessity. The good condition of such facilities in Germany after bombing which obliterated whole cities indicates the greater impregnability of "down under. . ."

However, "going down" for the human race is much more problematical than for the Gopher. There are many difficulties involved, requiring a special research and development program. So different is such a project from anything we have had to date, a vast study, in addition to all which has been achieved heretofore, is requisite before a workable plan for underground protection can be perfected.

#### EVALUATING UNDERGROUND UTILIZATION

In an attempt to evaluate the necessity and value of underground utilization it is essential to start at the point whereupon this element of warfare first assumed an importance in the modern age. Militarily, the underground has been used for centuries and was proven practicable. Many of our modern fortresses and installations, primarily those of stable defense artillery, have subterranean spaces for storage, magazine, and shelter

purposes, all of which are of proven value. Corregidor's great stand is a monument to the value in the era just past as were the Catacombs a monument to that value in Antiquity. Now, it becomes the task of the Army-Navy Munitions Board to acquire the knowledge to recommend the action which will achieve more than a monument of defense, but a monument of invulnerability.

In the Pacific phase of World War II, the Japs utilized the underground wherever possible, and, in those territories and islands long in their possession, went to great pains to provide such facilities. The accumulative defense tenacity of these measures added to the time extent of that phase of the war. Each cave so utilized by the Nips proved a veritable fortress and took all the power our forces could muster to obliterate it.

In Germany, underground sites were utilized extensively, and there, too, proved valuable. At Neuhoef, Germany, the salt mine was used by the German Army for their medical and chemical warfare supplies and quartermaster materials as long ago as 1936. The mine, 1,800 feet below the surface of the ground, had 64 miles of storage space. Hundreds of tons of supplies were stored there. Small trains with battery motor power were used with a great deal of efficiency for transportation through the tunnels, while two speedy elevators were used for communication with the surface.

Along with using these spaces for storage, the Nazis used some of the huge compartments to fill hand grenades and explosives.

At Geislingden, Germany, the enemy had achieved a huge factory cut into a hill which provided both natural camouflage and natural protection. Although it took only two tons of dynamite, carefully distributed throughout the entire plant by our victorious forces to destroy this factory, flotillas of B-29's could have unloaded carloads of blockbusters on top of it with little more effect than the concussion experienced by a battleship from its own guns.

With the termination of hostilities many of our officers returned to the United States highly impressed with the value of the underground for industrial facilities. However, until all possible information on the subject has been examined thoroughly, it is impracticable to determine what influence the experiences in Europe will have on our activities. After an extensive study and a careful evaluation of all possibilities, with complete data, and the proven military feasibility of subsurface utilization, it is presumed that plans will be developed further. At the moment underground investigations are confined to research projects and little more.

As earlier stated, the value of underground utilization was proven to some extent during the late war, and, rumor and fact indicate that other nations are a little faster and less cautious in seizing upon the idea as a defense measure. Great Britain, which had underground factories which withstood the pounding during



the Battle of Britain, is said to be enlarging upon what it had previously. Another country, it is persistently rumored, has pressed prisoner-of-war labor into the construction of the largest underground airfield in the world—located in a highly dominating and commanding area, which has great semiglobal air-striking potential. Sweden, also, has many such facilities, some of which have been constructed since the war.

With such a background, subterranean facilities cease to be a matter of conjecture, but a concrete element in the science of modern warfare—an element worthy of careful study and evaluation. This evaluation will require, among many other things, an extensive study into the geophysical aspects, morale and psychological effects, effectivity of the below-surface sites against specific weapons, the efficient interweaving of sites into the national industrial pattern, costs, and the extent to which American industry might or should go underground.

Earlier information eliminates the utilization of natural caves for this purpose, outside of, perhaps, as storage facilities for rugged materials. Abandoned mines might prove to be of some value for storage only, because of structure and limited accessibility.

In order for an underground site to be efficient as well as protective as a factory facility, it must have normal and expeditive accessibility for both personnel and materials. One of the great errors committed by the Germans was in commandeering underground mines with limited means of physical communication with the surface for below-surface factories. It has been reported that as much as half a shift was absorbed in some instances in the transportation of workers to and from the surface. With portal-to-portal pay a labor factor in the modern world, such a situation would mean: "Go down; go up; go bust!"

Similar and many other problems rule out the extensive use of abandoned coal mines as practical underground facilities, aside from limited storage and shelter purpose. Upon abandonment, most of the physical communication systems are removed along with much of the protective construction such as shoring and other similar construction. Subsequent deterioration and collapse offer extensive costly construction to achieve rather limited space, and a good argument for man-made below-surface areas.

#### ABANDONED QUARRIES LIMITED

It has been suggested abandoned quarries are highly adaptable for the purpose, but these, too, are limited because of their nature and relation to national economy. Quarries invariably never "run out," and are almost limitless in their productivity. The causes of their abandonment have generally been production costs because of having been cut to a depth that equipment to bring the product to the surface is more costly than profitable, depressions, which curtail building activity and consequently the demand for quarry material, and

the war, which had a similar effect. Building booms and normal national material expansion would complicate underground planning to an embarrassing extent, and in the case of the former limitation—depth—it might prove equally limiting because of costly accessibility.

Relatively, there is little left for our industrial and defense planners to do but figure on constructed subterranean facilities.

For such construction, it becomes immediately apparent that softstone areas, primarily limestone, are most adequate and widespread in our country for the purpose of underground building. Limestone, according to the Department of Interior's Minerals Yearbook, "in the form of dimension stone, is used almost exclusively for building purposes. Under normal conditions limestone is the most widely used building stone. . . ."

Areas of this and similar stone are located in almost every part of the United States, offering part of the solution to the general problem—location. Materials on (or in) site are a valuable asset in such a selection.

In construction of a below-surface facility, it can be recognized that if such a facility must be constructed for protective reasons the problem of depth is of major importance. How deep must one go to be immune from modern or possible and probable future weapons? Apparently, from the type of weapons now used, the depth need not be great. Bombs do not have a great penetrating effect, and all known explosives have a tendency to blow up or about rather than down, and, it is doubtful, if a propelled missile, such as a rocket, could add much to the normal weight velocity of a standard artillery missile or bomb to achieve greater ground surface penetration.

In any event, available statistics on the earth surface penetration of existing weapons will provide the key to both the depth needed and an estimate of the penetrability of possible future weapons. However, ventilation systems now used could be vulnerable points in the impregnability of Mother Earth. Radioactivity might be able to transverse this system as could chemical weapons. However, proper plating could protect such a facility from radioactivity and sealing up ventilation systems and using emergency oxygen during attack periods, with the aid of proper decontamination systems could negate the effects of such attacks upon underground facilities. Better still would be a ventilation system, composite within the facility with a completely artificial air source and with a standby oxygen supply for emergencies caused by breakdown or power failure.

In the realm of morale, underground facilities offer a complex problem, not new, but a new version on an old mental quirk relative to the underground. Maintaining good morale among workers in underground developments should not be too difficult. There is little difference in working in a below-surface factory than in



many of our modern plants which are completely sealed from natural atmosphere, depending completely upon artificial light, and mechanical ventilation. The problem, however, will be primarily in "conditioning" workers to overcome the "trapped" complex which invariably smites one in working in such a plant. Normally, the worker in such a plant becomes accustomed to the odd surroundings the underground facility offers, but "warmth" in the interior design of such a facility would aid the underground worker immeasurably in overcoming whatever qualms he might have upon entering such an activity or which he might acquire.

Psychologically, an underground worker will have to be made to feel the "strength" of his surroundings and all its accompanying assurances, and extensive health measures, similar to those used by the Navy for its submarine personnel, will have to be assumed to assure the worker that his health is not being impaired by his "gopher" activity.

Generally, during war, underground morale will be dependent upon the same assurances it took for workers under normal conditions during the past conflict.

Perhaps the biggest psychological threat in the idea of underground protection is not the fearful effect of such a situation on people but the overconfidence such protection might instill in our people. The Maginot Line, and its effect on the French populace is highly indicative of what extreme faith in a defense measure can accomplish. In a similar but smaller fashion, our nation suffered because of our confidence in the protection of a few thousand miles of ocean. Initially, with the inception of below-surface protection for our industry and people, should come an emphasis that such a measure, great as it might be, is but a small part of national defense. Our nation, like the ostrich, might well stick its head into a hole only to have its tail feathers—or something less superficial—shot off.

Interweaving underground facilities into the national industrial network could be more of an asset than a problem for it would be part of a planned industrial layout. Existing industrial facilities, for the most part, are ill-planned because of the nature of their inception into the national economy. Heretofore, an industry, at birth, depended on its accessibility to the raw material source, to markets, and, in some cases, on accessibility to labor sources and on economical locale. The type of product, the period, available transportation facilities, and many other factors determined the location of a factory, usually bunching them into compact zones, which now provide excellent target areas for potential enemies attacking.

#### UNDERGROUND SITES LOCATION

Location of underground sites should go hand-in-glove with decentralization of U.S. Industry, which must also be considered in defense planning. In planning a new facility, a corporation now might well consider the value of strategically locating such a facility

away from a "vital" area and, while doing this, consider the feasibility of going underground.

It is doubtful that with modern mechanical methods the cost of constructing an underground plant would much exceed that of a surface plant. It may prove to be less costly, and certainly maintenance of such a facility would minimize some expenses.

Immediate apparent benefits of underground and/or decentralized industries and a classic and tragic example of the danger of a surface and centralized industry were illustrated in the recent Texas City, Texas, devastation. There one nitrate-laden vessel, a rough equivalent to a few blockbusters, started a rush of destruction which demolished a city and destroyed hundreds of millions of dollars of industry which would have been vital in a war emergency. Aside from the material destruction, there were many by-effects, terrifically costly in a war effort. The tie-up of emergency apparatus and personnel, the necessity of the services of medical personnel, and the use of hospital space and housing for such victims would add greatly to the war burden. The whole tragedy, caused by an explosive mild in contrast with what the future might offer, gives a vivid illustration of the drastic necessity of remodeling our industrial organization in conformity with the dangers offered in future emergency.

Like decentralization of industry, the suggestion that industry go underground is a vast assumption. Because

A salt mine in Neuhoof, Germany, was used as a storage bin by the German Army for their medical and chemical warfare supplies and quartermaster material, as long as 10 years ago, a further indication of the long-term planning of the Nazis for World War II.

Signal Corps Photo





of the magnitude of such a move, it cannot be suggested that American industry do either as an outright move; it must be an evolutionary program consisting of dispersed construction of new facilities, and later, as existing facilities deteriorate to a renewal point, replacement with a dispersed facility. More evolutionary will be dispersal of the human element of industry. As industry disperses, labor will follow it, when and if living facilities are provided, and decentralization of industry will become gradually achieved. Such a gradual development of a decentralized and protected industry would nullify the economical effects of such planning and construction. A deliberate move would bring hardship on people and havoc on national economy. Consequently, the over-all planning and construction would necessitate subtle reconstruction to eliminate the hardship quick and deliberate action would create. However, a dispersed and protected national industrial might is essential to our national security in the event universal peace is not achieved, and the problems involved should *now* be studied, and sensible planning underwritten by our people, industry and government.

#### "STRATEGICAL INDUSTRIAL SURVEY"

In such planning, it might be suggested that a *Strategical Industrial Survey*, similar to the strategic bombing surveys of the war, encompassing all the problems and threats, be started. Of course, such a survey would require a great length of time, but its value to our nation would be proven if ever we are engaged in a war in the future. It should be started soon, too, because a nation cannot go underground rapidly, even in time of emergency, and, if it is not underground at the outset of a future war, a wartime exodus into the bowels of the earth would have similar effect as the proverbial lock on the barn door—too late.

Such a survey would necessitate consideration of the most important element of industry—its personnel. Along with housing and community facilities, stores, *et al*, protection similar to the industrial plant would have to be provided underground. Shelter and hospital facilities would be top priority items, the latter being of extreme value in any event. One of the great problems for hospitals faced with air raids was the evacuation of patients. Underground hospitals would have no such problem with which to contend.

At this point, it might be well to recognize the fact that all industries will not lend themselves to underground placement. Shipyards, certain types of mills, and many other industries cannot be drastically converted from their present situations without curtailment of productivity. However, the mere fact that the greater proportion of our industrial strength would be protected by natural fortification, would permit a maximum of surface protection for those facilities which would have to remain on top of the ground. Protection of similar nature to that provided by the underground, like that used in the German Sub Pens, could be constructed for

partial protection. Addition of a thorough antiair or antimissile system about such facilities could provide an almost equivalent to underground protection.

Considering the idea of below-surface protection objectively, it might easily be assumed that the concept is strong only in the minds of those who were frightened too much in the recent war, and that the whole nonsensical business is much too vast and too costly even to be considered. Accumulative indifference to national welfare can well sustain such an assumption and the idea will remain just what it is—an idea. However, a casual scrutiny of the success of the lasting peace efforts and the question: "What are other nations doing along these lines?" along with evidences of what they are achieving will indicate that the matter cannot be dismissed that lightly.

History indicates that a strong, peaceable nation, secure in its defense, is one of the best safeguards of its own peace, and, possibly of the peace of the world. Relatively, if the United States is to be a strong, peaceable nation, it must remain ever strong; ever well defended.

This fact, in conjunction with the type of warfare which may be experienced in the future should peace efforts prove fruitless, plainly indicates it will be a happy day when the vitals of the United States can be shielded within the strong armor of our mountains, hills and rock.

Dropping U.S. industry into a protective hole in the ground and the accompanying moves will prove terrifically costly and inconvenient. There is no doubt about this, but, as proven by our past wars, precautions of this nature ignored in the past because of cost, have the remarkable faculty of proving themselves absolutely necessary in times of emergency, costing many times the peacetime estimates in money, and much more in blood.

The underground evolution can and should be achieved gradually, and in its achievement might give the rest of the world evidence of our caution and potential strength. It need not disrupt our way of life drastically, and may eventually, save that very way of life.

Should that horrific day come as some of our advanced *push-button* theorists predict, an underground industry would transform our country into a huge weapon—THE U.S.A. SUBTERRAIN—not dissimilar to the standard American Sub. Like the submarine, America would lie beneath not a blanket of water but of rock and soil, permitting the enemy to expend its power on U.S. topography, and then torpedo our might against an aggressor.

However, no matter what anyone says, if those men at the peace conference and the peoples backing them fail to create a lasting peace, and nations persist in warfare, the elevator boys of Fate and Intelligence, will open their doors to our nation, cryptically muttering: "GOING DOWN?"



# 26TH CAVALRY (PS) BATTLES TO GLORY

*by Lieutenant Colonel William E. Chandler*

*(Editor's Note: Colonel Chandler, former S-2 and S-3 of the 26th Cavalry (PS) during the dark days of early 1942, continues his story of the Regiment's action against the Japs. Part I of this first complete and authentic history of the 26th Cavalry (PS), that appeared in the March-April, 1947, issue of the Armored Cavalry Journal, ended with the Regiment being attacked by Japanese tanks. Captain Wheeler, Commander of Troop F, was able to give warning to the rest of the Regiment by opening fire uselessly upon the Jap tanks with his small-caliber weapons. The history continues.)*

## PART TWO

WITH practically no warning, the 26th Cavalry found the leading Jap tank in its midst on the road. At this point the highway was narrow with a high bank on the south and a somewhat lower one topped with barbed wire to the north. While these barriers would have formed only slight obstacles in daylight they were considerably more formidable at night. Attempts by officers of the regiment to get their units off the road were thwarted by individuals becoming unhorsed in the dark by the wire or steep banks on the sides of the road.

Units not yet formed on the road milled about waiting for orders, while those on the highway floundered about trying to get off. Animals became excited and were lost amid the uproar of officers' voices giving commands. Colonel Vance and his staff were in the center of this confusion, and under fire from enemy tanks were unable to affect the situation to any degree.

The inevitable occurred. Down the road away from the Jap tanks toward Rosario was the only way to move. And, in that direction, the movement started in a jungle of disorganization complicated by riderless horses. This occasion was the nearest to a disorganized withdrawal that the 26th Cavalry ever came, and it was pretty near.

Casualties from the fire of enemy tanks were ap-

palling. Many others were injured by terrified loose horses dashing about in the dark.

Major Thomas J. H. Trapnell, Commander of the Second Squadron, brought up the rear of the column with Colonel Vance. When he passed over a bridge about three kilometers west of Rosario he dropped off with Captain Wheeler and seized the Veterinary truck with one of the regimental veterinarians, Captain Mickelson. The three officers set the truck in the middle of the wooden bridge and calmly set it afire while under heavy machine-gun and 47mm gun fire from Jap tanks on the far bank. This calm act of courage saved the regiment from further pursuit and won the Distinguished Service Cross for the three heroic officers. Major Trapnell then mounted a scout car and proceeded along the column restoring order.

I, having been knocked from my motorcycle by the first of the riderless horses while returning from Rosario, stopped the head of the column and started it moving at a walk headed by a young Private First Class with orders to let no one pass him. This, coupled with Major Trapnell's efforts in the rear, those of the other officers scattered throughout the column, and the naturally superb discipline of the Filipino Scouts, halted what had all the ingredients of a panic and turned it into an orderly withdrawal.



As the regiment passed through Rosario in small groups, it passed within 20 feet of the remnants of Troop F whose patrols had been successively forced in from the mountain trails and were now desperately holding the enemy across the town square until the regiment could pass. Captain Wrinkle, Troop F Commander, who later lost his life on Bataan while leading a counterattack, assured me that he would remain and hold his position until the last units of the regiment cleared the town. He kept his word and pulled out only when assured by Colonel Vance and Major Trappnell that the tail of the column had passed. When he put up this last desperate fight, Captain Wrinkle had only about a platoon under his immediate command.

Major Jones had gone on ahead to the Bued River position and there stopped the mixed units of the command, reorganized them and placed them in position. When I arrived, this reorganization was well underway, and by the time Colonel Vance and Major Trappnell arrived at the tail of the column the new position was manned.

Strength reports were then called for and it was discovered that at midnight, December 22, all that remained of the 26th Cavalry was 175 effectives on the line. However, groups of men, who had been forced off the road west of Rosario by tanks and cut off, returned cross country and rejoined the regiment in considerable numbers through the next three days.

No accurate estimate of the actual casualties suffered in this particular action can be made, as the regiment was in action constantly for the next several days, but they were extremely heavy even after the last small groups rejoined the regiment days later.

Suitable defensive positions were not too plentiful in the country in which the regiment was now operating. The Bued River position was selected because the river offered a natural barrier, although at this season the river was by no means unfordable. The high bluffs offered a concealed position overlooking the river flats and the fields beyond. The river made a sharp bend to the south at this point and ran parallel to the road for almost a thousand yards, and the road south of the bridge ran between a high mountain cliff on the east and the wide flat river bed, easily fordable at any point, on the west. Within easy range of small-arms fire from concealed positions amongst the low brush on the far side of the river for several hundred yards was the road. It may be seen, therefore, that the only route of withdrawal from our position at the Bued River was exposed and definitely a weak point. This had a decidedly limiting effect on the length of time the regiment could remain in its position.

Orders were received from the Commanding General of the North Luzon Force at about midnight, December 22, that the old road to Baguio would be held open throughout the night of the 22-23 to enable troops in the Mountain Province, under Colonel Horan, to join our main forces in the Central Plain. By the time

we received these orders, we had already passed the entrance to the Kennon Road, which was the new road to Baguio and Bontoc. The old road ran east of the Bued River from Agat to Camp One on the Kennon Road which had been the main route prior to the construction of the new highway. This old road was narrow and winding, clinging to the cliff above the Bued River for about three kilometers. It was seldom used, but was still passable for all types of vehicles.

#### DECISION TO BLOW BRIDGE

In view of our orders, it was decided to hold our present position, blow the bridge in our immediate front and the Kennon Road Bridge at Camp One which crossed the Bued River and joined the new Kennon Road at the point where the old road came in. We would patrol the old road and Kennon Road for about a mile into the mountains with scout cars and thus keep the route open for the withdrawal of the troops in Baguio. We had a particular interest in these troops as our own Troop C under Captain Ralph Praeger was still north of Baguio covering the Cervantes Road.

First Lieutenant Russel Bowers, commanding the Scout Car Platoon since the death of Lieutenant George at Damortis, was given the mission of blowing the Kennon Road Bridge and patrolling the old road with a section of scout cars, a mission which he performed efficiently. Within 30 minutes the Kennon Road Bridge was impassable to any but foot patrols, and Lieutenant Bowers' scout cars were patrolling the old road to detect any attempt to cut it by hostile detachments fording the river. He had several brushes with dismounted patrols during the night, but at no time was the route seriously threatened by the enemy. Several bus loads of inductees from Baguio came down during the night en route to Manila for induction into the Philippine Army, but there was no sign of the regular troops under Colonel Horan. The road was held open for them until 10 A.M. December 23, but they never came through.

The Bued River flows from north to south from Camp One close to the mountainside and paralleling the old road to just north of Agat where it makes an abrupt jog to the west for a few hundred yards and then turns south again. The new highway bridge crossed the river at this jog, and it was here that the 26th Cavalry took up its position. Units of Brigadier General Selleck's 71st Division extended our line along the river bank to the south during the night, and had they remained there we should have been able to put up something of a fight in the morning. Just before daylight, December 23, however, they were withdrawn to the new position being occupied by the 71st Division near Sison.

Just after dawn December 23, General Selleck visited the regiment in person and ordered that we hold the Bued River crossing as long as possible to give him the maximum time to prepare his Sison position. Colonel



Pierce indicated the southward bend of the river and the exposed route of withdrawal, and pointed out to the General that with our flank support withdrawn the time that we could maintain our position was strictly limited by the time it would take the enemy to get strong combat patrols in the bushes across the river covering our route of withdrawal and that that could be at any time from then on.

This was clearly understood by General Selleck who told Colonel Pierce to remain until his position was threatened from the flank and then to fall back through the Sison position to Pozorrubio and there halt for rest and reorganization. Colonel Pierce ordered all motor vehicles to Pozorrubio at once and directed that horses be held mobile for immediate evacuation of the position. Patrols were sent out to the left flank and observers posted to report any signs of enemy activity on the opposite bank.

Contact was first made at the destroyed bridge in our front where an enemy bicycle patrol was ambushed and destroyed. Before the enemy had built up a strong firing line in this position, our patrols and observers reported considerable activity on our exposed flank, and Colonel Pierce ordered the withdrawal at 10 A.M. The movement down the exposed stretch of road paralleling the river was made under scattered small-arms fire from hostile units on the other side. A report was made to General Selleck at Sison of the estimated enemy strength and earliest probable time of attack, and the regiment proceeded to Pozorrubio for much needed rest and reorganization.

The regiment arrived at Pozorrubio at about 2 P.M. with a combat strength of about 200, but found that a considerable group of stragglers from Rosario and Damortis had assembled there with our combat trains. Other groups came in all through the day. It is to be noted with pride that these men, although dispersed in the dark by a surprise attack, and in general with no individual knowledge of the regiment's destination, had managed to extricate themselves and to locate their organization, and had brought with them their arms and animals.

The regiment settled down promptly for rest after its first hot meal since leaving Rosales on December 21, but was not yet destined to get much sleep. The Commanding General, 71st Division first directed that a Scout Car section patrol the highway from Binalonan to Sison, evidently fearing that his line of communications would be cut by infiltrating groups of Japanese. This patrol was sent out under Lieutenant Bowers, who later lost his life in performance of this mission. At about dusk a message was received from the 71st Division that the Sison line had been attacked heavily and that the 26th Cavalry's present position would be endangered by any breakthrough. The regiment was to move at once to the village of Binalonan in division reserve.

In compliance with these orders, the regiment moved

out between 7 and 8 P.M. toward Binalonan and encountered units of the 91st Infantry moving into position east of Pozorrubio to support the 71st Division. The foremost elements of the regiment reached Binalonan at midnight, December 23, and by 1 A.M., December 24, were bivouacked in the western entrance to the town. The village was full of Philippine Army infantry, artillery, and service units of the 71st Division whose rear echelon was located there. General Selleck arrived while we were bivouacking, and told us that the Sison line was just barely holding and might break during the night, but that the 91st Infantry was moving in to strengthen the line. Although well behind the lines, the 26th Cavalry put out its own outposts to the north and west of the town to give timely warnings in case the enemy did break through the Sison line. The balance of the regiment dropped on the ground and slept for the first time in almost three days.

#### BIVOUAC DEFENSE ORDERED

I was roused at 5 A.M. on December 24, from heavy slumber by a messenger from First Lieutenant H. D. Mark, commanding the outpost north of the village, stating that his outpost was being overrun by enemy tanks which were proceeding south on the new highway to Urdaneta running just west of town. Even while this message was being delivered, firing could be heard from the direction of our second outpost to the west of town. Colonel Pierce was roused and a hasty defense of the bivouac area quickly organized in the shape of a reversed L along two sides of an open field just northwest of the Regimental Command Post. Troop B was placed on the upright of the L with its line running north and south facing west. Troop E, under Captain John Z. Wheeler, was placed on the bottom side of the L with its line running east and west facing north.

Clerks and other headquarters personnel reinforced by members of the Scout Car, Communications and Transportation Platoons formed a connecting link between the two line troops at the angle of the L within 25 yards of the Regimental Command Post. Troops A and F were held in reserve. These dispositions were dictated by the positions held in bivouac by the troops rather than by possible future employment of the units as squadrons; therefore, it turned out that one troop of each squadron was in action near its bivouac area rather than one entire squadron. These units found themselves immediately engaged in a heavy fire fight with enemy tanks and, although entirely without antitank weapons, they poured such a hail of fire on the enemy in the dim morning light that his tanks did not turn into the town but by-passed it and continued on toward Urdaneta. The tanks, however, were immediately followed by infantry in trucks who dismounted near the crossroads about 400 yards from our bivouac and attacked vigorously across the open field toward Troop E. Captain Barker, commanding Troop B on the northern leg of the L poured in such a murderous cross fire that



the enemy attack was thrown into confusion before it had moved 100 yards from its cover. Troop A, commanded by Captain Leland W. Cramer, was immediately thrown in on the right of Troop B in a strong counterattack which carried all before it until it reached the crossroads on the new highway when it ran into more enemy tanks from the north and was finally thrown back almost on line with Troop B where it halted and dug in.

This vigorous opposition stopped the enemy advance and the action quieted down for awhile. It was now 7 A.M. and Colonel Pierce and his staff, some of whom had been filling gaps in the line with rifles and machine guns during the excitement, had time to take stock of the situation. The first question that occurred to every one was, "What has happened to the Division Command Post and all the troops that were in town last night?" No messenger from Division had arrived during the preceding rather hectic hours since the action began. I was sent back to report the regiment's situation to General Selleck, secure any information possible and get the Commanding General's orders for the regiment.

When I reached the main square of Binalonan, I found it deserted except for abandoned buses, trucks and other material. There was not a human being in sight, not even a Jap, which was fortunate as they could have come in from the north at any time up to then. The Japanese tendency to pound straight ahead after an attack is launched must have been uppermost in that Jap commander's mind, and he kept pounding away at the opposition offered by the 26th Cavalry when the whole flank was open to him. I decided that this state of affairs was not apt to continue indefinitely, and after a short but futile search for some representative of the 71st Division Command Post I hurried back to report to Colonel Pierce. Troop F was sent immediately to secure the bridge on the east of town and to cover the northern approaches thereto. The regiment was too heavily engaged at the moment to attempt to withdraw without tremendous casualties, but we could use our last reserve to cover flank and rear and hope for a break later in the day. The trains were sent to the rear over the bridge and through Asingan to Tayug and told to await further orders there.

Meanwhile the Japanese continued to launch repeated attacks on our front with unbelievable stupidity. The attackers would be mowed down by our trained marksmen armed with M-1 rifles and machine guns before they had proceeded halfway across the field, but the fanatical Japs would try again. One sustained attack preceded by tanks would have rolled over our lines like a steam roller but whenever a tank poked its nose out of the bamboo thicket near the crossroads it was met by a hail of well aimed small-arms fire and while there wasn't an antitank weapon in the lot the Japs didn't know that and were hesitant to expose their tanks. They must have finally decided we were too tough for them

and the attacks ceased about 10:30 or 11 A.M. with most of the enemy armor by-passing us toward Urdaneta. Jap dismounted units remained in place and kept our lines under heavy fire from safely covered positions.

At about this time a survivor of Lieutenant Bowers' Scout Car Section, who had come in some time before but had been involved in the scrimmage, reported that Lieutenant Bowers, while preceding his section on a motorcycle on the Binalonan-Sison road the night before, had run into the Jap tank column just before daylight. Lieutenant Bowers when last seen was struggling with a group of Japs and firing with his pistol. His companion, a young scout soldier, had managed to get away in the dark and in accordance with Lieutenant Bowers' prior orders had rejoined the section and managed to extricate it during the confusion of Lieutenant Bowers' struggle, and had reached Lieutenant Mark's outpost only seconds in advance of the Jap column. Nothing was ever heard of Lieutenant Bowers again.

General Wainwright, at 11:30 P.M. accompanied by his G-3, Colonel Frank Nelson, and his aide, Major Tom Dooley, arrived via the east road and was surprised to find us in action. He had expected to find the 71st Division Commander in Binalonan. When he found the town deserted except for Troop F covering the northern and eastern approaches to the town and learned the situation from Major T. J. H. Trapnell, Second Squadron Commander, he insisted on coming forward in his Packard sedan to the Regimental Command Post although that spot was far from healthy at the moment, being under direct small-arms and 47mm fire from the enemy less than 400 yards away. With characteristic coolness he had his sedan parked behind a near-by shack and strolled over to chat with Colonel Pierce while Colonel Nelson and I exchanged the latest information.

Even Colonel Nelson did not know exactly where the 71st Division line was, although it was fairly obvious now that he was well in front of it. The Japs had launched repeated attacks against the Sison line the night before and had evidently pierced it with an armored thrust just before daylight. Since then Headquarters North Luzon Force had received no word. Colonel Nelson also told me at this time that General MacArthur had put WPO 3, the old war plan, into effect the night before.

This plan, well known and rehearsed by all units prior to the war but held in abeyance until now, called for a withdrawal into the Bataan Peninsula where we would hold out to the last possible moment. While more or less expected, this news was somewhat of a blow. It obviously meant that all chance of a major counterattack on our part was gone. Colonel Nelson marked the daily phase lines of the withdrawal on my map and stated that the North Luzon Force must at all costs hold the enemy north of San Fernando, Pampanga, until the South Luzon Force moved through Manila and into Bataan. These daily phase lines were desig-



nated D-1 to D-5 with the last two to be held as long as possible, exact dates for withdrawing from them not being given. It all depended on the progress of the South Luzon Force.

General Wainwright and his party remained at the Regimental Command Post for some time. Word of his presence spread up and down the line like wildfire and the men settled down to their sharpshooting of incautiously exposed Japs with renewed confidence. The General and his party departed sometime after noon in the same leisurely manner in which they had arrived. We could not even disengage a scout car to escort him, but Major Trapnell sent word that the eastern exit from the town was still open.

#### FIELD ARTILLERY UNIT LOST

Shortly after General Wainwright's departure, Lieutenant Vanderlester of the 24th Field Artillery (PS) arrived over the same route with two 75mm self-propelled guns, having been sent forward from Tayug by General Selleck. Major Hubert Ketchum, whose First Squadron was now bearing the brunt of the Japanese fire and who had located several enemy tanks massing under cover in his front, feared a renewed attack, this time preceded by tanks. He asked for and received Lieutenant Vanderlester's two guns and departed with them towards his squadron on the right flank. Just what happened is doubtful, as there are no survivors, but within a few moments we heard two shots from the 75s and that was all. They must have gotten ahead of or too far to the flank of our line and run into an ambush. Neither Ketchum, Vanderlester, the two guns or any of the crew were seen again.

The Regiment held on hoping to hear from Major Ketchum, but as the day wore on it became obvious that if we were to extricate ourselves from this position it must be done at once. A lull in the firing had developed, and it seemed that now was the time. Consequently at about 12:30 P.M. Troop E was withdrawn from the line, under cover of increased fire by other units, went to the rear to saddle and then return to the line to take over the fire fight, while Headquarters Troop and Troop B in turn slipped out of the line to saddle and return. Troop A on the right had to cross an open road in full view of the enemy to reach its horses; therefore, it was ordered to move out of the line, saddle and proceed at once as the advance guard of the regiment on the road to Asingan. Troop E was to withdraw next, followed by Headquarters Troop and Troop B in turn.

The entire maneuver was carried out with perfect timing and deception. The enemy suspected nothing until Troop A was seen crossing the road, and this was covered by a perfect hail of fire from all other units. By the time the Japs were ready to launch their attack, all units were on the road except a rear guard of Troop B which was just leaving as two enemy tanks moved out of a bamboo thicket near what had been

Troop B's right flank and Troop A's left. Lieutenant Seymour, Troop B, and another officer from the regimental staff waited behind a ditched ammunition truck until the foremost tank had almost reached them and then threw three hand grenades each over the truck in front of the tank and ran for their horses. These grenades, while harmless to the tank, evidently caused him to pause and wait for help. This permitted the regiment to pull out of town in perfect order, covered by Troop F at the eastern bridge. The last men to leave the town were Colonel Pierce and Colonel Vance, on foot and leading their horses. Troop F remained at the bridge for about an hour and then left the Scout Car Platoon there in vain hope that Major Ketchum and Lieutenant Vanderlester might show up and to delay the enemy should he pursue. No pursuit was made, however, and the Scout Cars abandoned hope of seeing Ketchum and Vanderlester and moved out to Asingan unopposed at about 5 P.M.

Casualties in this action were again heavy. We had lost Major Ketchum, Lieutenants Vanderlester and Bowers, and Lieutenant H. D. Mark, who was killed making a singlehanded attack on a hostile tank that was cutting his platoon to pieces. Dead and wounded among the enlisted personnel were much heavier than we could afford with our reduced strength, and no relief appeared in sight. However, we had held up all enemy forces, except a tank column which had by-passed us toward Urdaneta, from 5 A.M. to about 3:30 P.M. and prevented their movements eastward until after 5 P.M. This gave time to organize the D-1 line along the Agno River. (D-2)

The regiment moved toward Asingan and was forced to repair one bridge, destroyed by PA Engineers, for our scout cars, finally reaching Tayug at dusk, having blown our repaired bridge and another at Asingan behind us. Fortunately the bridge at Tayug was mined but not yet destroyed so that we were able to cross the Agno dryshod.

We found considerable confusion at Tayug. The 71st Division had been hit so hard at Sison that it had scattered badly. Lieutenant Colonel George Vanture was organizing a defense of the river with scattered bits of many organizations. The 91st Division, however, was occupying the line to the west in good order. Brigadier General Stevens, 91st Division Commander, was in command of this section of the line and he ordered the 26th Cavalry into the town to rest. We would have no part of the defense that night, but would be prepared for further action the next day. The regiment again bivouacked amongst the houses of a barrio and slept the sleep of exhaustion, not failing, however, to again post our own outposts, the events of the last twenty-four hours having proved more decidedly than ever the wisdom of never depending wholly on anyone but oneself.

Colonel Pierce on December 25, was called in conference by General Stevens who stated that the 26th



Cavalry had been attached to the 91st Division for the next operation. The 91st Division, now occupying the line of the Agno River, was to withdraw to D-23 commencing at 11 A.M., December 25, leaving a shell on the river until dawn. The 26th Cavalry would hold the river at Tayug covering the withdrawal of the 91st Division and protecting the right flank of the North Luzon Force. One company of tanks would be attached to the 26th Cavalry.

The day was spent in reorganizing the regiment, contacting adjacent units and planning the forthcoming operation. We took Colonel Vanture's line on the river north of Tayug late in the afternoon with the Second Squadron. Troop B was placed to the southwest of town to cover a possible breakthrough of the 91st Division shell on our left flank and combat patrols were sent to the northeast toward Natividad and San Nicholas. Troop A and Company C, 192d Tank Battalion, were held in Tayug as regimental reserve. A patrol was sent to Asingan in the early afternoon and contacted Japanese units repairing the bridge we had destroyed there the previous evening. Lieutenant Spies, with some scout cars, prepared about eight bridges and culverts between Tayug and San Quentin for demolition during the afternoon of December 25.

The enemy pushed in our forward patrol at 7 P.M. and attacked the Second Squadron which maintained its position without difficulty. Enemy tanks attempted to ford the Agno to the east but were stuck in the soft bottom. Sporadic firing and weak frontal attacks by the enemy continued through the night while strong Japanese forces attempted to move around both flanks. Contact was made with the 91st Division shell on our left flank whose personnel gradually closed in on the Second Squadron, but nothing could be done about extending our right flank due to lack of troops. The only possibility was to keep our flanks covered by patrols and to pull out at the last possible moment.

#### WELL EXECUTED WITHDRAWAL

The position was enveloped on both flanks by 2 A.M., December 26, and the regiment withdrew according to prearranged plan in a perfect example of timing. The Second Squadron pulled out of its position at a trot receiving hostile fire from both flanks and rear in so doing. As the Second Squadron passed through Tayug Regimental Headquarters fell in, then Troops A and B as the column passed previously designated points and then the tank company, and finally the Scout Car Platoon which trailed the regiment into San Quentin blowing eight previously mined bridges en route. It was a beautiful exhibition of careful planning, timing and execution by disciplined troops, permitting the last moment of delay to be extracted from the operation.

The regiment arrived at Umingan at 5:45 A.M., December 26, and withdrew behind the 91st Division line for rest. Orders were waiting from the North

Luzon Force Commander directing that the 26th Cavalry withdraw to Santa Rosa, Pampanga, in North Luzon Force reserve. Study of the map and application of time and space factors clearly indicated that the regiment could not reach Santa Rosa on horseback ahead of the withdrawing divisions unless day and night marches were made. Daylight movement was extremely dangerous due to the enemy's complete command of the air, and in any event our animals had been on the go constantly since December 13, and were in no condition for forced marches. Colonel Pierce and myself, therefore, took a trip to North Luzon Force Headquarters at Bamban while the regiment rested in concealed bivouac during the day. General Wainwright's Chief of Staff, Colonel William P. Maher, consented to change the destination of the regiment to Mexico, which was behind phase line D-5 and was to hold for several days. This we hoped would enable us to get a day or two of rest to refit and shoe our horses, some of which were getting in really bad shape.

In accordance with these revised plans the regiment moved out of Umingan at 7:15 P.M., December 26, and arrived in Munoz 2:30 A.M., December 27, where we again slipped behind the lines of the 91st Division whose troops had passed us in trucks during the night. We left Munoz at 7:15 P.M., December 27, and arrived at San Isidro 6:30 A.M., December 28, a long and exhausting march for animals and men in poor condition, but at last the regiment was well behind the front of the 91st Division. Troop G rejoined the regiment at San Isidro from Bongabong where it had been since early in December.

Departure from San Isidro was at 7:30 P.M., December 28, and the regiment arrived at Mexico at 1:30 A.M., December 29, where Lieutenant Cunningham and his Scout Car Section were waiting. At last the regiment was all together again except for Troop C which now must be considered lost in the Mountain Province. We later heard of the excellent work performed by this troop under Captain Ralph Praeger who refused to give up merely because he was cut off from support. His raid on the enemy-held airfield at Tuggerau is a classic.

At noon, December 29, Colonel Nelson, G-3 North Luzon Force, stopped at our bivouac with orders that we were to move on Porac that night. This was the last blow; men and horses were exhausted, equipment was damaged due to the past week of combat and movement, and we had just started a basic reorganization to make two full-strength troops of the three decimated ones in each squadron. Colonel Nelson was shown the situation on the spot and he returned to North Luzon headquarters with me to plead for some delay. Colonel Maher was considerate as ever, but said that a 24-hour extension was absolutely all he could allow us. It would have to do.

The regiment left Mexico at 7 P.M., December 30, and arrived in Porac at midnight. On December 31, the



reorganization of the regiment was completed. Troops E and F, which had suffered the severest casualties, were combined into one troop under Captain Wheeler and with Troops A and G formed the three-troop horse squadrons under Major T. J. H. Trapnell. Troops B and Machine Gun were dismounted and formed into a motorized unit mounted in buses and trucks under Captain Joseph Barker, Jr. Headquarters, Headquarters and Service Troops remained the same with vacancies filled by dismounted men from Machine Gun and B Troops. This makeshift reorganization was necessary because no replacements of men or animals were available. Some Bren gun-carriers destined for Singapore but dumped in Manila at the beginning of the war were offered us and were snapped up for the motorized units. These arrived from Manila late on December 31, under Captain Gochenour, Regimental Veterinarian, Lieutenant Caruso and a detail previously dispatched.

Orders arrived on January 1, 1942, attaching the regiment to the 21st Division (Philippine Army) and we left Porac at 7:00 P.M. and marched to San Jose, Pampanga, arriving at 8:45 P.M. the same day. General Capinpin's 21st Division held a line from Porac halfway to Guagua where he joined with Brigadier General William E. Brougher's 11th Division. The mission of the 26th Cavalry was to cover the left flank of the 21st Division toward the Zambales mountains. Both the 21st and 11th Divisions had received orders that they must hold for five days at all costs to permit the organization of defensive positions in Bataan. The South Luzon Force had completed its withdrawal into Bataan the night of December 31, aided by the 21st and 11th Divisions' stand north of San Fernando and by the 91st Division's to the west. However, it was necessary now to prepare lines in Bataan to plug the entrance to our hole and the 21st and 11th were ordered to provide the necessary time if it cost every man in both divisions.

The 26th Cavalry performed its mission of flank protection by holding the regiment at San Jose and sending one troop with a pack radio to the left of the 21st Division and thus plugging the gap between the 21st and the mountains. Hourly reports were made by radio and twice daily by written message.

#### 21ST DIVISION REPULSES ATTACKS

On January 2 and 3, the 21st Division repulsed repeated attacks on their front, but no serious threat was made against its flank and our troop there did not need to call for help, consequently the balance of the regiment caught up with much needed rest. The Japanese, however, launched a determined attack on January 4, which pierced the 21st Division line and forced a withdrawal to San Jose, Bataan, but contact was maintained with the 11th Division southwest of Guagua. Troop E-F had relieved Troop G on the flank of the 21st Division on the morning of January 4, and when the withdrawal was made Troop E-F moved cross country to its

new position. The 26th Cavalry covered the withdrawal of the 21st Division and reached Dampas on the left flank of the Division's new line at about midnight.

On January 5, the canefields in front of the 21st Division were burned, but the enemy failed to follow up his success, probably for the reason that he was making even better progress against the 11th Division. Strong enemy forces had outflanked General Brougher's troops by moving through the swamps on his right flank and were now threatening his line of communications into Bataan. This development forced the withdrawal to take place at once and both divisions fell back to the Layac Junction Bridge during the night of January 5 and 6, and crossed over covered by the 26th Cavalry which finally crossed the river about 1:00 A.M., January 6. The bridge was immediately blown by North Luzon Force engineers under the eyes of General Wainwright.

The 26th Cavalry anticipated a period of rest behind the lines in Bataan, but was doomed to disappointment. Even before crossing the bridge at Layac Junction, orders were received from General Wainwright outlining the new organization of troops for the defense of Bataan and assigning a new mission to the 26th Cavalry. The troops in Bataan were divided into two corps, I Philippine Corps on the west coast commanded by General Wainwright and II Philippine Corps on the east coast commanded by Major General George M. Parker. The new line was to run from Moron on the west coast to Abucay on the east. This line, unfortunately, was not continuous being divided in the center by Mt. Silangan and Mt. Natib, both well over 3500 feet high and with precipitous jungle clad slopes.

Contact between the two corps was practically nonexistent near the front as patrols required several days to negotiate the difficult terrain between the two corps and the detection of a hostile force penetrating those gaps was problematical. It was some consolation, however, to feel that any such force could not be large or carry very heavy weapons. We had yet to learn the full measure of determination and endurance of our foe! While the Moron-Abucay line was being organized and occupied a temporary line through Culis and Hermosa, parallel to the Olongapo-Dinalupihan road was established by the remains of the 71st Division and 31st Infantry (U.S.). The 26th Cavalry's mission was to cover the left flank of the 31st Infantry (U.S.) whose line stretched from the main road just north of Culis nearly to the mountains.

In compliance with these orders, the regiment, upon crossing the bridge at Layac Junction, moved immediately along an unimproved road through Culis behind the 31st Infantry's line to their left flank, arriving there about 3:30 A.M., January 6. The country was new to all members of the regiment and reconnaissance was impossible in darkness; therefore, the unit was bivouacked in contact with the left unit of the 31st Infantry and local security measures were taken. Shortly after



daybreak Colonel Vance and Major Trapnell took patrols out to make reconnaissance preliminary to making the regimental plan of action. The regiment meanwhile settled down to get a few hours rest, but succeeded in getting very little due to enemy artillery fire which was searching for a near-by battery of ours. Several animals were killed or wounded but no men were lost.

Major Trapnell returned shortly after noon and Colonel Vance about 3:00 P.M. Both had found suitable locations for the regiment, and after some discussion it was decided to follow Colonel Vance's plan which called for the regiment to bivouac about two and one-half kilometers west of our present position and to establish a standing screen of patrols from the left of the 31st Infantry to the mountains with the bulk of the regiment centrally located and ready to move to any threatened point on the screen. In furtherance of this plan, the regiment moved out at about 4:00 P.M., leaving Captain Barker's motorized unit to provide local protection for the 31st Infantry's flank, as the trail from that point on was impassable to normal motor traffic. Four scout cars accompanied the regiment for communication and staff work. This proved a costly error, as the only practicable trail for vehicles of any type was the one we were on and it was later closed by the enemy.

Colonel Pierce at 8:30 P.M. sent a message to the 31st Infantry Commander requesting that we be kept informed of the situation on his front and of the road out of our position. The reply was, "Estimate road will be open until daylight." Troop A had by this time established the screen as planned and the regiment settled down for the night.

#### CONTACT WITH 31ST INFANTRY LOST

Contact was lost between our patrol on the right and the 31st Infantry during the night, and when attempts were made to regain it, our patrol was fired on in the darkness. Attempts to contact the 31st Infantry or 71st Division by radio were fruitless, but at about 1:30 A.M., January 7, a radio message from Captain Barker was received, "Believe road closed by 3:30 A.M. Am moving out." This message naturally caused renewed efforts to contact the 31st Infantry or General Selleck's headquarters, but without result. At 2:30 A.M. a code message was received from the 31st Infantry, but it was impossible to decipher it in spite of every effort of Captain Jones and his code experts. It later developed that the code of the day had been compromised and a new key-phase had been issued, but no one had thought to inform the 26th Cavalry of this important fact. Repeated calls to 31st Infantry and 71st Division resulted in only more gibberish and further attempts at physical contact drew heavy fire. Feeling that he was not justified in abandoning his mission on nothing more than a message from one of his own junior officers, Colonel Pierce decided to remain in his present

position until daylight and then reestablish contact.

A patrol under First Lieutenant W. P. Leisenring reported at 4:00 A.M. that the 31st Infantry had apparently withdrawn from its position. He had visited our bivouac of the previous day and found no one there. Colonel Pierce ordered our four scout cars to make a dash for the main road at Culis as this was the only way out for them. Mr. Franz Weissblatt, a United Press correspondent who happened to be with the regiment, was advised to accompany the scout cars as he was not a seasoned horseman and the probabilities were that the regiment faced several gruelling days in the mountains trying to rejoin our forces on the Abucay line. Mr. Weissblatt accepted the advice and was in the forward car when they ran into a Japanese ambush at Culis. The first three cars were destroyed, and Mr. Weissblatt severely wounded and captured. His subsequent experiences form a tale which it is hoped he will himself some day write. The last car got away and returned to camp with word of the ambush.

It was now obvious that the regiment was cut off behind the enemy lines and must either find its way by unfamiliar mountain trails to our new line at Abucay Hacienda or chance fighting our way through such of the enemy as were between us and our own troops. Knowing practically nothing of the strength or location of the enemy, but being only too familiar with the small strength and exhausted condition of the horse squadron, which was all that remained to him of his regiment at that moment, Colonel Pierce elected to try the mountain trails.

No one in the regiment was familiar with the trails, although the S-1, Major Harry J. Fleeger, and one noncommissioned officer had made a trip from Abucay Hacienda to Dinalupihan some two years before. Jungle trails change considerably in two years and neither was confident of the route, but the regiment started off generally southwest at 7:00 A.M. About 12 Noon the advance party was on top of what appeared from the map to be Mt. Santa Rosa and all trails petered out into trackless jungle. Abucay Hacienda, our destination, and Moron, on the west coast, could be plainly seen a few kilometers away, but they might as well have been in China. It was obvious that by abandoning our horses and proceeding on foot, cutting our way through the jungle, we could reach Abucay Hacienda by the next day but, of course, the idea was not to be considered except as a last resort, and the back trek down the mountain was started. By nightfall we were within a few kilometers of our bivouac area of the previous night and it was decided to return there and make a new start the next day. Patrols were sent out toward the old position of the 31st Infantry and found Japanese looting the battlefield.

A new start was made at daybreak, January 8, and when a safe distance was placed between us and the enemy a halt was made while five patrols were sent out on different trails in an attempt to find one which



would lead us to Abucay Hacienda. While waiting, a mule, which had been wounded by the shelling on January 6, was killed and roasted. For most of the men this was the first food they had eaten since the evening of January 6. The animals had had nothing since the morning of January 7, except what they could snatch from the trees along the trails.

Two of our patrols ran into a camp of Filipino refugees early in the afternoon and were shown a trail which supposedly led to Abucay Hacienda. Accordingly, the regiment set out at about 3:30 P.M. and reached the outpost line of the 51st Infantry just before dusk. Negrito guides were furnished by the 51st Infantry, and the regiment was led over almost impassable trails to a deep gorge whose precipitous sides seemed absolutely impossible to scale. Captain William M. Cummings, an officer of our regiment on detached service with the Philippine Army battalion in that area, told us that the Quartermaster Pack Train, that was supposed to supply him, had been trying for three days to find a way to cross but without success. Meanwhile, he was packing every bit of rations or equipment used by his battalion on the backs of his men. Colonel Pierce decided to halt for the night and attempt the crossing of the gorge by daylight. Captain Cummings had no food to spare, but the men found stacks of upland rice in the near-by fields, left from the last harvest, and the animals had forage of a kind.

At daylight, January 9, Major Fleeger went ahead with an orderly to find a crossing of the ravine and with considerable difficulty managed to reach the other side where, by a fortunate coincidence, he ran into First Lieutenant Robert Cunningham, Platoon Leader of the Scout Car Platoon. Lieutenant Cunningham reported that Captain Barker, with his motorized unit of the regiment, was bivouacked about three kilometers west of Pilar on the Pilar-Bagac road and that he had sent several patrols to likely spots where he thought that the regiment might possibly debouch from the mountains. Lieutenant Cunningham had arrived in time to see Major Fleeger's head appear over the edge of the ravine. Major Fleeger immediately sent Cunningham back to Barker with orders to get food and forage to this point as soon as possible while he returned to guide the regiment over the ravine.

It took until 2:00 P.M. to get the last animal across the gorge, a day of herculean labor for exhausted men and animals. Zigzag trails in the precipitous slopes of the ravine had to be cut by hand, undergrowth had to be cleared away with bolos and in some cases animals had to be drawn over the worst places by ropes. On several occasions animals that lost their footing near the top rolled almost to the bottom before being stopped by the tangle of brush on the sides of the ravine. Every man and animal and every piece of equipment, including two mule-killing pack radio sets, finally reached the top, however, and collapsed in utter exhaustion.

Captain Walter J. Buboltz, regimental S-4, arrived

about 3:00 P.M. like a ministering angel with two truckloads of cooked rations and forage. Men and animals were soon engaged in the pleasant and long neglected task of filling their stomachs.

As soon as they had eaten, Colonel Pierce and I took Captain Buboltz's car and reported to Headquarters I Corps, to which Lieutenant Cunningham had said the regiment was now assigned, for orders. We were greeted at headquarters with enthusiasm as we had been written off as lost by all but the General himself, who had maintained that the regiment would show up somewhere, sometime. Our orders were to move at once to Bagac where we were to recuperate and refit.

The regiment moved at 7:00 P.M. on January 9, from the gorge to Captain Barker's bivouac west of Pilar on the Pantingan River, while Captain Barker moved his motorized unit north of Bagac and prepared a bivouac for the horse elements. During the night orders were received to send one troop to Moron where the 1st Division (Philippine Regular Army) needed a reconnaissance unit. In spite of the condition of men and animals, Troop G moved out at dawn, January 10, and reached Moron by nightfall. The balance of the regiment moved to Bagac at dusk, arriving shortly after midnight.

From January 10, to January 15, the regiment remained in bivouac about one kilometer north of Bagac engaged in recuperation, shoeing of animals, and familiarization of officers and noncoms with the surrounding terrain by numerous reconnaissance patrols.

Troop E-F on January 15, was sent to Moron to give Troop G an opportunity to get some rest and to reshoe its animals. Troop G had been almost constantly on patrol since its arrival at Moron, the evening of January 10, and had reported enemy in considerable numbers landing at Mabayo and moving overland. Early January 16, this enemy force attacked Moron and drove out elements of the 1st Division (PA). After several fruitless counterattacks with 1st Division troops, General Segundo ordered Troop E-F to attack Moron and drive out the enemy. Captain Wheeler attacked and drove the enemy beyond the river north of the town on the west, but was not able to completely dislodge those on the east. First Division units followed Troop E-F into the town and took over. Captain Wheeler withdrew his troops, but was unable to pull out about 25 horses which had been left near the southeastern edge of town. Approaches to these animals were covered by enemy fire. Troop E-F had suffered considerable losses in the action and General Wainwright, who had witnessed the action, ordered Captain Wheeler to return to Bagac; the attachment to 1st Division was terminated. Captain Wheeler arrived at the Bagac bivouac before daylight January 17, with his troop pretty well exhausted by their heavy fight and long march and much depressed over the loss of their animals.

*(To be continued)*



# 26th Cavalry (PS) Of Today

*by Major John C. Wachtel\**

**In conjunction with the three-part history of the 26th Cavalry (PS) entitled "26th Cavalry (PS) Battles to Glory" by Lieutenant Colonel William E. Chandler (of which the second part appears in this issue of the Armored Cavalry Journal), this article on the present 26th Cavalry (PS), which has been redesignated the 12th Cavalry Reconnaissance Troop (PS), is published. The 12th Cavalry Reconnaissance Troop is a part of the 12th Infantry Division (PS).**

**T**ROOPERS of the 26th Cavalry—the handful that remained after the Binalonan-to-Dinalupihan delaying action and the defense of the Orion-Bagac line—might reasonably have expected their final, desperate stand near Trail 20, Bataan, in April 1942, to have been the finish of that gallant outfit. For the horses, and for many of the officers and men, it was just that—the end of the last trail—but during the past year a portion of the 26th Cavalry, with a new unit designation, has been riding the roads and trails of the Zambales Mountains in the upper Stotsenburg reservation—in machine gun jeeps and armored cars!

The ex-horsemen have changed shoulder-patches (they now wear the Golden Carabao of the old Philippine Division) and they have changed their name to 12th Cavalry Reconnaissance Troop (Mechanized), but they're back on the old stamping ground carrying on the traditions and missions of the historic horse regiment which sired them.

On Army Day a year ago the War Department, through Headquarters, AFWESPAC, reactivated and redesignated the Second Squadron, 26th Cavalry, Philippine Scouts as the 12th Cavalry Reconnaissance Troop, a part of the 12th Infantry Division (PS), which itself was the reactivated and redesignated

Philippine Scout Division that General Jonathan M. Wainwright had commanded prior to the start of the war. Young Scouts, some of whom were the sons of men of the old regiment, were assigned to the troop and four of its five officers were former enlisted men of the 26th who had fought throughout the Luzon defense campaign.

The troop, stationed at Camp O'Donnell, Tarlac, originally was equipped with M3A1 scout cars due to shortage of M-8's in the theater, but the standard armored car was added early this year. Due to supply difficulties the troop vehicular strength has not yet reached T/O levels; however, in spite of shortages the troop is now operational and is carrying out a number of missions in addition to regular training. These missions include:

Patrol of the boundary of the Stotsenburg reservation from Capas, Tarlac south to the Bamban River Bridge, thence west to Hill 29, to prevent trespassing and stealing of timber and bamboo. Patrolling of the O'Donnell excepted area within the reservation for the same purpose. Interior reservation patrolling for terrain reconnaissance and to check periodically for presence of Hukbalahap armed bands which occasionally raid surrounding towns and have on at least one occasion, bivouacked in the Reservation near the

\*12th Infantry Division (PS).



site of Colonel Thorpe's guerrilla hideout during the Japanese occupation days.

The troop's patrol activities take half the unit into the field a week at a time. Vehicles undergo daily and weekly maintenance under field condition, and in spite of the war-weary cars the deadline is comparatively low.

And life is not dull! A patrol led by Lieutenant Felipe Francisco, while reconnoitering the Malasa area for squatter communities, encountered eight armed men carrying ammunition boxes. This group was sighted at a range of 1,000 yards across a ravine and before Lieutenant Francisco could close in the group had faded into the jungle. On another occasion a detail of two machine gun jeeps of the troop accompanied Division G-2 on an observer liaison with the Philippine Army when Brigadier General Mariano Castaneda led his Military Police Corps troops onto the reservation to eject and destroy a large force of Hukbalahaps. Although contact with the insurgents was not made, the troopers had thoroughly enjoyable outing, including giving General Castaneda a cross-country jeep ride which left that officer impressed (physically as well as mentally) with the traditional cavalry mobility!

Platoon Sergeant Cristuto Lopez' patrol, quite inadvertently, came under artillery fire on February 21. By misplotting the artillery danger area on his map, Sergeant Lopez took his jeep and scout car into the 23d Field Artillery impact area and became the center-point of a two-way bracket by a battery salvo. Sergeant Lopez' report said, in part: "On their way to Peak 29 the jeep and scout car were nearly hit by the sailing of the 23d Artillery shells. The shells exploded front and rear, right and left, five paces from the vehicles. Due to the fast moving of the vehicles they were able to escape, where the rounds exploded. And right now the dismounted outposts were transferred."

As a "graduation exercise" upon completion of phase II, mobilization training, the troop made a practice march and bridge and road reconnaissance of the Bataan-to-O'Donnell Death March route. Led by Captain Frank H. Young, American mestizo and holder of the distinguished Service Cross for his part in the Bataan campaign, the troop revisited the locations in which the 26th Cavalry spent its last days: Trails 10 and 20, the Alongan River, Mariveles and Cabcaben. For the young Scouts of the troop it was a trip into history. Lieutenant Eulalio Arzaga pointed out the bridge near Dinalupihan that he had helped dynamite after the regiment had withdrawn across it, and Lieutenant Francisco showed his men the spot near Abucay where the scout cars of his section had been ambushed by the Japs as they dashed for the road at Culis.

Present officers of the Recon Troop who served in the ranks of the 26th Cavalry during the war (and who may be remembered by officers of the Service who served with that historic outfit) are Lieutenant Francisco, Lieutenant Arzaga and Lieutenant Felipe Fernan-

dez, formerly of Troop E. Major Juan Dalipe, formerly Regimental Supply Sergeant, though not serving with the troop, is a member of the 12th Division.

And the 26th tradition goes on from father to son: Staff Sergeant Porfirio C. Gascon, son of Sergeant Melchor Gascon who retired from the 26th Cavalry, is troop clerk of the new unit.

The 12th Cavalry Reconnaissance Troop will continue its efforts to uphold the standards and traditions of the 26th Cavalry. The troop files contain a letter written by Brigadier General Clinton Pierce at Ft. Riley, Kansas, in June 1946—a permanent reminder of the Reconnaissance Troop's heritage:

"1. As a former commander of the 26th Cavalry (PS), it is with extreme pleasure and interest that I have found out about the incorporation of a part of the old regiment in the 12th Division.

"2. In any organization of the U. S. Army to be organized and stationed in the Philippine Islands the 26th Cavalry (PS) has earned its right of representation.

"At Damortis, the Bued River, Binalonan, Tayug, Pio and Culis Junction the 26th Cavalry fought as a unit, using its mounts to provide the battlefield. At Moron one troop of the Second Squadron used its mounts to initiate an attack against the Japanese forces holding the town, and pushed the enemy north, out of the town and across the Bataala river. In Bataan, where the terrain no longer permitted mounted maneuver and forage was not available the horses of the 26th Cavalry (PS) were turned in and eventually used as food for the Bataan garrison. Using the remaining scout cars of the regiment and adding Bren gun carriers, trucks and busses the reorganized 26th Cavalry carried on in its fine tradition of combat on Bataan on the west coast and finally on the east coast during the last heartbreaking days of the capitulation. No other unit in the force of General MacArthur or General Wainwright excelled in the fighting spirit and dogged tenacity of defense displayed by this fine regiment. To quote from a letter sent me by General Wainwright, referring to the 26th Cavalry (PS), 'From December 22, 1941, until about January 9, 1942, this devoted little band of horsemen was in action almost daily, always gave a good account of itself and suffered heavy casualties. During these trying days, it was the most reliable unit under my command, and so remained during the defense of Bataan except for the two Philippine Scout Infantry Regiments, which were its equal, but in no way its superior.'

"3. What higher praise could a regiment receive? And so, after the terrible days of the invasion and occupation it is most fitting that the 26th Cavalry (PS) will ride again even though designated as the 12th Cavalry Reconnaissance Troop, Mechanized, of the 12th Division. My great respect and deep thanks go to the old horse regiment and its survivors and to the glorified dead of that band of horsemen goes the salute of a Nation for a task well done."



# Philippines' Own West Point To Rise Anew

*by Major C. B. Rigor\**

THE site of the erstwhile Philippine Military Academy, that counterpart of America's pride of the Hudson, is in shambles. In the wake of allied bombings and the sudden evacuation of the wantonly destructive Japs in January 1945, the summer capital of the Philippines, Baguio City, suffered the same fate as that of Manila. Of the buildings and installations of the Philippine Military Academy, not even the charred remnants of the cadet barracks nor the debris-strewn parade grounds would suggest to the circumspect traveller that here, once upon a time, smartly uniformed cadets used to go about their daily chores in much the same fashion as those at West Point.

All along the adjoining hills of Teachers' Camp today are a wild verdurous growth of stalwart pine trees—all that remain of the academy. These straight, rugged trunks are indeed reminiscent of the crop of fine, sturdy stock of Filipino soldiers of yesterday. In spite of the crucibles of war and the privations that the Filipinos had to bear under the heels of the invaders, the idea and the symbol of such a school as the Philippine Military Academy is not dead. In fact, it will rise again as all healthy, natural growths go. The new Republic is scarcely a year old; but it has definitely set its eager planners to work on the blueprints of a new West Point of the Philippines.

At this writing the President of the Philippines has already approved the official site of the Academy. Considering climate, terrain, and locale, Loakan, on the outskirts of the City of Baguio, is an ideal location. Here, only a few miles from the city and closely adjacent to the municipal airport, is a gentle rolling country 5,000 feet above sea level. According to plans the physical plant of the new PMA will have every facility adequate to take care of more than 500 cadets at one time.

## HISTORICAL BACKGROUND

The Philippine Military Academy was, strictly speaking, an offspring of the Commonwealth era when the National Defense Act of 1935 authorized its establishment. Curiously enough, when President Quezon asked General MacArthur to lay the groundwork for a Philippine citizen army, it was a certain Lieutenant Colonel Dwight D. Eisenhower, member of the Philippine Military Mission, who cooked up the details of the

Military Academy patterned after West Point. On the other hand, as early as 1905, only a few years after the Philippine insurrection headed by Aguinaldo had died down, the need for a Constabulary School was felt, to give adequate training for young shavetails who were after the trail of the islands' irreconcilables. General Henry T. Allen of the U.S. Army is remembered for pioneering in this school. From that time on the Philippine Constabulary School had become the source of regular commissioned officers of the state police. Residence at the Academy for the student officers varied from six months in 1908 to two years prior to the enactment of the National Defense Act. The curriculum of the old Constabulary School dealt mostly with peace-and-order courses intended to train the young second lieutenant in coping up with highway bandits and the Moro problem of Mindanao and Sulu.

In 1936 when the Philippine Constabulary Academy became the Philippine Military Academy, the curriculum and a thousand other details went in for a thorough change. To this gigantic task Philippine military history should very well reckon with the name of the late Colonel Pastor Martelino (Philippine Scout officer and a West Point graduate) who may be considered the father of the Military Academy. (Incidentally, he was executed by the Japs in 1944.) This energetic Filipino professional soldier went to work with a select group of Philippine Army officers and built up a counterpart of Sylvanus Thayer's school at Teachers' Camp, Baguio. The course was lengthened to four years with a Bachelor of Science degree awarded to the graduate upon completion of the course. The academic, physical, and extracurricular traditions of West Point were prescribed and adopted. Even the full dress uniform—bell buttons, shako, sashes, woolen jackets (minus tails)—was a close ringer to the West Point attire. There were four departments, namely, (1) Department of Engineering, (2) Department of Mathematics and Natural Philosophy, (3) Department of Languages and Social Arts, and (4) Department of Tactics. The Commandant of Cadets was invariably a West Pointer and the heads of the different academic departments were graduates of reputable American universities and the University of the Philippines.

Character training, military and physical proficiency were stressed in all phases affecting cadet life. Academic

\*Field Artillery officer in Philippine Army.



ratings were given every day and deficient cadets were either turned out for final exams or "found" and subsequently debarred. The demerit and honor system, the "plebe-conscious" yearlings, and all other social activities were introduced and practiced with the least scruples. Graduates of Class '37, '38, '40, '41 who are now veterans of Bataan, Corregidor, and the resistance movement, have been imbued with years of patient, conscientious technical and practical military schooling never before experienced in this part of the world. Whether they had chosen the air corps, infantry, artillery, or any branch of service in the Philippine Army, they have become the very backbone of the regular officers' establishment simply because their PMA training was no less rigid and wholesome than West Point, Annapolis or any of the world's better known military institutions.

By June this year, 75 new cadets will be admitted to inaugurate the postwar academy. Faced with the problem of inadequate quarters and lack of classroom facilities, the school will start all over again acquiring, replenishing, and building up its physical plant, records, and its reputation.

The program of instruction and training has been designed to dovetail with the new trends of military warfare and the officer-requirements of a modernized Philippine Army. It is expected that the Academy graduate will be sufficiently equipped with a thorough knowledge of the fundamentals of engineering and the physical sciences, and a broad education in the humanities and social sciences.

#### SPRIT OF THE PMA

The tenets of Courage, Loyalty, and Integrity (PMA's motto) became living symbols to the men who kept the underground movement alive during the Japanese occupation. The following is the story of undergraduates of the Military Academy in that significant segment of Philippine military history linked with guerrilla warfare. It serves to gauge the degree of sustained effort which could only be the residue of discipline and courage of the PMA brand.

When the Japs started to bomb Camp John Hay (U.S. Army reservation in Baguio City) in 1941, the Corps of cadets were ordered to vacate Teachers' Camp and proceed to Manila in a hurry. Brigadier General Fidel V. Segundo (USMA Class '18), then superintendent, mobilized the entire cadet corps and the officers and, in commandeered trucks, bundled off the whole personnel of the Academy under cover of darkness to Manila. There the first and second classmen were hastily graduated and assigned to line duties.

The yearlings and the plebes were not mustered into the service—much to their chagrin and disappointment—and in the hurley-burley of the retreat to Bataan and the eventual evacuation of Manila, these cadets were ordered disbanded together with several ROTC boys who failed to make Bataan. They were told to go

home; that was bitter and painful to these youngsters who were all eagerness to take a hand in the fighting.

Came the sad days of March and April, 1942. With Manila occupied by the enemy and Bataan under a fierce siege, the orphaned cadets were in a fix. When the fateful day of the fall of Bataan came, these boys took to the hills.

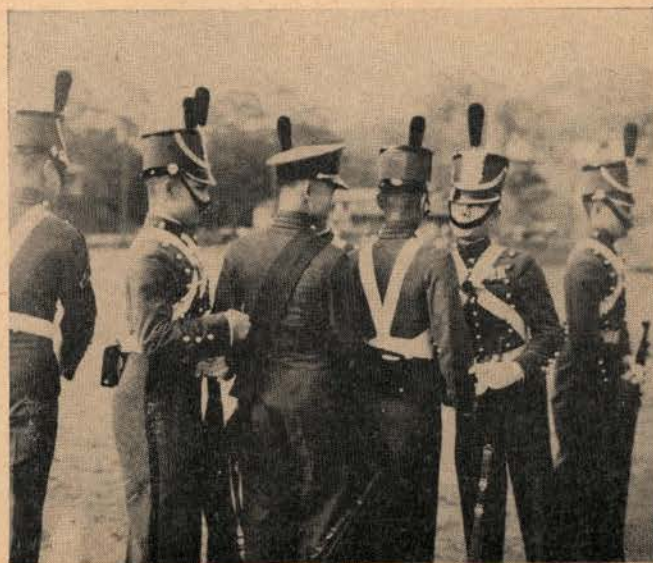
Thus the Hunters, ROTC Guerrillas led by two former PMA cadets (Miguel Ver and Magtangol "Terry" Adevos), was born. Arms and ammo were smuggled to the hills of Montalban and the Sierra Madre. Every day the small army of Jap saboteurs grew and spread its activities in and around Manila and central Luzon. The intelligence coverage of this guerrilla unit is on record with the files of G-2, Southwest Pacific Theater.

Colonel Ver's hide-out was raided by the Japs and he himself became a casualty. "Terry" Adevos carried on the job until the American liberation forces streaked into Manila in February, 1945.

Many of the young PMA officers fell in the front lines of Bataan and Corregidor. Some have succumbed to disease as a consequence of the "death march" and the filthy conditions of the Capas Concentration Camp. Others who were captured and incarcerated in the charnel halls of Fort Santiago were later put to the samurai sword.

All these exploits of young patriots and heroes can very well stand the test of time in the valiant history of the Philippine nation. Any institution worth its salt should look back to the glory and sacrifice of gallant men who gave these "traditions in blood" for the next generation to cherish and emulate. Certainly, the new West Point of the Philippines shall have come of age with a rich legacy when it opens its doors in June this year.

Recognition Day for the Plebes; Upperclassmen shake hands with the Plebes who may now become Yearlings.  
A prewar photograph.





# First Cavalry División Artillery Combat Operations

*by Colonel Rex E. Chandler*

**Here is the complete account of the First Cavalry Division Artillery combat actions in World War II written by former Brigadier General Rex E. Chandler, wartime Division Artillery commander. The First major campaign for the Division, the Admiralty Islands, presented artillery problems of technique in transport, over-water displacements and fire support not covered at that time in existing field manuals. How this and other combat problems were overcome is discussed in this article.**

ACCOUNTS of combat operations of American divisions seldom more than mention the presence of artillery. The better the support, the more closely integrated the infantry-artillery team, the more likely were the problems and solutions of the artilleryman to be lost in the recording of actions which brought about successful operations. Particularly was this true in organizations where there existed a mutual interest, admiration and confidence such as was found in the First Cavalry Division. The following paragraphs summarize a few of the methods of handling artillery support met and worked out by the artillerymen of the Cavalry Division in the march from Camp Strathpine, Australia, to Tokyo.

The First Cavalry Division, the only "Square division" of World War II, entered the combat zone with less than the full complement of artillery normally provided an American division. It was short in quantity and light in the caliber of its weapons. The division arrived at Camp Strathpine, Australia, with three artillery battalions organized as follows:

61st FA Bn, 1½-ton truck-drawn, 105mm (Snub-nose) M-3 Howitzer.

82d FA Bn, ¼-ton truck-drawn (jeep), 75mm Pack Howitzer.

99th FA Bn, ¼-ton truck-drawn (jeep), 75mm Pack Howitzer.

Such an organization provided one 75mm howitzer battalion for direct support of each cavalry brigade and the 105mm M-3 battalion for general support. What the division needed, and what it finally finished combat with on Luzon in 1945, was four 105mm battalions, one for the direct support of each cavalry regiment, and a 155mm howitzer battalion for support of the division as a whole (general support). The evolution of the artillery organization followed the requirements of combat as each operation indicated the need for more artillery and heavier calibers.

The 271st FA Bn, 105mm Howitzer, truck-drawn, was organized at Camp Strathpine on October 11, 1943, from officer and enlisted personnel drawn from the other battalions. Because the 99th FA Bn had been converted from mule pack to a jeep-drawn there existed a surplus of enlisted personnel in that unit. This personnel plus overstrength brought overseas by the other



battalions permitted the organization of the 271st without outside replacements. Thus four months later the battalion was to do an outstanding job in combat. A tribute to the excellent training of the division artillerymen and the superlative efforts of the men and officers of that battalion.

Also in October 1943 the 61st FA Bn was converted to two-and-one-half-ton truck-drawn, and the M-3 (Snubnose) howitzers replaced with M-2 howitzers. At Borio, New Guinea, in January 1944, further changes were made in the prime movers of all battalions. The 61st and 271st FA Bns were given TD-9 tractors in exchange for two-and-one-half-ton trucks and the 99th and 82d FA Bns exchanged their one-quarter-ton (jeeps) for three-quarter-ton weapons carriers. Thus equipped and organized the division artillery entered combat in the Admiralty Islands.

The Admiralty Islands campaign brought out two defects in the weapons and organization of the artillery of the division. First the 75mm pack howitzers were too light for jungle warfare. Second a general support artillery battalion of 155mm caliber was needed. With only four battalions to support four cavalry regiments the division artillery commander was often confronted with the problem of where to get additional artillery to influence the action of a particular regiment. In every such case it was necessary to withdraw a battalion from its direct support mission. As a result of the experience of this campaign a request was made on the Sixth Army to convert all light battalions to 105mm howitzers and provide a 155mm howitzer battalion for general support. This request was met as follows:

In October 1944 and three days prior to loading out for the Leyte operation the 82d FA Bn received its 105mm howitzers. Because of limited over-water transport the 99th FA Bn left its three-quarter-ton prime movers in the Admiralties, went porte, and loaded its weapons in two-and-one-half-ton trucks. With such an arrangement it became a compact march and water-transported unit with far more cargo and ammunition carrying capacity than it had with either the one-quarter-ton or three-quarter-ton prime movers. Several times during the Leyte Campaign the 947th FA Bn, 155mm Howitzer, was attached to the division for specific operations. When the division sailed for Luzon in January, 1945, the 947th accompanied it and remained attached throughout that campaign. Toward the end of the fighting on Luzon the 99th received its 105mm howitzers. The cycle of organization, transportation, and equipment was completed shortly before VJ Day with the division artillery organized as follows: five battalions, 61st FA Bn, 82d FA Bn, 99th FA Bn, 271st FA Bn, and 947th FA Bn, all composed of tractor-drawn 105mm howitzers. (Attached and adopted by troopers and artillerymen alike for the excellence of its fires and the esprit of its officers and men.)

The Admiralty Islands campaign presented artillery problems of technique in transport, over-water dis-

placements and fire support not covered at that time in existing field manuals.

In amphibious operations followed by fighting in jungle terrain the first problem that confronted the artillerymen was that of transportation. The current WD T/O & E's provided for motor transport far in excess of that which could be carried by the watercraft available and beyond the capabilities of the road net on the objective shore. This was recognized early and the First Cavalry Division Artillery was reorganized in New Guinea to conform to the principle that the maximum amount of transportation needed for any operation would be that required to mobile load TE equipment and one-half unit of fire of ammunition with all personnel, except drivers, walking and carrying individual equipment. Overloading was accepted. Initially battery commanders were allowed considerable latitude in the manner of loading under the directive that the equipment would be readily accessible in the order in which it would be needed in the occupation of position. The ingenuity and initiative of the individual were encouraged. As new ideas were developed and found satisfactory they were adopted and made uniform throughout all battalions. Battery commanders were required to keep all equipment in the vehicles, nothing in supply and storage tents. Thus loaded, the battery or battalion could move out in a few hours and the men were trained to keep their equipment dry and serviceable under field conditions. During the training in the Borio, New Guinea, staging area, batteries operated with reduced transportation. This reorganization paid dividends when the operations started.

A usual method of target designated by artillerymen is the use of numbered reference points or scheduled fire concentrations indicated on a map or overlay by 200-yard circles. During the Admiralty Campaign and thereafter this method was adopted by the cavalry and

**A First Cavalry Division Artillery gun crew stands by to fire during jungle training of the 61st Field Artillery Battalion at Camp Strathpine, Brisbane, Queensland, Australia.**





extended to supporting Navy units, providing a common language and relatively secret code for the initial phases of each shore to shore operation and major attack. Where practicable copies of the artillery reference point and concentration overlays were furnished through Liaison Officer and forward observers down to cavalry platoon leaders. Thus any cavalryman could call for Naval gunfire or artillery fire by the simple means of asking for a numbered concentration or designating his target with reference to it.

In jungle warfare wherever practicable the artillery should be emplaced on the flank of the attacking forces to provide closer support of the advancing troops and eliminate tree bursts within our own lines. By clever use of island positions the artillery was able to provide such support throughout all phases of the shore to shore operations during the Admiralty Island campaign. In the attack on Lorengau by the Second Cavalry Brigade the three artillery battalions designated to support the attack were in island positions from which they could support all phases of the attack. The 61st and 271st FA Battalions were on Hauwei Island and the 99th on north Butjo Luo Island. All battalions fired in support of the initial landing at Lugos Mission. The 61st and 271st FA Battalions provided flanking fire to the squadrons of the Eighth Cavalry in their movements down the Beach Road and Number One Road toward Lorengau. So effective were these positions that the gunners could observe their own fire and using field glasses watch the advance of the cavalry down the Beach Road.

The 99th FA Battalion interdicted Number Two Road, the only avenue of withdrawal of the Japs, and provided flanking fire for the advance of the Seventh Cavalry along that road after the capture of Lorengau. Following the attack on Lorengau the 271st FA Bn was returned to direct support of the 12th Cavalry for the attack of the First Brigade in the Papitalai Hills. This battalion displaced to positions in the Salami Plantation on the West Shore of Los Negros Island. From there it could support the action of elements of the Twelfth Cavalry and reinforce the fires of the 82d FA Battalion in position near Momote Airstrip. The positions of these two battalions were such that either battalion could reinforce the other with flanking fire and afford close-in support of the cavalry irrespective of the direction of attack. Interlocking radio communication permitted the observers of one battalion to adjust fire of the other, a very important and necessary consideration when elements of the attacking regiments converged in the thick jungle of the Papitalai Hills.

The following comments of a squadron commander of the Fifth Cavalry are appropriate.

"We used all the artillery we could get. We could not get too much. One entire battalion of field artillery in direct support of our squadron was most profitable.

"Preparatory to the attack, a barrage of intensity commensurate with the importance of the objective

was indispensable in attaining the objective with minimum casualties. On occasions we found it profitable to use as many as 1500 rounds or more in the initial preparation. The take-off was followed by a rolling barrage, in close, which facilitated the advance. Enemy outposts were driven back so that we were able to reach their main line of resistance without delay and harassment. Artillery fire leveled foliage, made bare pillboxes and bunkers, and exposed enemy points of resistance. Craters from artillery fire offered our troops cover in the advance. The delay fuze was used effectively to bring the shells through the foliage to get the bursts down on the ground. Artillery fire on villages drove the enemy away from the supply points and denied them food and ammunition. Many enemy dead were found in these villages following artillery fire.

"Concentrations on points of resistance, and prepared positions located in the daytime by our patrols, silenced enemy fire, kept the enemy in their dugouts, and prevented movement on the ground between our perimeters and their prepared positions. Fire on our flanks protected our long and narrow lines of communications and supply from envelopment.

"Close and constant liaison with squadron, troop, and forward observers, who were with the forward elements, resulted in excellent coordination. All our plans included detailed employment of artillery.

"Observer planes were of inestimable value in these jungles. Often it was only through their use that we were able to locate ourselves accurately on the ground. The location of our troops and the objective for the day were made known to the air observer daily. By the use of flares fired from front-line positions the exact location of our troops was determined by the observer so that he could adjust close-in fires with safety. This worked especially well when our troops were pinned to the ground. Returning patrols reported coordinates of targets to the liaison officer with the Squadron, who sent them to the air observer. In practically every instance the target was well covered with artillery fire. The effectiveness of all daytime fire was constantly adjusted and checked by plane when ground observation was not possible, which in the jungle is most of the time."

The Leyte campaign presented problems of mud and mountains that taxed the artillery to the utmost to provide adequate fire support and afforded opportunities for assistance that put the cavalry-artillery team into a smooth functioning unit and tightened the bonds of mutual admiration and respect.

Accurate maps were nonexistent. The only way in which the artillery could provide fire support was through the combined efforts of the ground and air observers, by the methods worked out in the jungle terrain of the Admiralties. The air observer after spotting the location of the ground observer would start an adjustment with the initial rounds well in front of the cavalry troops. He would then pull the fire back until



the ground observer could take over. In the mountainous terrain this required careful coordination by the observers and accurate laying of the pieces at the gun positions.

When the bottom dropped out of the secondary supply routes to the cavalry regiments operating in the mountains, artillery ammunition vehicles, the tractor and trailer, were used to push food and ammunition forward and evacuate sick and wounded. The artillery liaison planes dropped medical supplies, food and ammunition to isolated troops in positions that made any other means of transport impracticable.

One incident which occurred during this operation illustrates the measures which an artilleryman will take to look after his supported unit. One of the cavalry regiments in its movement across the mountains was beyond the support of its artillery battalion but the battalion commander continued to follow its movements from a liaison plane. An air drop of food to the regiment did not materialize. The situation became critical. Division headquarters were unable to arrange to have food dropped through the usual request channels. The artillery battalion commander went to the air strip near Tacloban and persuaded an air corps pilot of a C-47 to take the mission, without benefit of orders or fighter cover. He, the battalion commander, secured the food, lashed himself in the open door of the plane, placed his own radio set in a position so that he could talk with his forward observer with the regiment and proceeded to deliver. The ground observer talked the pilot into position over the dropping ground and the battalion commander kicked packages out of the door on each pass of the plane over the area. This performance was repeated several days later not, however, without some repercussions from corps and Army staff, but the job was done. If the artillery could not support the regiment by fire it certainly could with food.

A single one-way beach and mountain road on Leyte connected Carrigara and the operating area of the Cavalry Division with the Ormoc Valley. This was the principal supply route of the 32d Division. When the Fifth, Seventh and Twelfth Cavalry regiments broke through the mountains and entered the valley the question of artillery support became critical. Only one battalion could get through and be supplied over the Carrigara-Ormoc road and then not until the resistance confronting the 32d Division, north of Loroy, had been broken. The 77th Division had landed near Ormoc and was pushing north for a junction with the Twelfth Cavalry. An artillery staff officer was dispatched to that division to act as a liaison officer and arrangements made for the use of its artillery until the 61st FA battalion could move south to suitable positions. The excellent assistance rendered by the 77th Division artillery provided the support needed at a critical period. In the mopping up operations and movement of the cavalry to the west coast of Leyte the 61st FA Bn had some of the most intense firing and lucrative targets of the cam-

paign, not to mention the constant harassing of infiltrating Japs by-passed in the fast movement of the cavalry.

Artillerymen who served with the cavalry prior to the war have indicated that there was always the question in the minds of the cavalry officers as to whether the artillery could keep up with the fast moving mounted trooper. The same question arose when the division made its dash from Lingayan Gulf to Manila in February 1945. To meet this situation the tractor-drawn artillery battalions dropped their tractors, hitched the howitzers to two-and-one-half-ton trucks and joined the columns. Two truck-drawn batteries were with the flying columns that broke into Santo Tomas University and the remainder of the artillery was in position near Grace Park Air Strip, when the division entered Manila. Not once during subsequent operations east of Manila, on the Bicol Peninsula, and west of Laguna de Baya was a regiment without artillery support although the roads and terrain taxed the initiative and ingenuity of the battalion commanders to the utmost.

From positions on and near the Wac Wac Golf Course in Manila, the Artillery supported the action of the First Brigade, south of the Passig River, and the operations of the Second Brigade, east and northeast of Manila. During one period the light battalions and batteries of the 947th were so disposed that they were delivering fire through 270 degrees of the compass.

The action in Manila and east, toward Antipolo afforded the division artillery its first wartime opportunity to mass the fires of all battalions. What amounted to a division artillery fire-direction center was placed in operation with direct telephone communication to the fire-directive center of each battalion. An improvised telephone switching arrangement at Division Artillery CP permitted the Division Artillery S-3 to call and talk to all battalion S-3's, individually, or on a party line. Within three to five minutes all battalions could be firing on a target located and adjusted on by any observer. TOT (Time on Target) fires were used with excellent effect. In addition the artillery controlled and coordinated air strikes by lifting artillery fires just prior to the air attack, marking targets with smoke rounds and reporting the effectiveness through forward and air-observers. This was accomplished by a Division Artillery Liaison Officer, in direct radio communication with the Division Artillery CP and all battalions, stationed with the air liaison and control officer at his forward observation post. Such control insured more effective air support and withheld the artillery fires only during the period where the planes were making their runs over the target.

As the artillery battalions were withdrawn from combat during the closing stages of the fighting on Luzon they were given the mission of patrolling and mopping up in the rear areas of the zone of action of the division. A new role for the artillerymen but one which brought them closer to the problems and hardships of the cavalry trooper and made them better artillerymen.



# EMPLOYMENT OF ARMORED INFANTRY

*by Major Henry S. Hastings\**

**The importance of a closely knit combined team of infantry and tanks is emphasized in this article by Major Hastings, an advanced student at The Armored School. By joining tanks and infantry up to form a combined force one overcomes the weak points of the other.**

EARLY in World War II when armored divisions were first incorporated into The United States Army their fighting force consisted of three tank regiments, one armored infantry regiment, two field artillery battalions, a reconnaissance battalion and an engineer battalion. It was customary to attach an antiaircraft battalion and a tank destroyer battalion. The armored division was organized as a well rounded, self-contained, mobile unit which could operate separately for a considerable length of time. The principal doctrine of the division was to attack with tanks in mass with all other arms assisting in pushing the tanks forward.

In early maneuvers it was found the division was too large to move around easily and the tanks were out of proportion to the infantry. As a result one of the tank regiments was dropped from the division. About the same time another artillery battalion was added giving a total of three battalions. In the organizing of later armored divisions tank and infantry units were organized as separate battalions with a total of three tank battalions and three infantry battalions. This gave a much better balanced unit of tanks and infantry. As tanks and infantry were seldom employed as regiments the separate battalion organization had many other advantages.

Armored infantry regiments were originally copied after regular straight infantry regiments. They were smaller with less men in the rifle companies and had no antitank or cannon company. The number of actual fighting men was further reduced by drivers and vehicular maintenance personnel. The first vehicles used by the armored infantry were the four-wheel scout cars which gave some armor protection but had little cross-country ability. These were soon replaced by the M-2

and M-3 half-tracks. The fire power of the armored infantry was greater due mainly to the vehicular machine guns which each vehicle carried. Training was basically dismounted infantry tactics with special emphasis on offensive combat with tanks. Training was given in mounted marches, formations and fighting the vehicle. The latter was very seldom used as most of the time armored infantry fought dismounted.

Communication in armored infantry units was by means of SCR 508, 528 and 510 radios when mounted. When the infantry dismounted the 510 was dismounted and carried to form the SCR 509. This radio was too heavy and unhandy to carry as a dismounted set. It was possible to net it with the tank radios by installing the correct crystals. This was not done in lower units and it was not used for tank and infantry communication. Armored infantry units later received the SCR 300 and SCR 536 for dismounted use. These worked well for infantry communication but still gave no communication with the tanks. Telephones were installed on the backs of tanks for communication with the infantry. They were not very successful due to inability to alert the tank commander, inability to get to the back of the tank or damaged wires and phones. The only sure method of communicating with tanks was to climb on the back of the tank and talk directly with the tank commander. Visual signals were used to some extent, however messages are very limited by this means. With the SCR 300 and the AN/VRC-3 radio in the tanks communication may be improved between tanks and infantry. However, only one SCR 300 radio is authorized in each armored infantry company and tank-infantry communication is desirable in units below the company level.

In early training the armored infantry was used principally to follow an attack and secure ground taken by

\*Student at The Armored School.



the tanks. There was no close coordination between the tanks and infantry, both operated more or less separately. The importance of a closely knit combined team had not at this time been realized. Of necessity the practice was started of joining tanks and infantry up to form a combined force, one overcoming the weak points of the other. This eventually developed into the tank-infantry team with units of various size from battalions to platoons being joined together according to the mission, enemy and type of terrain. It became customary in all types of operations to join infantry and tanks together with one or the other leading according to the type of obstacles met. In the heavy armored division there was always a shortage of infantry. Often battalions from infantry divisions were motorized and attached to the division to overcome this shortage. The principal disadvantage to this was that attached battalions did not have the training or experience of fighting with tanks and personnel of tank-infantry teams were not familiar with each other. The latter was found to be an important factor in gauging over-all efficiency of a combined team.

Whenever possible it was found best to join up the same tank and infantry units together in training and in combat. Not only would staff sections function better but lower unit commanders and individual tank crews and infantry squads became acquainted and gained confidence in each other. Units gained objectives as a team and not as individual arms. To round out this team artillery forward observers were attached down to include tank and infantry companies from the field artillery battalion in direct support of the unit. This gave a well rounded team of tanks, infantry and artillery. The artillery forward observer operated dismounted with the infantry and the observer with the tanks rode in a tank. Wherever possible the same artillery battalions were kept in support of the same units.

Prior to an attack on designated objectives the tanks and infantry were joined together in a rear assembly area. Infantry vehicles were sometimes left in this area and the infantry rode on the tanks up to the attack position where they dismounted and attacked with the tanks. At other times the infantry rode mounted in their own vehicles to the attack position and dismounted there. In attacking a position the enemy often placed all his artillery on the attacking tanks forcing the infantry to fall behind some 200 or 300 yards. It is important that the infantry not be entirely separated from the tanks as one of the enemy's objectives is to separate the tanks and infantry so they may deal with each in turn. After tanks overran the objective the infantry mopped up and organized the position, or the team reorganized and continued on to the next objective. Usually a team was assigned several objectives with other teams attacking on either side. Where enemy mines, obstacles or antitank guns were encountered the infantry took the lead and was supported by the tanks.

When these obstacles had been reduced the tanks

passed through the infantry and continued the attack. In some instances after committing the tanks it was found the objective displayed more antitank defenses than was first thought. In such cases it was necessary to have the infantry pass through the tanks and seize the objectives before the tanks could move forward. At times the infantry would be holding in a defensive position and the tanks passed through and made an attack with the infantry following. It was found much better for the tanks and infantry to join in a rear area.

In the attack of a fortified town a coordinated envelopment and frontal attack was generally used. Medium tanks encircled the town sealing it off so reinforcements could not get in and the enemy in town could not escape. To have tanks in their rear created confusion among the enemy. The frontal attack was made by tanks and infantry. The tanks led to the outskirts of town where the infantry passed through and cleared the town. In this phase small teams of tanks and infantry worked together. Usually a tank to a squad of infantry. The tank covered the infantry squad's movement forward and supported by knocking out automatic weapons and other strong points. These small teams must be organized before the attack and given specific sectors or streets. Coordination and control is most difficult in this type fighting and prior planning must reach down to the lowest units. Because of their speed and maneuverability the light tanks were found good for supporting infantry in a town. Teams continued through town and set up a defense on the far side with the medium tanks. The support which consisted of infantry and tanks followed the attacking teams, took over prisoners, and assisted in overcoming particular tough islands of resistance.

In attacking a woods the infantry led and the tanks were used in a support role. The main enemy defenses were found in the edge of the woods where there were good fields of fire. During the infantry attack the tanks supported from vantage points by direct fire into the edge of the woods using both machine guns and cannon. Infantry vehicular machine guns were sometimes used to supplement the tank fire. After the infantry entered the woods tanks followed closely along and continued in support. When woods were very thick and no trails existed it was necessary for tanks to skirt the woods and join the infantry on the far side. Tanks had to stay close to infantry in the woods for protection from rockets and other individual antitank weapons. In an attack through large wooded areas where the terrain was extremely hilly it was sometimes necessary for the infantry to attack alone and the tanks join them later after engineers had cleared avenues of approach.

Small tanks and infantry teams were very successful in attacking pillboxes and bunkers in the Siegfried Line. A medium tank company and an infantry company were joined together. These were further broken down to form assault teams consisting of a section of tanks, two squads of infantry and an engineer flame



thrower team. This gave two assault teams to each tank and infantry platoon and six teams to the tank-infantry company. Two or more assault teams would attack pillboxes simultaneously and other teams passed through to attack positions farther on when the first positions were overcome, using a leapfrog method. Prior to teams attacking, an artillery observer put artillery fire on the position forcing the enemy defending outside to seek cover inside the pillbox. The section of tanks took the position under fire with machine guns and cannon forcing the enemy to close the gun ports. The two infantry squads then approached the position from a blind side prepared to make an assault. The tanks continued to fire and attempted to shoot the gun ports in. The tank fire lifted as the infantry reached the position. The infantry placed charges in the ports to blow them in if the tanks had not already accomplished this. The flame throwers were directed through the ports and the infantry entered and cleared the box out. In most cases the enemy came out when the flame thrower was used. Smoke and fragmentation grenades thrown in were found very effective in bringing the enemy out.

On an exploitation combat commands marched in from one to sometimes three columns. Each column was organized into a tank-infantry team usually not less than battalion strength. Many of the actions in an exploitation were advance guard actions. The point was generally made up of a section of medium tanks. The advance party was composed of a medium tank platoon with a platoon of infantry mounted on the backs of the tanks. The remainder of the infantry with the advance guard rode in their vehicles in the support. On long marches the infantrymen riding the tanks were rotated to rest them. Their half-tracks followed at the rear of the main body. This shortened the column and made the infantry immediately available should they be needed. The infantry in the main body usually moved mounted in its vehicles. When passing through woods where enemy was suspected the infantry in the advance guard dismounted and took a parallel route through the woods on either side of the road. The infantry was used to take out road blocks, antitank guns and mines when encountered to allow the tanks to move ahead. Tanks in the advance guard acted as a base of fire while the infantry maneuvered and took out the resistance. Infantry in the main body was often used reinforced with tanks to put out flank security. The general practice was to put two squads of infantry and a section of tanks to cover a main avenue of approach. As there is danger of an attack on any part of a column during an exploitation tanks and infantry were distributed throughout the column. This was particularly necessary in a long column where a combat command was marching in a single column. Often the command attack from a march column when on an exploitation and it was necessary for the infantry to be joined up with the tanks on the march. When the advance guard hit something the column would coil just off the road and get set

for action.

When halting for the night or any length of time security was placed well out. Strong outposts and road blocks covered roads and other avenues of approach. It was found a good hasty road block could be established by stringing a couple of concertinas of wire and mine necklaces across the road covered by a section of tanks and two squads of infantry. The infantry should have a dismounted post in front of the block to alert the main force on an enemy approach. An artillery observer was posted with the main blocks and artillery fire plan prepared to support the blocks. The infantry was used to assist the tanks in setting up local security around the bivouac area.

On an exploitation where movement continued at night more infantry was put in the advance guard and it was necessary for them to dismount more often to protect the tanks and make dismounted reconnaissance of dangerous areas. Progress was much slower at night. In terrain where we averaged fifty to sixty miles a day only fifteen to twenty miles was made at night. When artificial moonlight was used it helped very much.

In organizing a defensive position armored infantry battalions were used practically the same as regular infantry units. The main difference was we had more tanks and used more of them in the line. Generally all three infantry battalions were put in one combat command and two battalions were put on the line and one in reserve. Each battalion had attached a medium tank company which was assigned a platoon to each rifle company and dug in on the front lines covering tank approaches. A platoon of tanks along with the reserve rifle company acted as the battalion reserve. The reserve infantry battalion of tanks constituted the combat command reserve. Where the front was such that all three infantry battalions were required on the front lines the division reconnaissance battalion was used to relieve battalions.

In an amphibious operation the division was usually formed into combat commands and landed after regimental combat teams had established a beachhead. If possible ports were secured and the combat team was landed there. Other times the landings were made on beaches from landing craft. Missions of the command were to help expand the beachhead, act as a reserve or seize important installations or terrain features. The armored infantry and tanks were loaded as teams on the landing craft. The first mission of the armored infantry was to secure and outpost assembly areas for the teams. After assembling the team fought in the manner already covered. If difficulty occurred in landing vehicles the infantry was sometimes transferred to smaller craft and landed dismounted to assist the regimental combat teams until the tanks and vehicles were landed. In landing operations plans had to be kept flexible as so many different things could happen. Armored units generally had several plans and executed the one which best suited the situation.



# Tank-Infantry Teamwork At Its Peak In The Armored Division

*by Major Emerson F. Hurley\**

IN the first and second years of World War II the combined training of tanks and infantry in the armored divisions was nonexistent. The armored infantry regiment and later the armored infantry battalions were a thorn in the side of maneuver directors because of the planning required to give the foot soldiers something to do in the large-scale armored operations.

In the early desert training one example was a 23-mile night march across a mountain range as a separate operation for an armored infantry regiment. During the Tennessee maneuvers in the spring of 1943, successful combat command commanders were using the armored infantry half-tracks to precede tanks to explode mines and draw antitank fire.

It was not until the spring of 1944, in England, that the first 100 per cent tank-infantry team was formed in an armored division. During the first month of the fighting in Normandy, Major General Lunseford E. Oliver of the Fifth Armored Division, performed a marriage ceremony between his tank companies and infantry companies that catalyzed the growing belief of the need for each other. At that time it was to be only one of the division SOP formations, but it immediately became so successful and popular that it was used practically all the time this division was in combat.

This plan called for three equal combat commands. The three rifle companies and the three medium tank companies in each combat command were welded together into what may be called three armored organizations. The tank and the infantry half-track and personnel now became one squad. It consisted of five men inside the tank and 10 men outside the tank. Sometimes the men outside rode in their half-track, sometimes on the tank. But the men outside had one job—stay with that tank. Their primary mission was to fight with the tank while their presence near the tank offered some protection from enemy individual weapons, such as the bazooka, magnetic charge, and hand grenade. Their

secondary mission was to dig the enemy out of foxholes, cellars, and houses. We called it the armored squad.

The armored infantry platoon contained five squads which made an equal union with the tank platoon. The mortar and machine-gun squads in the infantry very seldom used their crew-served weapons in this formation. They became rifle squads. The armored platoon consisted of five squads, and the armored company of three platoons.

Each company now had two captains, each platoon two lieutenants, and each squad, two sergeants. At first thought, surely this would be too many commanders. And another thing, how would these three large companies be divided between the two battalion staffs?

Now, looking back at that situation, those were not questions at all. The combat commander gave two of these companies to the tank battalion staff and one to the infantry battalion staff. The other attachments were divided evenly which resulted in a light task force and a heavy task force in each combat command.

## COMBAT COMMAND DIVIDED INTO TWO COLUMNS

**Light Task Force**  
Married Platoon  
Assault Gun Platoon  
Mortar Platoon  
Command Group  
Reconnaissance Platoon  
Married Company (—)  
Engineer Platoon  
Headquarters Company  
Battalion Command Post  
Tank Destroyer Platoon  
Medical Detachment  
Service Company  
Artillery Battalion

**Heavy Task Force**  
Married Company  
Assault Gun Platoon  
Command Group  
Reconnaissance Platoon  
Engineer Platoon  
Married Company  
Headquarters Company  
Battalion Command Post  
Tank Destroyer Platoon  
Medical Detachment  
Service Company  
Artillery Battalion

The control of the unit was performed through the tank radio net—the same as the tank company alone. The infantry vehicular radios were very seldom used. The presence of the infantry among the tanks did not interfere with the usual good control that is characteristic of all tank units. The tank commander issued orders to both men inside and outside. They became one large squad.

These married companies moved into the Salisbury Plain in late June and trained together. They ate from

\*Student, The Armored School.



the same kitchen or the same 10-in-1. They slept around the tank and half-track. They went through combat firing problems together. They planned bivouac security and cleaned weapons together. The tank and the half-track were always together.

The comradeship and brotherly love that is formed from close association had been planted. The men began to hope they would not be separated when they reached Normandy.

It was on August 2, 1944, that this column went down the Normandy Peninsula behind the Fourth and Sixth Armored Divisions. After passing Avranches the Fifth Armored Division struck out on its own to Vitre and Lemans. It was tank, half-track, tank, half-track all the way.

Lemans was one of the first large cities in France to be surrounded. It was done in a matter of hours after arriving there. Combat Command B was given a third of the city's outer perimeter to cut. This was divided between the two task forces. A line of roadblocks was quickly made. The armored squad (tank and half-track) can make a powerful roadblock by itself.

With the tank and half-track hidden, two soldiers go out in front of the tank near the bend in the road. They turn, each raises one hand. The tank commander looks down at the gunner. Yes, he can see them.

These two Americans are confident, cocky men. Brave? Yes. But it is more than that. They actually want something to come up that road so they can raise a fist in the air. That's their private signal to Howard, the gunner, to put a tank shell down the road in front of them. Ralph and Frederick feel they are more than just two soldiers on a roadblock. They have the power of an American medium tank behind them. They can afford to be brazen and reckless because Howard, the gunner, is one of their team.

It was he who told Frederick to get larger shoes back in England. Howard had worked as a boy in his father's shoe shop in northern New York and knew all about shoe fitting. Yes, after the war he would look up Howard.

That is a type of teamwork with which Combat Command B of the Fifth Armored Division fought the war. It was used from the beginning to the end except for short administrative groupings.

From Lemans it was tank, half-track, tank, half-track to Argentan, Dreux, Paris, Sedan, Luxemburg. Here a tank had been hit in a fierce, local fight. It had started to burn. Machine-gun fire was hitting the tank and the trees near by. The crew bailed out. Howard was halfway out the turret when machine-gun fire hit him.

He lay unconscious in the turret of the burning tank. In an instant, a soldier jumped up on the tank and carried the wounded man to shelter in the rear. Howard was seriously wounded but before he started back he gave a ring to Frederick and asked him to give it to his mother after the war. A medal was given to Frederick. The citation read, "an infantry soldier had disregarded

withering machine-gun fire and climbed upon a blazing tank and rescued a member of a tank crew." That was not the whole story. To the men of this armored squad, it was one member helping a buddy.

As the winter approached these armored squads were fighting in northern edges of the Hürtgen forest. The half-tracks were back in an assembly area and the armored squads were living and fighting around the tank. In forcing the Germans back across the Roer, the mortars from the other side were having a field day. For the tanks it was a series of short, fierce attacks, and longer waits. During this waiting, the tanks were in firing positions with the outside members securing it. For the tanks that were forced to wait in the open, the men outside dug in under the tank for protection from the mortar fire. The men inside would exchange places with those outside during these waits. It was not uncommon to see a bow gunner or a loader in a foxhole on security duty with an outside member of the squad. Surely this was the highest example of teamwork. These men had learned to appreciate each other's job. They had become a single unit.

These armored squads continued the advance across the Roer in February and on April 1, crossed the Rhine. Eleven days later, they were on the Elbe, 43 miles from Berlin.

Figures can be made to speak for or against anything by rearranging or omitting. But when figures may represent human lives, they become precious numbers. The following table has been taken from the record of the armored divisions that fought in France and Germany.

Armored Division	Date Committed	Killed and Wounded	Tanks Lost
3	29 Jun 44	8,940	632
4	17 Jul 44	6,236	216
6	27 Jul 44	5,194	196
5	2 Aug 44	3,043	116
7	14 Aug 44	4,781	360
9	20 Oct 44	2,894	162
10	29 Oct 44	4,009	181
8	24 Jan 45	1,392	58

The above table indicates that casualties in the 5th Armored Division were not more than would be expected. It would not be wise to conclude more. But those who were in that unit are convinced the close cooperation of infantry and tanks conserved men and matériel on many occasions.

The secret of combined infantry and tank fighting is to keep the same infantry squad with the same tank crew all the time.

The commander who thinks he can form the infantry-tank team by moving infantry into the tank assembly area and move out into an attack is groping in the dark. The winner of the next war may not be decided prior to the close combat.



# Speed – Essence Of Armor<sup>\*</sup>

*by Lieutenant Colonel E. A. Trahan<sup>\*\*</sup>*

ALTHOUGH World War II furnished many examples of rapid advances in combat, in fact being characterized in its later phases, particularly in Europe, by a full fledged pursuit of a broken enemy, there were few examples of charges in the cavalry tradition, executed with a maximum of boldness and speed in order to attain surprise and minimize losses. This was not due to timidity or lack of skill on the part of commanders, but rather to the very nature of the campaigns themselves. The deadly weapons and the high degree of coordination and communication developed by all belligerents during the war precluded the use of such tactics in almost all cases. Yet a study of the few such actions which have been recorded underscores the fact that, although the optimum conditions required for their successful execution very seldom occur, the seizure of such an opportunity can spell the difference between success and failure of a mission. This is particularly true of armor, which, although capable of rapid and crushingly powerful movement, was so often characterized by slow, cautious attack, in which tank-infantry teams felt out, maneuvered against, and eventually took positions in sequence.

Such an action was the Allied attack against the Siegfried Line in October of 1944. Slow, costly, time-consuming advance was the rule, forced upon the attacking units by the very nature of their objectives. The Siegfried Line was Germany's border defense, and the first defensive line that the German Army had been able to man since the breakthrough in Normandy. The "Holy Soil" of Germany itself was at stake, and the defense of the line was, therefore, stubborn and often fanatical. The attack procedure generally called for an infantry-tank team, with artillery and sometimes air support. One of the several pillboxes, or a strongpoint, was selected for reduction. Smoke was laid on surrounding pillboxes and strongpoints to isolate the area under attack. A portion of the team laid down covering fire, to drive personnel in the open into the pillboxes, and blind the apertures. Then the remainder of the team moved in and reduced the area by direct assault and demolition. Once captured, the pillboxes were sealed to prevent the Germans from remanning the positions by means of small patrols which infiltrated during the night, a practice common during the early phases of the attack. After all of this was accomplished, the team reorganized to attack the next area. If such a method was impossible, direct frontal attack was the only alter-

native. Yet out of this creeping offensive came one of the best examples of a bold, swift tank charge, which gained the objective with negligible losses where slower, more powerful means had failed.

The incident occurred during the attack of the Second United States Armored Division, just north of Aachen. On the first day of the division's attack, October 4, 1944, the Third Battalion of the 67th Armored Regiment entered the fray, spearheading Combat Command B. The battalion crossed the narrow Wurn River into the small bridgehead established by the infantry in Ubach, where it found itself under incessant artillery and direct heavy caliber fire. The infantry had not been able to push out to the outskirts of the town, and all exits were commanded by enemy tanks, 88mm guns, and artillery fire. Under these conditions the force attacked, gradually pushed out and finally cut the north-south highway approximately 1,000 yards east of Ubach. This was accomplished in the face of direct tank, antitank, small-arms, and artillery fire. The attack was pushed despite mounting losses until a line was established late on the fourth about 300 yards east of the highway. (See sketch.)

The next morning the battalion again jumped off to press the attack, with the medium tanks leading. As the first wave reached high ground 1,000 yards east of the main road, they were caught in a withering cross fire of dug-in tank, antitank, assault guns, and artillery, as well as fire from the pillboxes to the east, north and south. The tankers hung on stubbornly, attempting to advance against this hail of fire, but were finally forced to withdraw into defilade after suffering heavy losses. From this position they continued to return the fire of the enemy guns until their ammunition supply was exhausted, and they were forced again to withdraw, this time to the jump-off line. Again, at 1 P.M., another attack was launched. In spite of friendly artillery fire, supporting fire from flank units, and covering smoke, the attack again failed, so completely were the German guns "zeroed-in" on the open ground which had to be crossed. Air support was impossible, due to the low clouds and drizzling rain which prevailed throughout the fight, and a flanking movement was precluded by the uniform continuity of the German line. The only approach possible was a direct frontal attack.

The morning of October 6 dawned gray and wet, and under the lowering clouds the Third Battalion launched yet a third attack. At 8 A.M. an artillery serenade was placed on every known enemy strongpoint, and simultaneously the tanks rumbled forward.

<sup>\*</sup>Military Review, Command & Staff College, May, 1947.

<sup>\*\*</sup>GSC, Second Armored Division.



Again they were met by withering fire. The enemy had brought up strong reinforcements of armor and artillery, determined to check the tenacious attack. Direct fire from Mark V and Mark VI tanks was added to the increased weight of artillery, antitank, mortar, and small-arms fire. Movement outside of the protection of the tanks' armor was suicidal, so concentrated and sustained was the weight of the enemy fire. The Third Battalion's losses continued to mount as the M-4s slugged it out with the more heavily armed and armored Mark Vs and VIs. They gradually withdrew to the jump-off line, leaving a trail of blazing and knocked-out hulls behind them. At this point the losses suffered by the battalion left only a fraction of the original attacking force. In the two days of futile attack the battalion had suffered 63 per cent casualties in medium tanks.

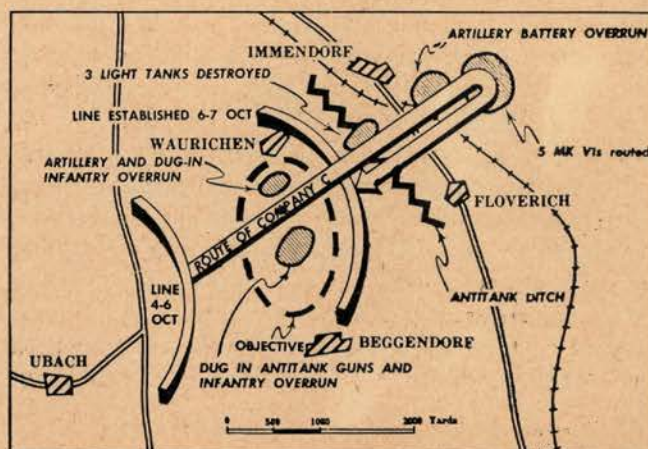
Another attack with the mediums was obviously impossible. The enemy fire had not been diminished. On the contrary, it was steadily increasing as the Germans brought up new reinforcements. Units on the right and left were in as bad a situation as the Third Battalion. Fighting against the same type of opposition, their losses were correspondingly as great. An infantry attack would be suicidal. And the medium task force was so depleted that they could muster less than half of the strength with which they had made the first attack three days previously. But perhaps speed would succeed where power had failed. C Company, the light tank company, was holding the left flank and had suffered relatively light casualties. The minds of the commanders turned to this, their last hope. C Company was composed of 17 M-5 light tanks, armed with 37mm guns—weapons which would worry the heavily armored German tanks no more than a mosquito sting. The M-5's armor was light, so light that a hit by any of the German guns, except their small arms, meant certain destruction. But the M-5s had one thing the Germans did not have—speed. And in this one advantage their commander placed his hope.

C Company was withdrawn and a thin covering force placed in the line where it had been. As the light tanks formed behind the line of battered mediums, their commander outlined the plan. According to all available information and observation, no tank barriers and few mine fields existed on their route, at least as far as the objective, which lay on the high ground just south of Waurichen. The mine fields could be avoided, and if it were necessary to go beyond the objective, the light tanks might be able to negotiate the obstacles that lay beyond. They would be followed by the slower mediums in the second wave, with infantry following close behind to hold ground taken. Their mission was to overrun the enemy defenses with as much speed as possible, cause what destruction and disorganization they could, and allow the heavier elements and the infantry to come up and occupy the objective. The attack hinged on their success in overrunning the defensive positions before those defenses could knock them out. Speed

and daring were the keynotes.

Gathering themselves, the light tanks burst through the lines of mediums at 11 A.M. on the morning of the 6th, throttles wide open and the prayer of every man in the line riding with them. At 35 miles per hour the M-5s screamed toward the enemy in a single weaving line. The German gunners must have thought them mad. Then, as the realization dawned that they could not track these fleeting targets in their sights, the seeds of panic were sowed. The tankers and infantry who were to follow watched in wonder. One thousand yards, and not a tank hit. The mud and soft ground which had made the mediums sitting ducks for the German guns were no great hindrance to the lighter M-5s. Two thousand yards, and still not a gap appeared in the charging line. The Germans were firing every weapon they had, and the line was alive with stabbing flashes, but the light tanks seemed to bear charmed lives. Individual Germans began to run to the rear. But every gun in the swiftly advancing line was firing, and they were cut down before they fairly started. Then the company disappeared in the low ground before Waurichen, and mediums and infantry moved forward behind them.

On the objective, the left of C Company overran a strongpoint of artillery and dug-in infantry. The right of the company overran a strongpoint of dug-in antitank guns and infantry at the same time. So rapid had the advance been that the positions were still manned. Without pause, individual tanks altered course, overran the guns, cut down the crews that tried to run, and left the remainder cowering in their holes. Light fire was being received from Waurichen and Beggendorf, but it was ignored, for now heavy caliber fire was being received from a point between Immendorf and Floverich. With undiminished speed, the company continued its headlong charge in that direction. Just east of Waurichen, the company ran into an antitank ditch. All but three of the tanks successfully crossed it. Those three, bogged down in the ditch, were immediately knocked out. But their battle-wise crews, well knowing the fate of a stationary M-5 under that murderous fire, had already abandoned their tanks and later made their





way to safety. These were to be the only light tanks knocked out in the engagement.

Once across the ditch, the company continued with unabated speed. The north-south highway and railroad between Immendorf and Floverich were cut. Here the artillery battery which was delivering the fire received just south of Waurichen was encountered. The guns were destroyed and the crews either killed or wounded, or left for the following force to take prisoners. Then five Mark VI tanks appeared. Knowing their own weaknesses and strength, the lights, rather than seek cover, continued their charge. The German crews vainly tried to track with their manually operated turrets, while the M-5s literally ran circles around them. Round after round of 37mm ammunition bounced off the sides of the heavily armored German tanks, causing little damage other than the discomfort of the crews inside. Outflanked, and in danger of being completely cut off, the Mark VIs retired in confusion. C Company, triumphant, awaited further orders. They had succeeded, brilliantly, where the slower, more powerful attacks had failed. By their skill and courage they had finally broken Hitler's "Westwall," for now they rested in the eastern fringe of the Siegfried Line. The pill-boxes they had bypassed and the guns and infantry they had overrun lay behind them, at the mercy of the remainder of the battalion.

The mediums and the infantry, in the meantime, had come up behind C Company, and now occupied the objective. Mopping up was in progress, and units on

the right and left were coming up on line, pressing the bewildered Germans hard. But C Company was 1,500 yards ahead of this line, surrounded except for a narrow corridor to their rear—their path of advance. The German reaction, once the company had stopped, would not be long in coming. Further advance of the main force was precluded by the immediate necessity of stabilizing the entire line, orders for which had already been issued. Maintenance of its extended position was, therefore, unsound, and C Company was withdrawn to the main line.

Originally, Waurichen was not taken, and fire from that town increased steadily during the night, so that at dawn on the morning of the 7th, a force was sent in which took the town, straightening out the line.

In its attack C Company had destroyed two batteries of artillery, several antitank guns, and numerous smaller arms. It had made possible the capture of several pill-boxes, much matériel, and over 200 prisoners. It had routed a full platoon of vaunted German Mark VI tanks, and had advanced the American line almost 2,500 yards. This it had done with weapons and armor vastly inferior to that of its opponent. The disparity was made up in gallantry, skill, and raw courage. The battalion was later given the Presidential Unit Citation for its part in the Siegfried Line offensive, and no unit more richly deserved it than this company of light tanks, which had proved that a full-dress charge, skillfully executed under the proper conditions, still had its place in the tactics of the United States Army.



Every Cavalryman in the First Cavalry Division thinks of artillery pieces as his own special weapons and he also has a particular place in his heart for the Division Artillery's big prime movers. He has good reason to.

When it became impossible to use trucks in carrying supplies to Cavalry troops fighting in the rugged mountains of Western Leyte the Division Artillery's prime movers were pressed into service. Because of the heavy rain the roads had become impassable for trucks and it was possible only for the artillery tractors to plow through the mud and get the vitally needed supplies to front-line troops.

Forward observers of the artillery battalions became as much a part of the front-line troops as riflemen and they have been accepted as such. They ate, slept and lived with the front-line troops through each action.

During the heavy fighting on Luzon in the Philippines, artillery liaison planes were used time and again to keep Jap artillery silenced. The Japs developed a healthy respect for these little planes and feared them dreadfully. The front-line trooper learned to love the sound of those small planes overhead.

Such cooperation between artillery and front-line units has done much to improve the fighting efficiency of many an army fighting team. Each unit has developed mutual respect for the other and the result has been a winning and successful combat team.

Terrain on Leyte has been said by Brigadier General Rex E. Chandler, former First Cavalry Division Artillery commander, to be: "A Field Artilleryman's nightmare." Yet not once during the entire campaign did bad terrain prevent the field artillery battalions from going into action against the enemy. The troops, which these artillery battalions were supporting, were aware of this and it gave them not only confidence, but it kept their morale at a high level.

It is to the advantage of every unit commander to see that such respect and confidence exists between all the units of his command. It pays off in battle.—Major Hal D. Steward in *"The First Was First."*





# Germany's Armored Infantry

*by Manfred Knayer\**

**Armored units from a German viewpoint are discussed in this article written by a German Graduate Engineer. "Some of the great actions in Russia failed," according to the author, "because the high commanders did not know how to use the armored units assigned to them." This article gives the reader an insight on the German attitude toward Armor.**

**F**IRE power, mobility and protection are three essential qualities in every fight. It was Napoleon I who declared the combat value of an army to be a product of the mass multiplied by the speed.

The speed of the marching foot soldiers is low. It takes two hours to send a reserve battalion waiting six miles behind the first line to come to the front to stop a gap. Many efforts have been made to give more speed to the infantry.

Achill and Hektor fighting in front of Troja used horses and waggons to hurry to the battle-field; the Teutonic adversaries of Julius Caesar assigned a foot-soldier to each horseman, seizing the horse's mane to obtain a faster speed for moving to and during battle. Napoleon I assigned voltigeurs to some cavalry outfits, to jump behind the horsemen to travel short distances in a short time.

Mounted infantry (hunters) were to be found in all greater armies, using their horses not for fighting, but for transportation. Cavalry divisions often had mounted artillery with them and in the Zaristic Armies even mounted engineer outfits existed for some time.

The bicycle gives to man a three times higher speed than by walking and was used especially in less wealthy and more niggardish European armies in complete units with some success.

The invention of the internal combustion engine

combined with the caterpillar track permitted armies to combine speed with protection by armor, besides the railway. Already before World War I, under the auspices of Moltke senior, in the German maneuvers infantry was transported on trucks and trailers, with the low speed of eight mph, but anyhow, it was the beginning. His son was hit by one of the greatest shifts of the Allied side. Paris was saved in the miracle at the Marne by the buses and taxis of Paris and London bringing troops to the points of decision.

The tank, son of the motor and the caterpillar track, became the victor of the formerly single battle-deciding machine gun. In his commencements, he was a failure because of imperfect tactics and construction. Both were improved and he became a great success through independently, cavalry-like fighting when not tied to the creeping infantry. But, similar to the ancient cavalry, he only could conquer a territory but not hold it. It was necessary to give the accompanying infantry higher speed, and protection. The result was the armored infantry, also called the motomechanized infantry.

The first essays also may be found in World War I. Colonel Estienne, the creator of the French armored forces in his first draft of a char d'assaut had provided to attach to each tank a trailer containing a group of infantrymen. The British constructed their Mark IX, an Infantry Carrier, able to carry 50 well-equipped

\*German Graduate Engineer.



men and some machine guns behind the enemy lines. The first effort to take along infantry in tanks, made in the battle near Amiens in August 1918, was a failure but only because of technical imperfectness. Bad ventilation, vibrations and spoiled air made the doughboys unable to fight later when needed.

Between the two World Wars, outfits of motorized infantry appeared in all greater armies. In England, all mounted outfits were converted into motorized ones. In France, bicycle bataillons received the half track "dragons."

Germany did nothing about it. Permitted to have an army of only 100,000 men, she could save the money other countries had to spend for their army budgets. Some ex-officers joined foreign armies as advisers and experts. Many, also of the pensioned majors and colonels, attentively observed the things going on in other countries:

England, the native country of the tank, was inclined to use it as the successor to the cavalry, cultivating the independant fight.

France, considered the tanks as an armored artillery, as a servant of the infantry. Only reluctantly the idea of independant use was introduced in the reglements.

Russia, systematically trying out everything, even developed a threefold system to be used by artillery, air corps and armed forces:

The NPP-groups had to help the infantry fighting in close connection with them.

The DPP-groups had to aid the infantry but in independant fight.

The DD-groups had to act independantly over long distances.

The forced revival of the Prussian militarism in connection with the German solidity and thoroughness, created an army of monstrous power, in which the armored forces were to play a leading part. They even intended to become an independant part of the armed forces, besides Army, Navy and Air Corps.

Principally, the tanks were to fight independantly. To help the infantry was a task of the assault artillery, all-armored self-propelled 3-inch guns.

On the other hand, not only motorized and motor-cycle outfits were created. The tanks, not able to do all kind of work, got their voltigeurs, got an infantry to match them. The Armored grenadiers (Panzergranadiere), as they later were named by Hitler personally, grew a new and efficient branch of service. Together with tanks, armored artillery, engineers and signalmen, they completed the Armored Division.

The vehicles—a light and a medium type of six and nine tons—had a form like coffins. On top, they were open permitting the men to get out quickly and for good observation they had a periscope. Sometimes, screens were arched over the top to protect against hand grenades. The side plates welded together and slanted, about one half inch thick, gave a reliable protection against infantry fire and shrapnels.

The undercarriage was of the half-track type, as it was used also for many other purposes. The non-driven front wheels had shotproof tires. The tracks consisted of rubber plated steel links. The bogies had a large diameter to keep low the number of revolutions and the temperature of the tires to avoid a getting the rubber away from them. In order to place a greater number of bogies to have a low ground pressure, they were hidden one in another. The only trouble was that to exchange a middle bogie, you had to take off the two other wheels too. A motor of about 80 resp 150 Hp permitted a speed up to 35 mph.

The crew of the smaller type was half a group, the medium car transported a complete group, about 12 men.

The standard armament of these vehicles, besides the semi-automatic rifles and submachine guns of the crew, were two machine guns, mostly MG 42, firing nearly 2000 rounds per minute; one mounted in front behind a slanted shield, the other one on a simple post in the rear, able to fire on airplanes. But there was quite an arsenal of weapons to be mounted on these weapon carriers: From the 2 cm (0.8) anti-aircraft machine gun over 3.7 cm (1½ inch) and a 5 cm (2 inch) anti-tank gun up to even a 7.5 cm (3 inch) short cannon, besides the handy 81mm (4 inch) trench mortars and flame throwers.

A small ultra short wave set was placed beside the driver.

These armored trucks, equipped with a medium wave station besides the small set, were used as command cars. They also made themselves useful as ammo carriers and finally they could do good work as an armored ambulance bearing wounded through artillery fire and even from surrounded units through enemy country and partisans to more backwards situated positions.

A late light type German armored car carrying an 81mm (3-inch) trench mortar. Cases for tools and accessory used as additional armor.





Three medium cars each containing one group, and a light car formed a platoon, and three platoons a company, consisting of about 15 armored half-track vehicles. Like the other infantry, three light and one heavy company made out a battalion. The regiment consisted of three battalions, a staff company and a big appendix of supply and maintenance outfits.

The Armored (tank) divisions got assigned armored infantry units and had an approximate structure as follows:

- 1 Reconnaissance outfit
- 2 Tank Regiments
- 1 Armored Inf.-Btl.
- 1 Arm. Artill. Regt.

Engineers, signal, medical, maintenance and supply outfits. The Armored Infantry Division:

- 1 Reconnaissance outfit.
- 1 Tank Regt.
- 2 Armored Inf. Regts.
- 1 Armored or motorized Art. Regt.

Engineers, signal etc. outfits.

There was also a number of independant miscellaneous units existing, for special purposes or remainders of torn units.

The Armored Infantry discerned several manners of fight:

- 1. Collaboration with the tanks.
- 2. Independant fight;

and

a. Fighting from the vehicles

b. Fighting dismounted, like infantry.

To ride sitting or lying on the tanks as often done by the Russian infantry is a peculiar thing. It may be all right as long as there is no enemy interference, but mostly tanks attract fire as a light entices the gnats, to the disadvantage of the unprotected riders. As a rule, also these armored vehicles were used only as a fairly safe means of transportation, and only occasionally as a moving fortress. They used all available cover to hide their movements preferring uneven terrain—they were seldom to be found in the African plains—but the crews never were afraid of getting out. To hold a beachhead or an important place they had to build their

A medium type German armored vehicle mounted with a 3.7cm antitank gun.



dugouts, also under arising antitank fire they had to dismount quickly and the vehicles were to move to the nearest covering place.

The tasks of the armored infantry were various but almost exclusively the attack. Undisturbed by infantry fire and shrapnels, together with the tanks, protected by them and vice versa, they broke the first breach in the enemy lines. They formed the shaft behind the spearhead of the tanks. They conquered territory, combed it out and held it, especially important positions and points. They were a precious, mobile reserve for the higher commanders, able to march 300 miles in one night. Their mobility gave them always a chance of surprise.

The efficiency of this new weapon depended not only on their technical qualities, and on the fanatic struggling of the spartanic educated men and officers always gambling with a high stake. A very important factor was the existence of elaborate reglements and instructions on fight, strategical and tactical use, of these "fast units" and another point was a thorough training and schooling of all members.

Of course these are also disadvantages to be mentioned: Besides the long tail of maintenance and supply outfits there was the absolute necessity of fuel. When advancing too quickly and cut off from the following troops, they had to get their supply from the air, a very expensive thing for the German army was obliged to save Gasoline at any time. In the tank training centers, heating gas in high pressure tanks and even "gas-in-pieces," produced from wood through generators had to be used. The air raids on the motor works and factories caused an increasing decrease of the output of armored vehicles. The losses in battles in retreating, as it had become a custom since Stalingrad, are still higher than in advancing. It is much more difficult to salvage a car broken down and to bring it back when the front is also moving backwards. So the rank: "Armored Grenadier" more and more became a mere name.

As in all Armies, also in the German Army reactionary elements were to be found, of course, not because they intended to weaken the Prussian Militarism. They only were of a mental shortsightedness paired with a good portion of ambition. There was talk in the army that some of those monocle-wearing generals preferred a neat horse tail to a complete armored division. Some of the great actions in Russia failed because the high commanders did not know how to use the armored units assigned to them. In our quickly changing times everybody is doing well to prove to himself whether or not he is attached to old fashioned things as Raeder was to his high cornered collar.

Despite such reactionary movements, the armored grenadiers had an essential part in the German war successes and it will be of good use to study this branch of service. Besides the airborne units it is the most modern and efficient form of infantry.



# What Would You Do?

*by Major Kenneth T. Barnaby, Jr.\**

## SITUATION:

YOU are the commanding officer of the 53rd Cavalry Squadron (Proposed T/O), and have been assisting in the liberation of Bigtown which our forces occupied last night. Bigtown is a large city of 500,000 population located on the west bank of the Riley River. This river is about 200 yards wide and an important communication link in the area. The severe loss of Bigtown to the enemy is emphasized by the fanatical fight he made to hold it in which were employed his crack Elite Troops. You have been attached to the 332nd Infantry Division and ordered to push north about 25 miles as a part of the perimeter defense of the Bigtown area while the Corps completes the clearing of the town and reorganizes for an announced intention of crossing the river at some later date in the near future.

You have under your command your squadron (less Troop C) plus the 3rd platoon of Co A, 5th Heavy Tank Bn. You have given Troop A the left side of your area with axis Bigtown, Foxton, Georgeville, Howtown and north. Troop B axis Bigtown, Abletown, Bakerville, Charlieburg, Dogtown north. Troop B is responsible for Kington. Troop A is responsible for lateral contact with Troop B from Foxton and Georgeville and Howtown. Troops G and F are in reserve near your Command Post at Foxton. Troop E is following Troop B axis, always keeping one battery in position to support both troops.

It is September 29, a nice, cool, clear day.

At 1500 the leading platoon of Troop B is stopped cold at Bridge L by flat trajectory fire, estimated 88-mm, received from behind Woods K. They also receive small-arms and automatic fire from haystacks in field just south of Woods J and K. In retiring to Bakerville, they receive a heavy barrage of large caliber mortar, estimated 120mm.

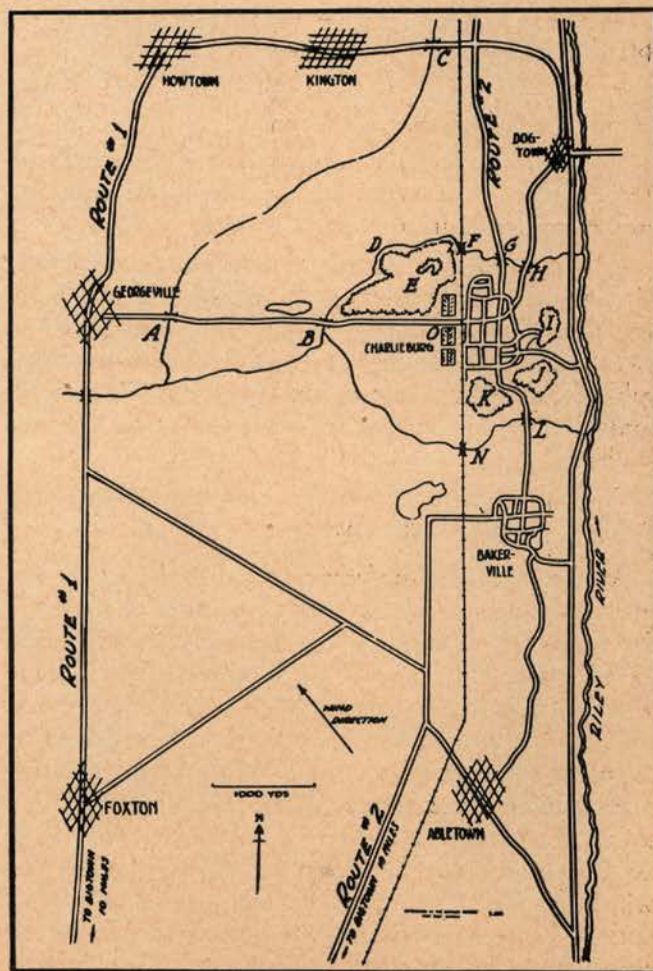
Troop A has met no enemy. Their leading platoon is just south of Howtown which is clear. They send a team to make contact with Troop B from Georgeville. Bridge A and B is reported intact, but considerable small-arms and automatic fire is received from Woods E and three rounds of flat trajectory fire from vicinity of O. There seems to be a large factory of some kind at O with a tall water tower in the middle of it.

Shortly thereafter Troop A reports Howtown is clear but their liaison team sent from Howtown to contact B Troop in Kington (which is clear) did not

meet any elements of Troop B, so pushed-on east to Bridge C. Bridge is blown and as they dismount to look at the bridge they receive machine-gun and rocket fire from crossroad just E of Kington. Team remained in Kington pending your orders.

You report this to division with the additional information that the entire area, Bigtown north, is flat as a pool table. Because the Riley River floods regularly, all roads and railroads are constructed about six feet higher than the adjacent ground level. In addition there is a dike 15 feet high running parallel to the river with a narrow roadway along the top.

The commanding general informs you that from your reports and other sources of information, it appears that the enemy is holding a bridgehead around Dogtown undoubtedly with the idea of attempting a buildup to retake Bigtown. The bridge at Dogtown has been bombed several times but never directly hit



\*Instructor, Ground General School, Fort Riley, Kansas.



and is probably still usable. He desires that you attack and clear Charlieburg tomorrow. He further informs you that he will tentatively attach the following troops in addition to those you already have, in your squadron for the operation.

A Company, 6th Medium Tank Bn.

C Company, 12th Bn, 13th Inf.

156th Armored Field Artillery Bn (105mm How SP).

These tentative attachments, except the FA, will report to your CP not later than 0200. The 156th AFA Bn will report to you not later than 1800 tonight. He desires that you report to his CP at midnight with your plan of attack.

You initiate strong reconnaissance of the Charlieburg area that night.

At midnight you meet the CG with your plan. From your patrols, one of which bagged three prisoners, and from civilians you have gathered the following additional information:

1. Bridge at Dogtown is slightly damaged but still usable.

2. Estimated 400-450 Elite troops in Charlieburg and approximately 100 in Dogtown and east of Kington. Reinforcements are due about 1500 the following day, number unknown.

3. Three or four medium tanks and at least three 88mm SP guns in Charlieburg.

4. One battery each of large mortars and rockets in position just north of Woods I.

5. Haystacks in field south of Woods J and K are decoys, being steel slabs behind which are crouched one enemy with an automatic weapon or rifle.

6. Woods at east are dense but little underbrush. Ground in woods is very soft and not navigable for vehicles. Ground east of Route One and north of Georgeville-Charlieburg road is also marshy, not navigable for vehicles. Ground south very firm. All creeks fordable for men but not for vehicles because of steep banks.

7. Bridges A, B, F, H, L, and north are intact. Bridges C and G are destroyed.

At the midnight conference the CG approves your plan and gives you an air strike consisting of six P-47's for tomorrow available to you between first light and 1100 hours. The Tactical Air Control party and forward Air Controller will report to you by 2100 hours tonight. He also confirms the units you will have to augment your forces as those he outlined in the afternoon. He attempted to get Troop C back for you but failed. The attack is ordered to take place as close to 0600 hours as possible. First light 0537 hours. You will be prepared to hold Charlieburg until relieved at dark 1 October. Division will be responsible for security from RJ/M south.

## REQUIREMENT:

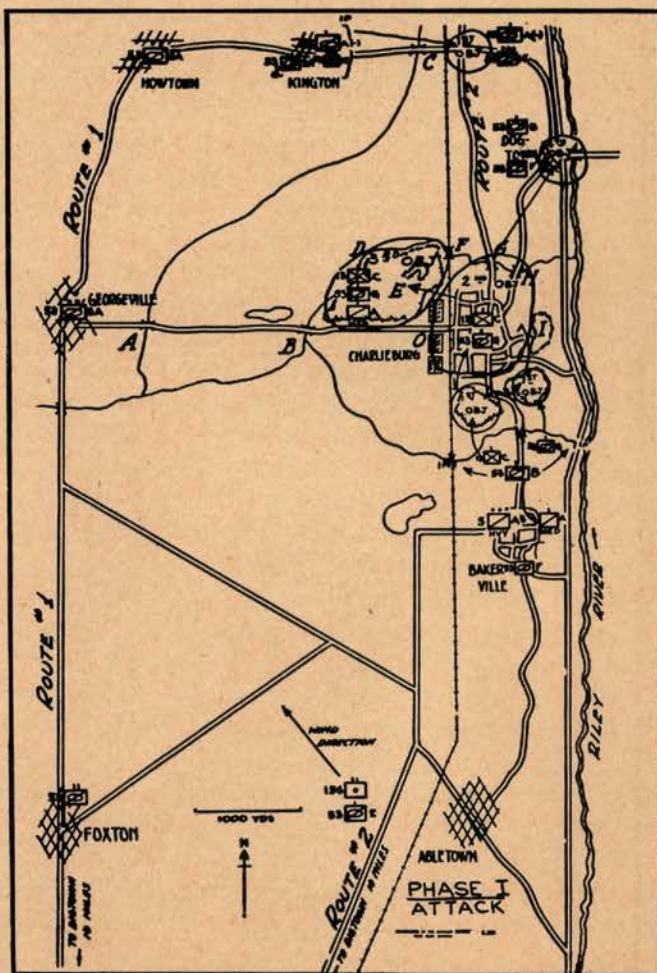
1. What is your plan of attack?
2. Assuming that your attack is successful, what will be your dispositions to hold Charlieburg in the face of enemy reinforcements due to arrive the following day? You will have to hold Charlieburg for at least 24 hours after you take it. You will not be responsible for security south of Bakerville.

## SOLUTION:

### Requirement 1.

#### a. Brief Estimate:

My mission is to take Charlieburg and hold it for a minimum of 24 hours. My attack is to take place at 0600 hours, 30 September. We are faced with a possible enemy reinforcement of his troops in the area by 1500 hours, 30 September. We must occupy and hold Charlieburg and Dogtown and be prepared for an enemy counterattack in force by 1500 hours. It is important to seize the bridge at Dogtown, although enemy reinforcements may arrive from the N rather than the E. If the bridge is secured intact division may elect to authorize a bridgehead defense to the east of Riley River in order to hold the bridge for our own future use. The troops at my disposal are my squadron (less Troop C), one platoon of heavy tanks,





one company of medium tanks, one company infantry, one battalion of artillery (105mm SP) and an air strike by 6 P-47's, available between first light and 1100 hours. First light is 0527.

*b. Plan:*

1. Troop A remain in position Georgeville, Howtown, Kington to provide left flank security.

2. Troop B remain in position in vicinity of Bakerville dismounted to positions on line north through L to Riley River. Route two boundary between units. Inf Co on left with woods K initial objective. Troop G on right with woods J initial objective. Attack at H hour.

3. Medium tank company move up to vicinity of Bakersville during darkness. Support crossings of Troop G and Inf Co by fire and join infantry troops on their first objective by most expeditious means. Crossing sites in order of preference are: Bridge L, bridge N and the dike.

4. Heavy tank platoon takes position in north edge of Bakerville prior to H hour. At H hour their mission is to destroy the camouflaged weapons positions south of Woods K and J and the water tower at O. Upon capture of initial objectives by Troop G and Inf Co, tank platoon will go into reserve.

5. Light tank company move up to vicinity of Bakerville with medium tank company and assist crossings with fire. Light tank company remains temporarily in reserve.

6. Artillery Bn, with Troop E (less 1st platoon) attached, move into position selected by Bn commander from which it can cover entire area under attack. With artillery Bn commander, prepare prearranged concentration plan for preparatory fires and supporting fires.

7. Request air mission rendezvous over Bakerville at H plus one hour and remain on air alert for limit of endurance. Mission to be directed against any target holding up the advance which cannot be economically removed by ground forces.

8. At H-one-half hour artillery preparation will begin. At the same time Troop A, minus one platoon, with a platoon of assault guns attached will launch a dismounted attack from the vicinity of Kington with the objective of taking the CR East of C and misleading the enemy as to the location of the main attack.

9. At H hour the attack from the south will be launched under the immediate command of the squadron executive officer. The attacking forces will reorganize on the initial objective and there be joined by the medium tank company and platoon of heavy tanks. This force after reorganization moves against its second objective, Charlieburg proper, followed by the third objective, the woods area at E.

10. When the second objective is taken and the bridge at H is uncovered Troop B and light tank company will be committed to attack Dogtown and secure the Riley River bridge.

Requirement 2.

1. If bridge over Riley River at Dogtown is taken intact, secure by shallow bridgehead and request permission from division to extend bridgehead to the east. If permission refused withdraw to Dogtown and prepare bridge for demolition.

2. Troop A, with one platoon medium tanks attached, to outpost line; bridge C, Kington, Howtown, Georgeville.

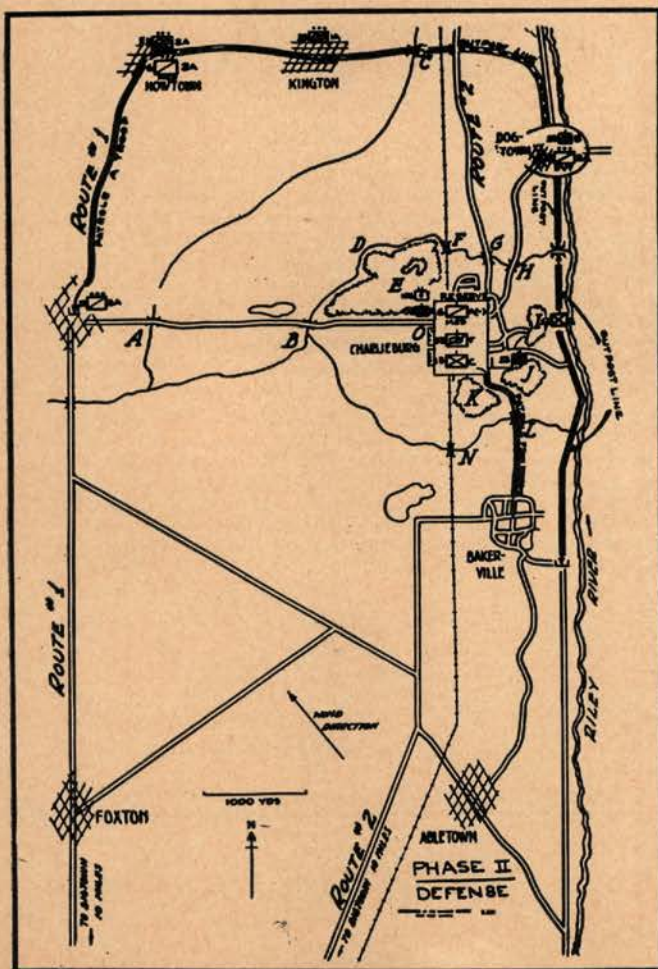
3. Troop B, with platoon heavy tanks attached, to outpost line; bridge in dike east of H. Dogtown, CR east of C, to bridge C.

4. Troop G responsible from bridge in dike east of H along dike to Bakerville with right flank refused through Bakerville.

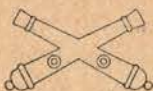
5. Patrols, from reserve, from Georgeville to Bakerville.

6. Squadron reserve in Charlieburg: medium tank co, Light tank company, and attached Inf Co.

7. Artillery Bn and Troop E under control of Artillery Bn CO in Charlieburg.







# OTHER BRANCHES



Lieutenant General R. A. Wheeler

"One hundred and seventy-two years ago this June, at the request of General George Washington, the Continental Congress established a Corps of Engineers as a part of the American Revolutionary Army. In March 1802, the Congress of the United States created the Corps of Engineers as a permanent branch of the United States Army, then being reorganized as a permanent military establishment. Its continuous existence since that date marks it as the oldest professional service of the Army.

As the technical branch of the Army, the Corps of Engineers permeates the whole of the Army in all of its branches perhaps more completely than any other service. To understand this, it is necessary to first understand the organizational set-up of the Corps of Engineers.

A substantial part of the logistical planning activities are carried out in the Office of the Chief of Engineers, but the field execution of these plans is carried out by Engineer troops who are attached to specific Army commands and are under the command of the unit to which they are assigned. For instance, each permanent army installation, such as an Armored Cavalry Post, has an Engineer unit assigned to it. The Engineer officer in command of the unit is under the direct command of the Post Commander and receives his orders from him. He carries out the orders according to the plans and speci-

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fications worked out in the Office of the Chief of Engineers. The same is true of theaters of operations, and even of advanced combat units. Highly trained for specific types of Engineer work, Engineer units are assigned to Army organizations, large and small, to do the specific type of engineering job which needs to be done. Port Battalions construct ports; pipeline units lay pipelines; bridging units build bridges. Consequently, Engineer units are constantly on the move within the Army organization.

As a technical service, created to serve the Army in all of its branches, the Corps of Engineers, and I, as Chief of Engineers, welcome the opportunity extended by the ARMORED CAVALRY JOURNAL's 'Other Branches' department to improve our mutual acquaintanceship with each other. Through this better understanding we can better carry out our mutual missions as individuals and as soldiers."

Lieutenant General, C.E.,  
Chief of Engineers.





# Engineers - Army's Backbone

*by Colonel W. D. Luplow\**

**“Actually, only part of the Army ever comes to grips with the enemy. Most of its energy is devoted to living and moving. Behind each foot of territory taken from the enemy are the months of preparation often forgotten in the more dramatic climaxes of war. The Corps of Engineers does a great part of this preparation.**

THE emergence of the Armored Cavalry as a permanent and extremely effective striking arm of today's Army is tangible evidence that quick, efficient movement is the keynote of successful modern warfare.

Yet the movement of any military force, large or small, is efficient only to the degree that the logistics of that particular movement have been successfully conceived and executed. Consequently, warfare today is essentially a war of logistics—of production, transport and supply, of increasing the combat power of friendly troops by both construction and destruction, and of facilitating the movements of friendly troops while impeding those of the enemy. It is, in short, what General Douglas MacArthur has aptly called, an “Engineer's war.” This is in the sense that, in the final analysis, it is the engineer who must marshal a nation's work power at its greatest and speediest efficiency and place it at the disposal of the military command.

The marshalling of American work power—the providing of design, material, and equipment during World War II to construct war plants, posts, camps, stations, airfields, utilities, pipe lines, storage facilities, docks, roads, bridges, and other essential construction in both this country and wherever over the world our Army needed them, was the primary assignment of the Corps of Engineers. For example, in the United States alone, Army Engineers completed approximately 3,000 command installations, some 300 major industrial projects, and hundreds of miscellaneous industrial facilities—all essential to keeping the Army equipped and able to move. The command installations included 500 camps, 765 airfields, 167 storage depots, and numerous training schools, ports of embarkation, hospitals, and other facilities. Not only did the Engineers build these

installations, but they also continued on the job and maintained them.

Simultaneous with this construction and maintenance assignment in the United States, the Army Engineers built outlying bases on the Azores, Trinidad, Newfoundland, Hawaii, Panama, Bermuda, Brazil, Iceland, and other places. At the same time, Engineer units were attached to every service and command in the theaters of operations overseas.

In light of the above illustrations, it is understandable that the Engineer troops should have reduced their primary mission to the working slogan “Keep the Army Moving.” For, today, it is axiomatic that without the Engineers, infantry cannot move onto foreign beaches, armored forces cannot surmount enemy fortifications or bridge hostile waters, and planes cannot advance beyond their initial base. Behind the tremendous striking force that landed on the Normandy beach lay two years of engineer production at home and building supply lines and fighting bases in Great Britain. In England, the Engineers built all the construction needed—with the exception of Signal Corps installations—to house, equip, and train the world's greatest invasion army. In addition, the Engineers provided the necessary information on tide conditions and on the height of waves through which assault craft would have to pass. They constructed large-scale models and detailed maps of what assault troops would find when they hit the beaches. All military maps in all theaters of operations were prepared, printed, and distributed by the Engineers, often constituting the first modern, up-to-date maps of the area. The quantity of maps consumed by U. S. field armies became no longer measured by pieces, but by tons. Thirty tons were an average daily requirement. For the invasion of France alone, the Engineers

\*Office of the Chief of Engineers.



furnished 116,000,000 military maps.

Perhaps the broad concept of the modern army moving against enemy forces can best be understood by envisioning a spear with a sharp, arrowlike head and a long shaft. To illustrate, the force that landed on the Normandy beaches on June 6, 1944, was a spearhead. Pushing this spearhead was its shaft, reaching back across the Channel to the United Kingdom, and back still further to the production centers in the United States. But before the spearhead finally could be launched at the heart of the Reich, the shaft had to be prepared, the impelling force built up. Thus, the first two years in the European Theater were consumed largely in securing supply lines and converting the United Kingdom into an invasion springboard. Thus, too, it is easy in the dramatic spotlight of combat to lose sight of the huge and complex organization of a modern army.

Actually, only part of the great army ever comes to grips with the enemy. Most of its energy is devoted to living and moving. Behind each foot of territory taken from the enemy, behind each bombing raid over Germany and Japan, are the months of preparation often forgotten in the more dramatic climaxes of war. Two years before the invasion of France, the Engineers began to prepare a fighting base in the United Kingdom. From this base, the air bombardment of Hitler's industrial backbone was launched. From this base, a substantial part of the African invasion was launched. And from this base—the invasion of Europe was launched. First action against Japanese forces and against Western Europe during the two years of invasion preparation was from the air. But even air power is earthbound. It is bound to the airdromes for take-off and landing. Requirements for roads, runways, and hardstandings of the U. S. Army Air Forces airdromes in the European Theater of Operations alone were equivalent to the construction of a 20-foot concrete highway from New York City to Moscow. And there is more to an airport than just runways and hardstandings—there are hangars, shops, operational quarters, fuel storage, billets. That a full year elapsed between the arrival of the first U. S. troops in England and the first 300-bomber raid—19 months before a 1,000-plane raid—may sound long to the uninitiated. The miracle of it is appreciated, however, when it is understood that construction on this island base alone by Engineer troops was equal to a lifetime of work for 15,000 men—eight hours a day, 6 days a week, no time out for training or vacation.

While the base itself was being created as a springboard for launching the armored forces, infantry, artillery, and other services, Engineers had to prepare for the reconstruction of that which would have to be destroyed in Europe. Damage on the Continent would be unprecedented as a result of allied artillery and aircraft which would deliver mighty blows against bridges, marshalling yards, communications centers, and supply depots. What would not suffer from bombardment,

Nazi troops would destroy by demolition. Consequently, to keep the invasion army moving, materials and supplies had to be on hand to make repairs quickly and efficiently. For instance, heavy railway bridging had to be ordered two years in advance so that it could be fabricated and delivered in time for the invasion.

The assignments carried out by the Corps of Engineers in England were repeated on a smaller—but much more widely distributed—scale in the Pacific, China, Burma, and other theaters of operation. In the same manner, the Normandy invasion was a large-scale model of practically all of the small and large invasions of the war. It further illustrates the jobs of Army Engineers in its assignment of keeping armies moving.

On the morning of June 6, 1944, Engineers carrying high explosives stormed the shore from small boats, and under withering artillery and machine-gun fire, blasted gaps through steel obstacles and antitank walls—first ramparts in Hitler's defense of Fortress Europe. Through these gaps poured the infantry and armored troops in unending columns to come to grips with the enemy. The battle for the beachheads, soon to grow into the Battle for France, was begun. Up and down the grim stretch of hostile Normandy coast the traditional Engineer mission of clearing the way for the armies again was being fulfilled.

But getting men on the beach is only part of an invasion problem. Supplying them is the other. The modern army is no dainty nibbler; each day it consumes thousands of tons of ammunition, gasoline, food, clothing, medical supplies, and hundreds of other items, any one of which may spell the difference between victory and defeat.

As assault troops smash inland from the beaches, the Engineer Special Brigades organize the beaches to pick up the task of feeding the men the things they need for battle. Theirs is the job of putting supplies ashore and across open beaches without benefit of port facilities. All veterans of an invasion operation know the scene. A beach has all the activity of a bustling port. Bulldozers chug to cut new roads for movement of supplies in the wake of the advancing armored and ground troops, and to bury enemy fortifications. They do whatever has to be done to ease the movement of men and supplies into the interior. Trucks roll from the beaches in continuous convoys. In the war of logistics—of supply—the Engineer units are under terrific pressure to make victory in the first battle a reality.

It has been said that three things take the beaches in modern global war—air power, fire power, and GI guts. But behind these is yet another power—work power. War is force; the side with greater force can impose its will upon the side with lesser force. American work power is the most overwhelming force in the world today. Delivering this force from home-front production centers such as Detroit, Philadelphia, Birmingham, and Los Angeles along the shaft of the spear to the spearhead were the Engineer units—each trained in



its specific type of job.

Again using the invasion of France as an illustration, U. S. troops raced ashore on the beaches and pushed westward for Cherbourg. This port was a necessary objective because autumn storms in the Channel would prevent continued use of beaches—necessary, too, because invading armies would grow and fan out, making captured port facilities essential in supplying them. Flooded areas, mine fields, road blocks, blown-out bridges which had spanned innumerable streams crisscrossing Normandy, emphasized the Engineer mission of keeping armies moving. Consequently, pointing the spearhead were Engineers who threw tactical bridges across the Taute, Vire, and Douvre Rivers under devastating artillery fire. Bridging was a repetitious job. The enemy knocked them out again and again with massed artillery. And as fast as he knocked them out, Engineer soldiers restored them.

Behind the combat soldier other Engineers keep armies moving, too. They make the shaft of the spear keep pace with the spearhead to make sure no item essential to the fighting man's progress is lacking. To accomplish this gigantic, globe-circling job during World War II, they constructed a chain of ports and anchorages and laid a carpet of airfields around the world. The rate at which the Engineers often were called upon to construct airfields, for example, is well illustrated by the fact that in Belgium and France the IX Engineer Command built 100 fields in 90 days. Often in both Europe and Asia, fields were laid well in advance of the infantry under heavy enemy fire.

There is no way of reckoning the miles of roads constructed for the transportation of men, supplies, and ammunition. Some of the roads, such as the Ledo Road into China, received world-wide acclaim; all of them were important and contributed to our final victory. And roads called for bridges. It has been said the Allies rolled across France and into Germany on a chain of Bailey Bridges laid down in advance of even the armored troops and often under fire.

A sufficient number of miles of railroads was constructed or rehabilitated overseas to link New York City and Tokyo with a double-track line. When time was of the essence, immediately following the St. Lo "break-through" of General Patton's Third Army, five Engineer regiments performed a miracle in railroad construction. These regiments rebuilt 60 miles of railways, five marshalling yards, seven bridges, cleared demolished tunnels, and restored water points—all within two days.

Also keeping pace with General Patton were the pipe-line Engineer troops, who laid from 15 to 50 miles of line a day in France. Other similar units built a supply line into China that many experts said couldn't be done. The oil pumped to and across France, incidentally, wasn't all transported to France by tankers; some was piped across the Channel from England by way of another engineering miracle of the war. A total

of 11,000 miles of pipe line was laid—enough to supply normal consumption for half the United States in peacetime.

The Engineers built and rebuilt great seaports—enough of them to handle more tonnage than New York, Boston, and San Francisco combined. Cherbourg is an example. The Germans left Cherbourg completely ruined and useless, or so they thought. Yet, in a matter of weeks, the Engineers had the port in full operation, and by VE-Day they had it actually handling more tonnage than ever before in its existence.

In the Pacific theater of operations, the Engineers were faced with difficulties vastly different from those found and overcome in Europe. In Europe, the British Isles formed a base from which to mount our invasions. In the long reaches of the Pacific there was nothing except volcanic islands and jungles. The Engineers had to start from scratch. With heavy equipment, they literally tore the jungle tops off the islands and built bases, camps, airfields, and ports. The very tempo of the war against Japan was measured by the speed with which Army Engineers were able to construct the far-flung staging areas and bases for operations. Engineers, who at home built the great secret laboratories, plants, and, in fact, the "city" in which the atom bomb was produced, also built the fields from which rose the plane carrying the bomb to Japan.

Surrender of an enemy country usually decreases the activities of other army service troops. But not for the Engineers. For instance, the end of the war in Europe meant that thousands of troops and their equipment would be immediately shifted to the Pacific. This meant that huge marshalling camps and debarkation installations would have to be provided in a minimum of time. Engineer troops who had been building railroads and bridges did not find their load eased by the peace. They immediately were set to work on a round-the-clock schedule to build such facilities at the seaports.

When peace came to the Pacific, the camps erected by these Engineers found a new and happier use—as debarkation points for troops homeward bound. But as is usually the case, the Engineers—who had been first to land in force in the European Theater, at Iceland—were the last to leave. There was still plenty of work to be done in Europe and Japan. Quarters and the facilities needed by the occupation forces had to be constructed. In areas where American troops would be quartered for any length of time, the rail lines and highways had to be permanently restored for normal usage. Today, Engineer troops are building permanent quarters, hospitals, and other facilities for the occupational troops. In addition they are remaining on the job and maintaining them.

Engineer troops have two sayings that neatly sum up their military mission. They say that the Engineers are the "first in and last out." They also say that "while other troops sweat out an assignment, the Engineers just sweat."



CARDED

# "Classroom Railroading"

*by Jim Lane\**

**Instruction in railroading is conducted at the Army Transportation School with an elaborate and minutely detailed scale model railroad that is complete to the last nut and bolt on her shining miniature locomotives. The model is the property of the Baltimore and Ohio Railroad and is loaned to the School for training purposes.**

A THUNDERING freight pounds down the right of way, riding the outside track, but her speed is no match for the sleek trim Diesel powered streamliner that is rapidly overhauling her. She hammers along to a switch and is quickly cut over to the center track; continuing doggedly ahead with her lading cargo, as the slender passenger train passes like a silver ribbon;—At the next switch point the ponderous freight rumbles back onto the outside track, and the steady forward progress of both freight and passenger train continue without the loss of a moment's headway.

Miles farther along the line another huge freight grinds to a halt. Two red lights in a horizontal position have warned the engineer that the block (or section) of track ahead is not clear. In a brief interval the lights are twin amber beacons at a 45 degree angle, indicating that the next section is clear, but that the one beyond is occupied. The freight starts to move slowly ahead—and swings back into her steady forward pace in response to the two vertical green electrical eyes that indicate "clear ahead."

A class of 50 Transportation Corps officers watch with interest as an instructor explains the various phases of operation—and the old thrill of railroading is combined with valuable education at Fort Eustis' Transportation School—for the entire lesson is conducted with an elab-

orate and minutely detailed scale model railroad that is complete to the last nut and bolt on her shining miniature locomotives.

The model is the property of the Baltimore and Ohio Railroad—loaned to the Transportation School at Fort Eustis, Virginia for training purposes.

Set-up in the large recreation hall, the model occupies a waist high platform that is 46 and a half feet long by 16 feet wide and reproduces the three track operation which is typical of the B & O's Cumberland Division.

Regular classes, 50 students in each, are conducted from 1 until 5 P.M. every day. Each class lasts for an hour, and 200 officers or enlisted men each day are instructed in its operation.

The scale is "0" gauge, or one quarter of an inch to the foot, required more than 1500 electrical connections between the various operating sections and its large control panel box that houses some 74 busily clicking relays. More than eight hours of work are required in its setting up.

The model is unique in that it operates entirely on a central train control system exactly after the fashion of a typical railroad division.

The center track is wired for signal operations in both directions and the entire road divided into blocks—a block being that distance between any two sets of signals, employing a positive train control system that

\*Transportation School, Fort Eustis, Virginia.



makes it impossible for a train to move into the block ahead until it is clear—or to move forward if a switch is set against it.

With this type of control and by "cross-overs," it is possible to conduct operations on three tracks that would normally require four.

The model boasts 170 pieces of rolling stock, including 19 locomotives which represent the latest development in steam types for freight hauls and streamlined Diesels for passenger runs.

Among the Diesels are the famous "Capitol Limited" streamliner that operates between Chicago and Washington; the "Royal Blue," a steam-powered streamliner of the New York-Washington run, and the "Columbian." Fast freights are handled by "Mikados" and "Santa Fe" mallets and virtually every type and variety of car is represented right down to the "Big Hook" for wrecks.

Buildings and structures such as might be found along the right of way are faithfully represented down to the last detail. Terminals, stations, roundhouses, turntables, signal towers, water tanks, coal tipple and a host of others are carefully laid out.

So detailed is the planning of the model, that even the speeds at which the various trains operate, are scaled. The three-track circuit represents nearly a scale mile of road, and a train covering the distance is approx-

imately 44 seconds in traveling at a scale speed equivalent to 75 miles per hour.

The model was brought to the Transportation School through the combined efforts of Colonel Stephen W. Ackerman, School Commandant, Mr. Lawrence W. Sagle of the Baltimore and Ohio's Public Relations Office, and Colonel K. W. Thom of the Transportation Department at Second Army Headquarters in Baltimore, after First Lieutenant Leslie Hesketh, Jr., Chief of the School's Research and Development Branch had initiated inquiries on the possibility of borrowing the exhibit for training purposes.

The entire recreation hall is occupied by the model and the large group of additional kindred items provided by the B & O. On display are such interesting additions as cross sections of various types of rails ranging all the way from the old stone sill and iron strap variety of 1830 to those in use today.

Models of locomotives of former times include a replica of the "Tom Thumb" of 1829 and a grasshopper type of 1836 vintage;—one of the first to have a cab for the engineer and the first to operate in the State of Virginia. The cars it hauls are the replicas of old Imlay coaches built by Davis, Winans & Gartner in Ross Winans' shop in Baltimore by Robert Imlay of Philadelphia—fancy affairs with open sides, upper deck, and fringed tops that must have been a stirring sight in their time, but a far cry from the sleek passenger cars that whiz over the rails today.

The walls of the hall are covered with pictures that sketch the history of American railroading for more than a century—from the "Pioneer" of 1829—first railroad passenger car in America, a quaint looking horse-drawn affair to the ponderous Mallet type locomotives in heavy freight service today.

The entire exhibit is handled by Mr. J. W. Sakers of the B & O's Electrical Department, who did all the original electrical work on the model. He is assisted by Mr. R. Kenneth Henry of the same department, who is responsible for the intricate track layout work.

Colonel Ackerman expressed a high regard for the model's value in the training program, and Major Charles W. Cocke, instructor in the Railway Section of the School's Technical Branch, who conducts the classes, was very much impressed with the student's favorable reaction. He pointed out the clarity with which the model showed such important railroad functions as three rail operation; position-color signal system, yard and terminal operations, locomotive maintenance facilities and centralized train control, in addition to giving a comprehensive picture of a wide variety of modern freight and passenger equipment.

The model created so much interest that groups of high school students from nearby communities have taken advantage of the opportunity to see it in operation, and on Tuesday and Thursday evenings each week the hall was open to the general public from seven until nine o'clock.

Major Harold W. Miner (right), an instructor in the Transportation School's Railway Section at Fort Eustis, Virginia, points out a signal tower, as Colonel Stephen W. Ackerman (center), School Commandant, and Major Howard W. Martens, Chief of the Railway Section, watch the intricate B & O scale-model railroad in action.





# OF THE TROOPS AND FOR THE TROOPS

*by Brigadier General B. M. Bryan\**

**From a total of three battalions and four separate companies in September, 1941, the Corps of Military Police grew in World War II to a peak wartime strength of some 200,000 enlisted men and 8,000 officers. This article by the Provost Marshal General of the U.S. Army discusses the Corps history, accomplishments and plans for the future.**

ON June 19, 1946, the Chief of Staff approved the continuation of the Office of the Provost Marshal General and the Corps of Military Police as a part of the permanent Military Establishment, and announced that at the appropriate time legislation would be submitted to Congress for authority to establish a permanent Corps of Military Police.

What prompted the decision to establish a permanent military police corps? What are the functions of military police, and how do they contribute to the efficient operation of the Army in war and peace? What are the plans of the Corps of Military Police?

These are questions which, I believe, will arise in the minds of all persons interested in the National Defense of our country and in efficient governmental operation, and deserve to be answered.

But before discussing the above questions, let us review briefly the origin and history of provost marshals and military police.

Students of British history have traced the office of

Provost Marshal back to the time of the Norman conquest of England in the eleventh century. In those early days the Provost Marshal was appointed personally by the King to maintain the peace, safeguard the royal interests, and handle disciplinary matters. As time went on, he assumed more and more duties of a disciplinary nature within the Army, until by the sixteenth century he had become a permanent member of the military establishment. He was also provided with assistant provost marshals and government-paid troops which by the time of Henry VIII were referred to as Provost Companies. As early as 1611, a provost marshal was serving in the colony of Virginia, under a Martial Code drawn up by the Deputy Governor.

At the beginning of the Revolutionary War, the American Army adopted with little change the form, titles, and administrative procedures of the British Army. A "Provost Martial," accordingly, was appointed "to the army of the United Colonies" by "His Excellency Genl. Washington" in January of 1776.

Two years later, by Congressional resolution, a Pro-

\*The Provost Marshal General.



vost Corps was established, "to be mounted on horseback, and armed and accoutred as Light Dragoons." At about the same time, General Washington directed the Marechausie Corps, commanded by a Captain Von Heer, to apprehend "Deserters, Marauders, Drunkards, Rioters and Stragglers" and perform various other military police duties.

For nearly eighty years after the Revolution, few references to military law enforcement personnel have been found. But in September of 1862, a Provost Marshal General of the War Department was appointed in the person of Brigadier General James B. Fry. His primary function was generally similar to that of the present Director of Selective Service, that is, the operation of the draft laws, but his subordinates stationed throughout the country performed many functions of a police nature. They were charged with apprehending deserters, arresting disloyal persons, inquiring into and reporting treasonable practices, seizing stolen government property, and detecting spies. To enable them to discharge their duties efficiently, they were "authorized to call on any available military force within their respective districts, or else to employ the assistance of citizens, constables, sheriffs, or police officers. . . ." In addition, an Invalid Corps, later called the Veteran Reserve Corps, was established in 1862 and charged with performing military police duties and maintaining internal security. The disadvantages of using personnel unfit for field service were recognized, but the shortage of manpower was so severe that no other men could be spared for these functions.

By 1866 the Veteran Reserve Corps had been disbanded, the Office of the Provost Marshal General was abolished, and military police work was again being performed by unit commanders. This situation existed until the entry of the United States into World War I.

As troops of the American Expeditionary Forces began to arrive in France in 1917, the necessity for military police supervision and control immediately became apparent. A Provost Marshal General was appointed to General Pershing's staff in July 1917, as advisor on provost marshal and military police matters. After much study and many recommendations, the establishment of a Military Police Corps for the duration of the emergency was finally approved by the War Department on October 15, 1918, only one month before the signing of the Armistice. During the intervening time, military police duties had been performed by all types of units, hastily activated as the necessity arose, without any special supervision or technical training. Personnel performing these duties were rarely required to have special qualifications, but were selected on a basis of availability and physical fitness. Although measures were taken immediately upon the establishment of the Military Police Corps to remedy the serious defects of organization, unsuitability of personnel, lack of training, and absence of approved doctrine, the early end of hostilities and demobilization of the Army precluded

placing many reforms in effect.

In April 1919, Brigadier General Bandholtz, the Provost Marshal General of the AEF, submitted a report to the War Department which enumerated in detail the shortcomings of the Military Police Corps and the Provost Marshal General's Department as it then existed. General Bandholtz's long experience as commander of the Philippine Constabulary made him eminently fitted for evaluating the merits and faults of the organization. The remedy to the existing situation was, in the words of General Bandholtz:

"Maintenance of a specially organized Military Police Corps, in our peace time military establishment, with units that may be actively engaged in Military Police duties, particularly during maneuvers and field training; whose personnel shall be carefully selected and highly trained, having such *Esprit de Corps* and intelligent appreciation of their functions as will enable the individual Military Police to perform his often delicate duties with assurance and certainty, yet without offense or embarrassment. Then in case of war we will have the nucleus to supply instructors for needed expansion, and trained units to be the first troops to report at any training area."

At the request of General Pershing, General Bandholtz also submitted a proposed Act of Congress creating and organizing a Military Police Corps. The bill was never enacted into law, although a Military Police Branch of the Officers' Reserve Corps was set up under the National Defense Act of 1920.

Several studies were conducted by the War Department during the next 20 years, to plan for the organization of a Military Police Corps in the event of another war. Such military police duties as were required in the peacetime Army, both in the United States and in overseas possessions, were performed by the temporary detail of officers and enlisted men from various arms and services, and by a few organized military police units.

The rapid expansion of the Army during the limited emergency of 1940 and 1941 again made obvious the need for a unified and centrally directed military police organization. Major General Allen W. Gullion, The Judge Advocate General, on July 31, 1941 was given the additional task of establishing the Office of the Provost Marshal General and of creating a Corps of Military Police. The newly appointed Provost Marshal General was confronted with the lack of uniformity of military police organization, training, doctrine and procedures. There were scattered throughout the United States and its overseas possessions many groups of soldiers of all branches of the service performing military police functions. These groups were not uniform in size, dress, or appearance. No standards were prescribed for their training. Some of them were on special duty, some on part-time assignment, and some performing full-time military police duty. There was no coordination of activities, no central directing



authority higher than the Corps Area or overseas Department, no permanent organization, and almost no personnel, either commissioned or enlisted, who had received any special training in military police functions and duties. The War Department had no information on the number of organizations, their size or location, by whom they were officered, how they were being trained, or, except for newspaper reports, what they were doing. In short, the Corps of Military Police had to be created from nothing.

To remedy the existing defects and form a homogeneous body of military police, the present Corps of Military Police was established on September 26, 1941 for the duration of the emergency. As a nucleus for further expansion, there were blanketed into the Corps all officers and men performing military police duties on or off military installations, all tactical MP units, and all Zone of Interior military police organizations. Instructions were sent out to all posts, camps, and stations directing that there be submitted to The Adjutant General the names of all officers performing military police duty, and the location and composition, including grades and ratings, of all enlisted men on such duty.

As rapidly as possible a school for the training of officers and selected enlisted men, a replacement training center, and a unit training center were established. The first class of the Provost Marshal General's School consisted of 211 officers, who were hurriedly trained in traffic control, criminal investigation, handling prisoners of war, military law, and military government operations by some of the leading experts (mostly civilians) in the country. Somewhat later an officer candidate school came into existence. From these humble beginnings, the Provost Marshal General's Training Center at Fort Custer expanded until, at the peak of training, some 14,000 students were being instructed simultaneously in military police work.

Tables of organization and equipment were published, and the testing and standardization of specialized military police equipment was undertaken by the Military Police Board. The preparation of badly needed training literature, films, film strips, and graphic training aids was also begun. Source material was limited to a single pamphlet of some 50 pages published in 1937, and meager reports in War Department historical files and the National Archives of military police activities in World War I. Of necessity training doctrine was developed during the war largely by trial and error.

During the past five years a total of 150 Military Police Battalions and more than 900 other military police units were activated. They included military police organizations for tactical units of the ground and air forces, communications zones, and the Zone of Interior; Escort Guard Companies for handling prisoners of war; Prisoner of War Processing Companies; Post, Camp, or Station Military Police Companies; and Criminal Investigation Detachments. Many military

police detachments were also formed from bulk allotments for duties at military installations, patrolling towns and cities, and maintaining order among military personnel on public carriers. From a total of three battalions and four separate companies in September 1941, the Corps of Military Police grew to a peak wartime strength of some 200,000 enlisted men and 8,000 officers.

The primary functions of military police include the preservation of good order and military discipline, the protection of government property, enforcement of military laws and regulations, control of military traffic, custody of prisoners of war, apprehension of absentees, evacuation of refugees, control of stragglers, investigation of crime, prevention of pilferage and looting, and, most important of all, protection of the welfare of millions of fellow-soldiers.

How well the military police accomplished their combat missions has been attested to by private soldiers and top field commanders alike. In Africa, in Europe, and on the islands of the Pacific, MPs hit the beaches with the first waves to set up control points; directed, often under fire, the movement of vitally needed troops and supplies to the front; secured countless command posts and lines of communication against attack; cleaned out snipers in by-passed villages; and, time and again, went into the line to fight beside the Infantry. As American forces moved forward, military police in newly liberated cities and towns held looting to a minimum, broke up black market and currency-exchange rings, and helped soldiers keep out of trouble.

The late Ernie Pyle, who saw their work in more than one overseas theater and knew their qualities both as fighting men and as preservers of order, called the military police "one of the finest groups in the Army." It was Ernie Pyle who said:

"The Military Police haven't got the taint to them that they had in the last war. This time they are a specially picked, highly trained, permanent organization. An MP serves throughout the war as an MP, he is proud of his organization, and he is respected by his fellow-soldiers. . . .

"From the MPs I saw, judging by their demeanor and their conduct, I believe that next to Rangers and Paratroopers they are really the pick of the Army."

Throughout the war, military police in the United States carried on their mission of "Service to the Command" in a way that reflected the caliber of the men and the training they had received. The military policemen who rode the nation's trains and patrolled its streets knew that the test of a good MP was not how many arrests he made, but how few. They knew their job was not to hurt their fellow-soldiers, but to help them; they knew that they were on duty not to make trouble for others, but to prevent trouble before it started, through quick thinking and intelligent, tactful action.

In recognition of their service in safeguarding the welfare of millions of troops in wartime travel—at one



time MPs rode over 60,000 trains per month—the Pullman Company some time ago presented to the Corps of Military Police a plaque expressing its appreciation for the “exemplary record” of MP train patrols. Pullman Company President D. A. Crawford had this to say about these train-riding military policemen:

“They have been a confidant and companion to the traveler, giving aid to the weary, succor to the ill and comfort to the sad of heart. In time of strife, they have tempered military discipline with tact and a keen sense of justice. The standard they have set has been a credit to the Army; it has won the respect of military and civilian travelers alike.”

In this age of specialization, the military policeman must be a specialist, a technician, as must a radio operator, an automotive mechanic, an optical instrument repairman, or an accountant. He must be carefully selected, both as to physical qualifications and temperament, and thoroughly trained in the many phases of modern law enforcement technique. As has long been recognized in civilian police organizations from municipal police departments to the FBI, the Army has found that law enforcement functions can be performed efficiently only by persons who make this field a career. The many details of police techniques, legal procedures, and modern criminology as they apply to the Armed Forces can be learned only by thorough training and experience. By the very nature of his work, the military policeman must function with less supervision than any other soldier, and must daily make decisions normally made by an officer.

Of those incidents which have occurred involving mistreatment or malpractice by military police, the great majority—estimated at some 90%—have been found upon investigation to have been committed by soldiers of other branches who had been placed on temporary military police duty overnight or on week ends, and who were attempting to perform a job without adequate training or experience.

Although some military police functions, such as the handling of prisoners of war, the control of traffic in combat areas, and the control of stragglers, are only exercised in wartime, military police have many important peacetime duties. The preservation of order and good conduct among personnel of the Armed Forces wherever they may be throughout the world, the prevention and investigation of crime, the apprehension of absentees, and the assistance of fellow-soldiers are only some of the contributions of the Corps of Military Police to the efficient administration of the Army. They protect government property on and off military reservations, control civilians entering military reservations and their conduct while on the reservations, operate post guardhouses and stockades, prevent and investigate accidents involving military personnel, protect members of the Armed Forces from violence and excesses, and recover lost, stolen, and abandoned military property. In occupied territory, military police are one

of the principal forces available to the Military Governor in maintaining order and carrying out the policies and regulations of the military government.

Provost marshals of posts, camps, and stations maintain close liaison with the local civil police and make the necessary arrangements for the return to military control of military personnel held for petty offenses. They also supervise the activities of military police in civilian communities adjacent to military reservations.

During the past decade, one of the most important duties of the military police has become that of traffic control. Never before in history has the Army been confronted with the problem of traffic control in such magnitude as today. Never before in peacetime have we moved such masses of men over our highways, and never before, in either war or peace, have we had the fast-moving, motorized tactical organizations which exist today. The solution of the traffic control problem has not yet been found, and it is one of the responsibilities of the military police and the Provost Marshal General to find the answer.

Of primary importance is the provision of a trained and experienced cadre of military police officers and men which may be rapidly expanded in time of national emergency. Just as the chief responsibility of the Ground and Air Forces in peacetime is preparation for possible combat, so the Corps of Military Police must train, plan, and prepare for war.

Constant study is being given to improving the organization, training, doctrine, procedures, and techniques of military police. The experiences of provost marshals and military police in overseas theaters and the Zone of Interior are being carefully studied and evaluated for the purpose of developing a sound and comprehensive military police doctrine. The Military Police School is teaching, and constantly seeking to improve, military police techniques. An Extension Course Department at the School is engaged in instructing officers and enlisted men of the reserve components, so that they may be fitted to carry out their duties efficiently should the need arise. Through the ROTC program, prospective military police officers are instructed in the techniques of military law enforcement work.

The Corps of Military Police is one of the youngest branches of the Army. It is proud—and believes it has a right to be proud—of its record of accomplishment and service, in combat and at home, written on the bloody beachheads of every major invasion and on shell-blasted roads jammed with traffic moving toward every front, and equally in our soldier-packed cities and on the country's war-crowded railroads, during the past five years. However, it realizes that it still has many unsolved problems, and its growing pains will continue for many years to come. But it is facing its problems squarely and devoting its energies to solving them as rapidly as possible. A permanent organization is essential to providing that continuity necessary for steady progress.



# History And Mission Of The Medical Administrative Corps

*by Major Bernard Abel\**

THE mission of the Medical Department in the treatment of the sick and injured and the preservation of the health of the Army entails the performance of numerous duties which do not require the application of professional technical training in medicine, dentistry or veterinary medicine. These duties, such as certain phases of pharmacy, medical supply, personnel management, laboratory investigation, psychiatric social work, clinical psychology, command and training activities, sanitary engineering, optometry, mess management, physical and educational reconditioning, occupational therapy, and others, can be performed adequately by scientific specialists and skilled administrative personnel, thus relieving physicians of administrative details and economizing in the utilization of these skills.

A plan was envisioned, fostered and implemented by The Surgeon General, Major General Norman T. Kirk, and Major General James C. Magee, former Surgeon General, whereby an enormous expansion of this type of personnel was developed, using the Medical Administrative Corps as a medium.

## HISTORY

Reflecting the dissatisfaction with the waste that was incurred during World War I, when doctors were utilized, in addition to their other duties, as accountants and mess officers, the Regular Army Medical Administrative Corps, with a strength of 145, was first established by the Act of June 4, 1920 (49 Stat. 1902) that amended the National Defense Act of June 3, 1916, for the purpose of providing a corps of officers whose primary function was performing medical administrative work.

During World War I, the Sanitary Corps was provided by War Department General Order 80, dated June 30, 1917. Administered by the Sanitary Corps

of that day were the officers who in 1920 formed the initial group of officers appointed to the Medical Administrative Corps.

The Act of 1920 provided that the second lieutenants of the Medical Administrative Corps would be appointed from enlisted men who had served at least two years in the Medical Department. The allowance was one officer for each two thousand men. These officers were eligible for promotion after five years to the grade of first lieutenant and after ten years to the grade of captain. Not more than one-half of the total number could be commissioned in the grades of first lieutenant and captain combined, and captain was the highest grade obtainable.

The year 1921 saw the strength of the Regular Army reduced, and in conformance therewith there was a reduction of Medical Administrative Corps officers to 72. This limited corps of 72 existed for the next two decades.

The Act of June 20, 1936 (49 Stat. 1902) provided that thereafter appointments in the Medical Administrative Corps would be made in the grade of second lieutenant from pharmacists between the ages of 21 and 32 who were graduates of recognized schools or colleges of pharmacy requiring four years of instruction and a B.S. Degree in Pharmacy upon graduation.

In January 1942 it was recommended and in July 1942 it was approved that Section 10 of the National Defense Act be modified to allow MAC officers to be promoted through the grade of colonel.

By the Act of June 12, 1943 (57 Stat. 430), a Pharmacy Corps with an authorized strength of 72 officers was established in the Regular Army, and although the Medical Administrative Corps was not abolished, a provision was made that officers holding commissions in the MAC would be transferred to the Pharmacy Corps, the 58 officers in the MAC being thus transferred. These 58 officers would be carried over and above the ceiling of 72 officers until eliminated through attrition

\*Surgeon General's Office.



by death, retirement or resignation. A tremendous reservoir of Reserve officers of the MAC exists, and even today some two thousand Reserve and AUS officers are on duty.

During the 1930's the MAC was the smallest branch of the Medical Department, and from a humble start of 66 MAC officers on duty in 1940 (including four Reserve officers at the time of the passage of the Selective Service Act), a peak was reached in 1945 of 19,439 officers. At that time it was the third largest of the eight corps in the Medical Department, being exceeded only by the Medical Corps and the Army Nurse Corps. Army-wide there were two MAC officers on duty for approximately every five Medical Corps officers, or almost three MAC officers on duty for every thousand troop strength.

#### PROCUREMENT

The mushroom growth of this very limited Medical Administrative Corps was implemented and procured in the following manner:

1. Civilians possessing special skills were offered direct appointments as MAC officers. These included medical supply specialists procured from industry, lay hospital and office administrators, medical photographers, hospital architects, operators of large restaurants and chain food establishments, physical reconditioning experts, acoustic and rehabilitation officers for the blind and deaf, and clinical psychologists. This procurement was authorized in June 1942 and continued until October 1943.

2. By the direct appointment of noncommissioned and warrant officers with eight or more years service to commissioned ranks. The direct appointment from enlisted men and warrant officers had precedence over the appointment of officers from civilian life.

3. By calling to active duty all officers holding Reserve commissions. (There were 1240 in the MAC Reserve Corps.)

4. By the establishment of two Officer Candidate Schools. In July 1941 100 candidates inaugurated the first Officer Candidate School at Carlisle Barracks, Pennsylvania, and by September of the same year the capacity had been increased to 250 candidates. The second OCS was established at Camp Barkley, Texas in May 1942 and at that time the combined size of the two schools was increased to 1,500 candidates. By October 1942 the capacity was increased to 2,250 and further increased in December 1942 to 3,750. The rapid increase was due to the urgent need of personnel to replace Medical Corps officers in non-professional assignments. Tables of organization were rewritten and published in April 1942 to provide for greater utilization of this expanded corps as a substitution for Medical Corps officers. Procurement was curtailed in early 1943 when one of the two OCS was closed, and by the end of 1943, enrollment had been cut to 98 candidates. However, in May 1944, the school strength was again expanded to

500 candidates and upon the completion of OCS, these officers were further trained in special courses as assistant battalion surgeons, this program continuing until March 1945. Seventeen thousand officers were graduated from OCS.

5. By direct overseas battlefield appointments of enlisted men and warrant officers of the Medical Department.

6. Married men in civilian life who voluntarily enlisted as MAC officer candidates. If selected after three months basic training as an enlisted man, a candidate was commissioned as a second lieutenant after an intensive course of instruction. If the candidate were rejected, he could return to civilian life.

During World War II, MAC officers were utilized in a multitude of diverse assignments with Ground, Service and Air Forces, as well as with the Transportation Corps in ports of embarkation, on hospital trains, and on transport and hospital ships.

#### 1. Medical Supply

One of the broader aspects of the assignments filled by MAC officers was represented by the Medical Supply Service of the Army, Red Cross, International Aid and other agencies. The elevation of the position of Director of Supply Service from the rank of colonel to brigadier general was indicative of the emphasis being placed on the use of MAC officers for this important activity.

Medical Supply is truly big business. During the war the approximate tonnage that constituted one month's transactions in moving medical supplies from manufacturer to depot to ultimate user would fill a freight train 50 miles in length. Two to three thousand MAC officers were connected with the procurement, inspection, shipment, distribution, storage, standardization, negotiation, price analysis, award of contracts, machine records, fiscal accounting, demobilization planning and disposal of (a) drugs, chemicals, and biologicals (b) surgical, dental, and veterinary instruments (c) hospital and laboratory equipment.

A 32 per cent reduction of personnel and a 25 per cent reduction in space requirements was effected in 1944 by using modern ideas and methods of mass production and work measurement; this at a time when stock pile and work load increased twenty per cent. A medical supply officer in an average hospital was responsible for Medical Department property averaging a quarter of a million dollars.

Various strategically located medical depots were dispersed in the Zone of the Interior. A typical medical depot was the Kansas City Medical Depot, which had two major missions: (a) the storage and issue of biologicals (b) the assembly, storage and issue of field chests, kits, instruments, sets of equipment for surgical trucks, dental operating trucks and dental laboratory trucks, not to mention equipment for air base group aid stations, field and evacuation hospitals, and many other



similar assemblies, which varied in weight from a few ounces up to large major assemblies comprising 140 parts, weighing 13,000 pounds, and occupying space equal to one-third of a railroad car.

The old table method of production was replaced by production lines of roller conveyors and power belts. Costly delays were limited by production planning, the use of motion study, time study, process charts, job analysis, and all the other modern tools of production. Ideas and methods were adopted from the airplane, airplane engine, automobile, and drug manufacturing industries.

As an example of the utilization of MAC officers in replacing doctors, medical supply is a splendid example. For instance, in late 1944 during the height of hostilities, only eleven Medical Corps and two Veterinary Corps officers were engaged in medical supply activities in the Zone of Interior. A specially phased program of instruction in medical supply trained hundreds of MAC officers by sending them the first month to Camp Lee, Virginia, the second month to the St. Louis Medical Depot, and the third month in "on the job" training in the various medical depots.

## 2. Hospital Administration

As an indication of the importance of hospital administration, it is significant that various civilian universities have instituted courses in recent years giving degrees in hospital administration and training individuals for these positions. A top administrator and his administrative assistants and department heads in a general, station, convalescent, regional, field, or evacuation hospital can formulate and advise the commanding officer of constructive plans for the progressive development of the hospital.

## 3. Ground Force Units

A new and novel course of instruction known as an "Assistant Battalion Surgeon's School" was established early in 1944 for the purpose of reducing the tables of organization of Medical Corps officers in battalion aid stations of Infantry, Airborne and Armored Divisions from two to one officers, and to conserve and place physicians in jobs of a more specialized professional nature. This substitution of specially trained MAC officers for these front-line jobs was authorized by War Department Circular 99 of 1944. This training was given to over 2000 MAC officers, and resulted in the depletion of a large reserve pool of MAC officers which had been built up in the latter part of 1943. In this manner the battalion surgeon was relieved from routine paper work, and provided with an assistant trained in a background of first aid emergency medical treatment and minor surgery.

Graduates of the Assistant Battalion Surgeon course also served as transport surgeons for periods not exceeding three thousand transport days (that is, 300 troops in 10 days) on smaller boats where it was uneconomical to

use a Medical Corps officer.

The treatment of shock, administration of blood and plasma, early administration of morphine, the splinting of broken limbs, the arresting of hemorrhage, and above all speedy evacuation of the wounded by deft and skillful handling by the assistant battalion surgeon and his well trained enlisted men made him a highly respected member of the incomparable medical team which made it possible for the American G.I. to be the best cared for soldier in the world.

Positions of the S-1, S-2, S-3 and S-4, as well as all other staff assignments in the headquarters of medical battalions and medical groups under divisions, corps and armies were manned by MAC officers. Ambulance companies were commanded and staffed entirely by them. The infantry divisions had an average of forty-two Medical Corps officers and thirty-seven MAC officers.

In the chain of evacuation from the battalion aid stations through the medical collecting companies of the combat command of the armored division and the regiment of the infantry division and the clearing companies of the division were MAC officers who were an integral part of those units. In the field and evacuation hospitals under Army Ground Forces MAC officers performed duties previously described under hospital administration.

Exclusive of the commanding officer and his executive officer, the MAC officer performed all other duties in a medical group headquarters which had under it field hospitals, medical battalions and separate collecting, clearing and ambulance companies. Some medical groups had as many as 2,500 assigned medical personnel and handled as many as 250,000 patients during their war operations.

## 4. Command and Training

In conforming with the War Department policy of conserving Medical Corps officers, teaching positions in Medical Department schools were assigned to MAC officers whenever possible. School secretaries, training aid officers, and instructors of such important subjects as army administration, tactics, intelligence, and physical training were the responsibility of the MAC officer.

In the Medical Replacement Training Centers established in 1941 and early 1942 at Camp Lee, Virginia (transferred in June 1942 to Camp Pickett, Virginia), Camp Grant, Illinois, Camp Barkley, Texas and Camp Joseph T. Robinson, Arkansas, there were approximately five MAC officers to every MC officer. The average MRTTC had approximately 350 MAC officers. It was here that trainees fresh from civilian life were given basic military and Medical Department field and technical training over periods ranging from eight to 17 weeks.

Beginning in April 1942 Officer Candidate Preparatory Schools of four weeks duration were conducted at these centers to provide an opportunity for screening



potential students for enrollment in MAC Officer Candidate Schools.

Over a period of three and one-half years 22,500 enlisted men were selected for further advanced training at Medical Department Enlisted Training Schools. These men specialized in one subject only and upon completion of the course became either medical, surgical, laboratory, dental, X-ray, pharmacy, sanitary or veterinary technicians.

Many a Medical Department officer was given a direct commission without ever having attended an Officer Candidate School. Therefore, a school of orientation in military subjects was given to him by the MAC officer in The Medical Field Service School. Included in the curriculum were such basic military subjects as:

Military courtesy, Map reading, Marches and bivouacs, Tent pitching, Nomenclature and care of equipment, Hasty entrenchment and shelter, Ambulance loading and unloading, Chemical warfare, Organization of the Army, Mass athletics, Close order drill, Safeguarding military information, Field sanitation, and Employment of medical field units.

#### 5. Army Air Forces

Prior to 1942 it was indeed a fortunate station in the Army Air Forces that had MAC officers assigned to it. The policy of the AAF was to assign MAC officers to their hospitals as they became available in the amounts of four to the smaller hospitals, and up to 20 in the larger ones. Air evacuation played an important part in the treatment of patients and many MAC officers were closely associated with this program.

Approximately 20 per cent of all sick and wounded military patients were returned from overseas to the Zone of Interior by air. This rapid transportation of wounded from the front to the United States measurably reduced the numbers of medical installations required overseas with an attendant reduction of medical specialists. The rapid flow of great numbers of airborne patients necessitated the establishing of holding stations en route and debarkation hospitals at continental United States terminal points. Administrative regulation of this flow was almost exclusively a function performed by the Medical Administrative Corps, utilizing Medical Corps officers as medical consultants.

The Surgeon General's convalescent program for patients is typified by the program developed by the AAF for the more rapid and complete recovery of patients. Physical exercises and educational activity were started while the patient was still in bed and broadened as he recovered. This resulted in savings of thousands of man-hours and materially lightened the heavy burden under which the Army Air Forces hospital staffs operated. Bed patients received two to three hours of physical education training per day while ambulatory patients received from three to six hours daily. Two million five hundred thousand man-hours a month were taught in physical and educational recon-

ditioning in the AAF alone, which shortened the period of hospitalization of soldier patients and reduced the chances of readmission.

Study of geography, geopolitics, foreign languages, tropical diseases, mathematics and skilled trades such as radio, airplane and engine mechanics, wood and metal work and allied subjects were taught. Close order drill, games and other outdoor activities, including victory gardens, also had a place in the routine.

#### 6. Higher Headquarters

The Medical Administrative Corps officer was also the administrative assistant to the surgeons of such higher headquarters as corps, army, theater and department. In The Surgeon General's Office of the War Department, in addition to general administrative matters, finance, statistics, hospital construction, personnel, supply, training and other activities were participated in by MAC officers.

Typical examples of highly specialized MAC officers were the clinical psychologists and psychiatric social workers who aided the psychiatrists in rejecting 1,850,000 draftees for mental disorders (twelve per cent of all examined). They also assisted the psychiatrists in treating one million psychiatric cases admitted to Army hospitals during the war.

Today there are but two to three thousand MAC officers left on duty, most of the others having returned to normal civilian occupations. However, many, because of their specialized Army training, were experienced enough to step right into corresponding jobs in the Veterans Administration Medical Facilities which have expanded so tremendously since V-J Day and will continue to serve the veterans for scores of years to come.

By the implementation of this enormous program of endeavor to relieve the doctor of as many non-professional duties as possible, thousands of already overburdened physicians were retained in their respective communities to maintain the high standards of medical care that existed in peacetime.

As an example of the economy measures utilized in the conservation of professional medical skills, it is interesting to note that during World War I when there was no Medical Administrative Corps, seven and one-half doctors were used for every thousand troops in the field, whereas in World War II five and one-half doctors were utilized per thousand troops. This saving can be attributed to the activities and development of the MAC at a time when operations were on a world-wide basis from tropics to arctic, during all types of weather and climate, under the most difficult field conditions, among primitive as well as highly developed civilizations. Every conceivable type of battle wound was encountered. A record number of troops were cared for. Nine million three hundred and seventy-three soldiers were treated in Army hospitals from January 1942 to December 1945.



# Air Force Engineering Practices In The Postwar Army

*by Major Ralph Pastor\**

WHEN on May 14, 1946, the now historic circular 138 gave the Army Air Forces its long sought semi-autonomy, new responsibilities and duties fell to its lot. Of these new tasks, the job of caring for its own bases and installations was by far the most demanding; it was to be handled by the engineers within the Air Forces, the Air Installations Division.

Thus inheriting this phase of the work of the Service Commands, the Air Installations Division began a period of expansion. This occurrence, when a general all-around reduction was occurring in the size and strength of the Armed Services, was essentially an aftermath of the late conflict.

The best understanding of the work of the Air Installations Division can be obtained from an examination of the growth of the Army Air Forces, and the problems engendered by this mushrooming.

## EARLY DAYS AND EXPANSION

The dark and dour New Year that greeted 1942, when headlines screamed reverses and setbacks, forecast a grim future unless Herculean efforts by the Armed Forces were coupled with increased industrial output to build for the United States an unprecedented war machine.

As a part of this picture, the growth of the Army Air Forces was a related phenomenon. Elsewhere have been recounted the airfields which were constructed on Pacific isles within the echoes of snipers' bullets; how the Aviation Engineers spearheaded the AAF's progress from Hawaii and Australia toward the Japanese Empire; the transformation of the British Isles into one vast aircraft carrier; the work in Africa, and then as the tides of war changed, on the European continent.

These fields that the aviation Engineers built were not only for bombers and fighters, but also for the needs of a unique organization which had made strategic air transport a byword of logistical planners: the Air Transport Command. Established in May, 1941, as the Air Corps Ferrying Command, it had grown to span the globe. For its North Atlantic route, it used bases in Labrador, Greenland and Iceland. South Atlantic flights went from Florida to the bulge of Brazil and thence across the Atlantic either non-stop to Dakar or, by way of Ascension Island, to Roberts Field or Accra in Africa. These fields were the points of entry into

Africa for this traffic which from Liberia, for example, continued northerly to North Africa or Europe.

Westward, Air Transport Command flew from Hamilton and March Fields in California to Hawaii, to Christmas or Canton Islands, New Caledonia, and Australia. Later, as the Jap retreated to his homeland, a direct route was followed to the land of Nippon via Johnston, Kwajalein, Guam, Saipan and the Philippines.

Global wise, Air Transport Command was the air supplier to the doughboy and the aircrewman. To Alaska, India, China: to every spot where the American soldier fought, ATC brought men and matériel of war, and flying its air evacuation mercy missions, carried the wounded to quick and prompt care.

Many of the bases that ATC used for its world girdling activities were taken over close on the heels of the retreating enemy. Hardly had Rommel been driven out of Africa, when ATC planes were at what later became John H. Payne Field in Cairo, Egypt. When fields such as this reverted to air transport activities, it was the engineers who made the alterations incidental to the changed needs. Terminals were enlarged, messing and billeting facilities expanded, and, so far as feasible, it was attempted to approach commercial airline standards. Of course, some bases served dually for both tactical and transport work.

Other ATC bases were constructed by the engineers specifically for its own activities. In Labrador, Greenland and Iceland; in Brazil, and at Ascension Island; in Hawaii and in Australia, ATC laid down its requirements.

As a result of this intensive airfield utilization, ATC's scheduled routes at its peak extended more than 150,000 miles. Its aircraft numbered 3,705. By the close of hostilities it had transported over 4,000,000 persons more than eight and one-half billion passenger miles.

## MAINTENANCE RESPONSIBILITY

Today, at its installations within the Continental limits of the United States, the Air Installations Division of Air Transport Command has the task of maintaining these wartime-expanded facilities which, while by no means as extensive as at the height of hostilities, still far exceed our prewar military establishment. Although in this country some ATC Air Installations responsibilities are similar to those shared by the other AAF

\*Air Installations Division, The Air Transport Command.



Commands, ATC with its greater wealth of global-wise air base operating experience, was selected to tend also to the housekeeping of the War Department's many so-called offshore installations. Especially in this interim period, when the national defense requirements of the United States have not as yet been definitely evolved, it is important that we do not neglect these expensive and, in many cases, irreplaceable facilities at our out-of-the-country installations.

#### "SPARTAN" LEVEL MAINTAINED

Practicing the "Spartan System" of maintenance, a policy formulated by the War Department as that most compatible with economy and proper upkeep, ATC's Air Installations Division will have an even greater job when our occupation of Germany and Japan ends. Then it may receive the bases and posts and camps which are now the responsibilities of the Theater Commanders.

Carefully set forth in a 14-page regulation issued in September 1946 is the exact type of maintenance that Air Installations Division is to perform at the War Department's various class three installations. (Class three installations include air bases, airfields, arsenals, camps, posts, stations, depots, forts, and hospitals, as well as proving grounds and other AAF assigned establishments. Specifically omitted are aircraft assembly plants, modification centers and other AAF industrial installations not under AAF's jurisdiction.)

Constantly ravaged by wind, rain and the elements, these installations even if entirely unused need continual attention. Additionally, a certain amount of new work must be accomplished for oftentimes damage by the elements precludes any repairs. Then, too, the occasion may arise when certain conversion of facilities is desired, either temporarily or on a permanent basis.

The day by day activities; water supply, with its attendant pumping and purification systems; various additions or extensions to the supply systems; gas, electricity, steam and fuel; all are the concern of Air Installations Division.

More mundane are its heating responsibilities, where close supervision is maintained over all the heating plants of installations; then, too, AID tends to the refrigeration work, from the manufacturing of ice to the keeping up of the lowly water cooler. AID's concern with sewage systems, its attention to the fire prevention systems, and its operation of effective insect and vermin control programs are still more of its routine functions.

In winter, AID sees to the removal of snow from runways, and other vital places of installations; summer, it looks after swimming pools. Bridges, fences, surfaced roads and of course the all important runways and hardstands, are also cared for by Air Installations Division.

On the drill field or the parade ground the seeding and drainage, as well as various anti-erosion details, are

another responsibility of AID.

At those installations where men undergo active training, Air Installations Division looks after the various training aids used; target ranges, bayonet courses, obstacle courses, shooting galleries and the host of details that are connected with such activities are all its concern.

AID also has an elaborate cost accounting system by which the exact cost of every repair or addition made to a post, camp or station is immediately ascertainable. A strict budgeting to justify the expenditure of appropriated funds by AID is a task no less important than the accounting for all the matériel and supplies which go into this gigantic repairs and utilities program.

Economy minded Air Installations Division is well aware that preventive maintenance is often difficult to justify except in long-range planning. Consequently it stresses the surplus value of installations; AID preventive maintenance is a prime means of staving off the depreciation which can so invidiously eat away real property values.

At the Greenland Base Command, in addition to the main post, ATC's Air Installations Division watches over the structures and components of many satellites comprising, in the main, weather and radio stations, with an average of five men staffing each installation. At the Newfoundland Base Command and at the Bermuda Base Command numerous subsidiaries have AID's maintenance service. With the exception of AACS personnel, Lagens, in the Azores, is another R&U responsibility of ATC Air Installations Division. Airfields, and posts at the Iceland Base Command owe their upkeep to ATC's AID, while at Ascension Island and the Bahamas, installations are also maintained by this organization.

#### AID EFFICIENCY

Under the Assistant Chief of Staff for Supply and Services, Air Installations Division in Air Transport Command shares parity with the general and air supply division. With four branches: utilization, assignment and real estate; construction, maintenance and utilities; management and service; and fire prevention; general supervision is exercised over and advice rendered to the field.

The utilization, assignment and real estate branch, as its name indicates, supervises all transactions involving the real property of installations under ATC's jurisdiction. Here are made all preliminary arrangements with other commands for their joint use with ATC of certain installations, as well as the initiating and coordinating of landing rights at ATC bases by commercial carriers, and other governmental agencies. Its day by day work makes it one of the best informed AID branches on the status of ATC installations within the continental limits of the United States, and when the occasion arises, it is thus able to advise AAF or other authorized agencies on their status. It functions as



well in an advisory capacity to the Chief of Engineers on real property of ATC. Through this branch, too, pass all reports to the Chief of Engineers on the real property of overseas installations.

The structures sections of this branch deals mainly with the supervision of the construction of new buildings and similar projects. This section prepares all preliminary budget estimates for construction of new buildings and structures, and actively collaborates with Headquarters, Army Air Forces, in the maintenance, alteration, extension and repair of their buildings. Personnel of this section make periodic visits to installations, checking the soundness of the various repairs and utilities projects. Here in this section are formulated architectural standards for the permanent type building peculiar to ATC's operation requirements; paralleling this work are the continuous studies undertaken to secure data on the economical and efficient conversion of existing ATC building for other essential purposes.

Analyzing the various requirements for proper operation of airfield runways, which involves such diverse needs as clearance projects to provide the proper 40 to one landing glide of aircraft, as well as proper runway drainage and erosion prevention, the grounds section of this branch passes upon all requests from various ATC agencies for maintenance, alterations, additions, or extensions to ground facilities. Definite policies on the maintenance approach to grounds work, including budget estimates and field survey work, are a further function of this branch.

Two units, the runways and roads unit and the drainage unit, subordinate to the grounds section, supervise maintenance in their particular specialties, the former concerned with all paved properties, while the latter attends to the proper drainage of installations.

Maintained by the installations data section is a central agency which handles records concerning all physical installations and their use. These records cover airfields, landing strips and radio ranges, as well as grounds and buildings with which the Air Transport Command is concerned both in this country and abroad.

In the utilities section of this branch, five functional units supervise the all embracing nature of this section's work, which is primarily concerned, as its name indicates, with utilities.

The first of these subsections, the electrical unit, maintains at installations (where AID functions under the Air Transport Command) the upkeep of generating plants, substations, power transmission systems, and the allied equipment fed by these electrical distributing means; street and airfield lighting, radio rangefinders, radio beacons, radar storm warning systems, as well as radio transmission and receiving systems. It formulates, too, broad programs designed to attain the maximum in efficiency and economy at these various stations, and is the advisor to the Air Installations Division officer on matters pertaining to its specialty.

The heating, ventilations and refrigeration unit, also

under this branch, is the supervising authority on the operation, maintenance, rehabilitation and general upkeep of these services which are so essential to the comfort and health of personnel at installations; the heating and ventilating systems. Additionally, comprehensive programs aiming at the most efficient and economical operation of such systems are constantly being formulated by this unit. Supervised, too, are the compilation of engineering reports and the subsequent preparation of graphic analyses.

Still another unit of this section is concerned with water supply, and the disposal of waste, while the insect and rodent control unit supervises the work in the field for the control of those pests which, unchecked, can cause so much property damage. The last unit of the utilities section, but not the least in importance, the shops and maintenance service unit, is the supervising authority for all the equipment used in the kitchens of installations; this unit functions to keep them in operating condition.

The management and services branch, which directs four sections, is also responsible for the training of command personnel in the technical aspects of repairs and utilities operations.

The first of these sections, the cost and property accounting section, directs field inspections and serves as consultant and advisor to other administrative activities on cost and property accounting problems.

In the policy and procedures section all war department and AAF publications pertaining to construction, repairs and utilities activities are reviewed for interpretation and dissemination to all sections of the Air Installations Divisions, sub-Commands, and ATC Installations. Here, too, are prepared studies devising new policies and procedures, as circumstances may require.

Prepared by the budget and statistics section is the financial program which Air Installations must follow in its maintenance, repair and utilities operations. Full coordination is also entered into with other activities on matters pertaining to budgetary functions, as well as the preparation of charts, graphs and tables to illustrate the results of statistical studies which it has undertaken.

The requirements and equipment section, fourth operating section of the management and services branch, carefully watches the matériel needs of AID, planning, initiating and presenting to higher authority tables of allowances, organization, and equipment for units or installations, under ATC's jurisdiction.

The fire prevention branch exercises supervision over the development and application of War Department and Air Transport Command fire prevention and protection, standards to real property, matériel, processes and personnel at ATC installations.

Attacking the problem from the standpoint of engineering, management, fire prevention and real estate controls, Air Installations Division functions to assist the individual installations, the total Air Transport Command mission, and the American taxpayer.



# AGF Intelligence Training

*by Captain Donald B. Crowl\**

**The first school of its kind ever established within Army Ground Forces, the reason for the Intelligence Instruction Division at The Ground General School stemmed from the combat experiences of World War II, which revealed that few officers and men were trained to assume the responsibilities of intelligence activities.**

**W**HEN The Ground General School Center was established at Fort Riley, Kansas, on November 1, 1946, several functions already in existence at that post were absorbed by the Army Ground Forces newest and most comprehensive school. These functions included certain courses formerly taught by The Cavalry School and the intelligence courses for officers and enlisted men offered at the Intelligence School. The retained courses fill an important niche in The Ground General School, which has, as a part of its mission, the "rounding-out" education of newly commissioned officers and the training of officer candidates in the Army Officers Candidate Course.

Briefly stated, it was felt that newly commissioned officers should receive a general military education and background of all branches within Army Ground Forces prior to attendance at branch material schools or branch assignments. The Army Officer Candidate Course will qualify or reject all of the ground force officer candidates for the entire Army. The course will be branch immaterial; the candidates who successfully complete the course will receive basic branch training at the respective branch schools.

## INTELLIGENCE INSTRUCTION DIVISION

With activation of The Ground General School, the Intelligence School became the Intelligence Instruction Division. The first school of its kind ever established within Army Ground Forces, the reason for the Intelligence Instruction Division stemmed from the combat experiences of World War II, which revealed that few officers or men were trained to assume the responsibilities of intelligence activities necessary to waging modern war successfully.

During the war, the War Department had established the Military Intelligence Training Center at Camp Ritchie, Maryland, where a large number of technical experts and specialists were trained. After

cessation of hostilities this center was closed. Realizing, however, that the Army must not be caught short again in any bracket of the military specialties that go to make up an effective fighting force, the Commanding General of Army Ground Forces, in October, 1945, directed that an intelligence school be activated at Fort Benning, Georgia. Accordingly, a handful of instructors who had been at MITC moved to Fort Benning and began preparation for such a school. In November the location of the school was changed to Fort Riley, Kansas, and there was established as the Intelligence School under the Commandant, The Cavalry School. On November 1, 1946, the Intelligence School became the Intelligence Instruction Division, one of the two academic divisions of The Ground General School.

## MISSION

The broad mission of the Intelligence Instruction Division is to train officers for duty as G-2's and S-2's of divisions and smaller units and to train enlisted men in the special techniques of aerial photo interpretation, order of battle and interrogation of prisoners of war. To carry out this mission, the Intelligence Instruction Division is divided into three departments, namely, the Department of General Intelligence, the Department of Aerial Reconnaissance, and the Department of Order of Battle and Interrogation.

In addition to the foregoing, the Intelligence Instruction Division will teach all courses of intelligence in the Army Officers Candidate Course and Basic Course, as well as aerial photo interpretation and map reading.

*Department of General Intelligence.* The Department of General Intelligence teaches the major portion of the class hours allotted to the Officers Intelligence Course. In this department are found combat experienced officers representing intelligence backgrounds of most of the ground arms. Lessons prepared by any one instructor are the subject of scrutiny by men with knowledge of the lesson's application to any type of

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field unit. One major contribution of this pooling of skills has been an increasing uniformity in procedures and techniques which are being taught to students. There has been increasing emphasis, growing from the discussions developed in this group, of the common purposes and generally similar intelligence practices of all arms and services.

*Intelligence Section.* The section which works with the widest variety of material is the Intelligence Section of the Department of General Intelligence. The section is divided into three instructor committees, described by the major branch of intelligence activities in which they specialize. The committees are Infantry-Armored-Airborne Intelligence Committee, Artillery Intelligence Committee, and Technical Intelligence Committee.

*Infantry-Armored-Airborne Intelligence Committee.* This committee teaches subjects of general intelligence common to these branches. Conferences and exercises are based on intelligence planning for infantry, armored, and airborne units from battalion to division levels. A great number of hours is allotted to the study of, and practical work in, the organization, function, and operation of G-2 and S-2 staff sections. Intelligence procedures dealing with summaries, estimates, reports, and annexes are covered thoroughly.

*Artillery Intelligence Committee.* This committee, which is composed of artillery officers, teaches subjects which include duties of the field artillery S-2 from battalion to corps artillery levels. Artillery observation and counter-mortar methods and equipment are demonstrated by firing exercises in which techniques of counter-mortar and use of radar are demonstrated. Advanced artillery intelligence is taught to those student officers whose branch is Artillery or Coast Artillery, which includes detailed practical exercises in the artillery intelligence team and counter-battery intelligence team.

*Technical Intelligence Committee.* The Technical Intelligence Committee is concerned with teaching various types of intelligence peculiar to the Corps of Engineers, Ordnance, Medical Corps and Signal Corps.

*Counterintelligence Section.* The broad purpose of this section is to enumerate and clarify the various measures that may be adopted to destroy the effectiveness of the enemy intelligence system and the prevention of sabotage and subversion. This section is composed of three committees, namely Covert Intelligence Committee, Security Committee and Psychological Warfare Committee.

The Covert and Security Committees deal with negative and positive measures of intelligence, and instruction covers all measures available to the commander up to and including Army level. A discussion of all special intelligence agencies, such as Office of Strategic Services, Counter Intelligence Corps, Informants, Signal Intelligence Service, Cryptography, Radio Intelligence Service, including signal information and

monitoring (SIAM), and all other counterintelligence agencies are covered. During the course students have practical instruction in all phases of counterintelligence, including organization and functions of all counterintelligence agencies, preparation of counterintelligence plans, security planning before and during operations, co-ordination, co-operation and liaison necessary with all general and special staff sections, and security checks and surveys in safeguarding military information.

The Psychological Warfare Committee informs the students of the capabilities and limitations of psychological warfare with special considerations to tactical application. The students are taught that success depends to a great extent on close co-operation between G-2, S-2, and the tactical psychological warfare unit. Historical examples are used throughout the course to illustrate the role of the intelligence officer. The importance of domestic intelligence is recognized and is receiving much emphasis in the curriculum.

*Department of Aerial Reconnaissance.* The broad mission of this department is to train students of all ground arms in basic map reading, techniques of photo interpretation and the use of specialized equipment, and the function of G-2 (air). The department reviews all new developments and trends relative to this field.

To facilitate instruction, the department is divided into two sections, namely the Photo Interpretation Section and Air Intelligence Section.

*Photo Interpretation Section.* In order to become proficient in aerial photo interpretation, students are first thoroughly trained in basic map reading with particular reference to the characteristics, similarities and differences of domestic and foreign military maps. Field problems in logical contouring, sketching and cross-country movement follow classroom instruction. The organization of the Army is studied, with particular emphasis on the relationship of personnel trained in photo interpretation to the intelligence staff sections.

The student receives instruction, which is mostly practical work, in recognizing, identifying, and classifying commonplace objects of a military nature, and in distinguishing between air views of natural and artificial cover and concealment. From here the student progresses to exercises in identifying vegetation, soil types, and land forms for preparation of "going" and trafficability reports and in determining the suitability of terrain for military operations.

The students design and construct terrain models for use in military operations. The materials used are obtained as far as possible from field sources. The resulting models are used in instruction of subsequent classes. It should be recognized that graduates are not full-fledged or experienced photo interpreters, but that they are versed in photo interpretation techniques and in use of specialized equipment, such as stereoscopes, height finders, and sketch masters. When the student returns to his parent organization, application of this



knowledge to tactical situations which will arise during training will develop these skills until the man is an experienced photo interpreter.

*Air Intelligence Section.* High performance aircraft became an important tool of ground intelligence officers in World War II. The Air Intelligence Section instructs students in the techniques of air reconnaissance, both visual and photographic, developing student skill in combining the efforts of air force personnel with the work of ground intelligence agencies. Instruction in all intelligence subjects stresses the facilities of the air arms which are available to other fighting units.

*Department of Order of Battle and Interrogators of Prisoners of War.* The Department of Order of Battle and Interrogators of Prisoners of War trains enlisted men in the techniques of order of battle and interrogation of prisoners of war. The exploitation of enemy documents and of information gleaned from the enemy by interrogators is stressed. A major activity of the department has been development of a mythical enemy for use in training. Manuals on order of battle, equipment, etc., of this mythical foe are being prepared for use in intelligence instruction in AGF schools and for development of a maneuver enemy with organization and characteristics different from our own. The goal is to inject realism into training and to do away with the obsolete order of battle books based on the now nonexistent Japanese and German armies.

The department is divided into an Order of Battle Section and an Interrogation of Prisoners of War Section.

*Order of Battle Section.* Order of battle is a system for bringing together the minute fragments of information to form a complete picture of the size, location, arms, equipment, movement, supply, and such intangible factors as the morale and physical condition of the enemy. Captured enemy documents and prisoners of war are principal sources of order of battle information. With proper evaluation and collation of captured information by highly trained order of battle specialists, the intelligence officer can more readily estimate the enemy capabilities which will affect the commander's plans and decisions.

The student is acquainted with the duties and function of order of battle personnel at tactical and strategic levels. He then is grounded in the military "language," that is, the symbols, abbreviations, and logistics of our late enemies, together with a study of the characteristics of the general staffs, types of divisions, uniforms, insignia, and weapons. The geography of the principal theaters of operations and the major campaigns of the war are studied, and problems are solved by the student based on actual campaigns. A great deal of time is devoted to the evaluation and interpretation of enemy documents and the information obtained from prisoners of war and native civilians.

*Interrogation of Prisoners of War Section.* This section prepares students to understand the nature of cap-

tured soldiers and the techniques that are effective in obtaining willing co-operation from them.

As in all courses taught in the division, the organization of the Interrogation of Prisoners of War Team, its equipment, and its place in intelligence staff sections are studied. The student receives a course in the historical backgrounds of Germany and Japan and of the events leading up to World War II. The psychology of surrender, the fundamentals of methods of interrogation, and the exploitation of such factors as shock, fatigue, and state of morale are covered thoroughly with a view towards instilling basic factors pertinent to successful interrogation. The mechanics of evacuation of prisoners and the description, classification, and evaluation of captured documents taken from prisoners are taught. The student is also shown how the G-2 collection agencies work and how close liaison and co-operation increase the over-all efficiency of the Interrogation of Prisoners of War Team. Last but by no means least, the student also learns how to write his report so that it can be understood and digested easily.

#### OPERATION HUSKY

The wind-up of the course is a command post exercise which takes in all students from all departments and allows them to utilize the knowledge and techniques gained during the weeks of study. The exercise is called Operation Husky, a problem based on the Allied amphibious landings on Sicily. The historical action is followed to the fullest practicable extent, with students solving the same problems required of the intelligence sections and teams of the units which participated in the actual operation. Student officers are assigned as G-2's and S-3's, and enlisted students in the Department of Order of Battle and Interrogation and Department of Aerial Reconnaissance act as Order of Battle teams, Interrogation of Prisoners of War teams, and Photo Interpretation teams. Instructors act as umpires.

The purpose of the problem is to give the student an opportunity to apply and integrate the instruction received in the classroom. In a command post exercise of this type, the student gains realistic experience in the collection, collation, evaluation, and interpretation of information and the disseminating of military intelligence. The students in Order of Battle, Interrogation of Prisoners of War, and Photo Interpretation are given opportunities to apply their specialized fields to a specific combat problem and to work as an integral part of an intelligence section.

The exercise consists of two phases, namely the planning phase and the operational phase. The planning phase is of three days' duration, designated as D-60, D-30, and D-15. Orientation, organization of units, and planning requirements for the operation are completed during this phase. The three days of the operational phase run continuously and are designated as D 4, D 5, and D 6. Requirements include intelligence



and counterintelligence plans, isums (intelligence summaries), oral estimates of the situation, current enemy capabilities, periodic reports, and intelligence annexes. Interrogation of prisoners of war, photo interpretation reports and enemy order of battle are of major importance during this intensive phase.

Unit umpires, consisting of faculty members, had formerly accomplished a detailed study of the actual operations of the respective units of the U. S. Seventh Army to which they are assigned for umpire purposes. Current orientations and requirements based on historical action are presented to the students by the umpires.

#### AFTER GRADUATION

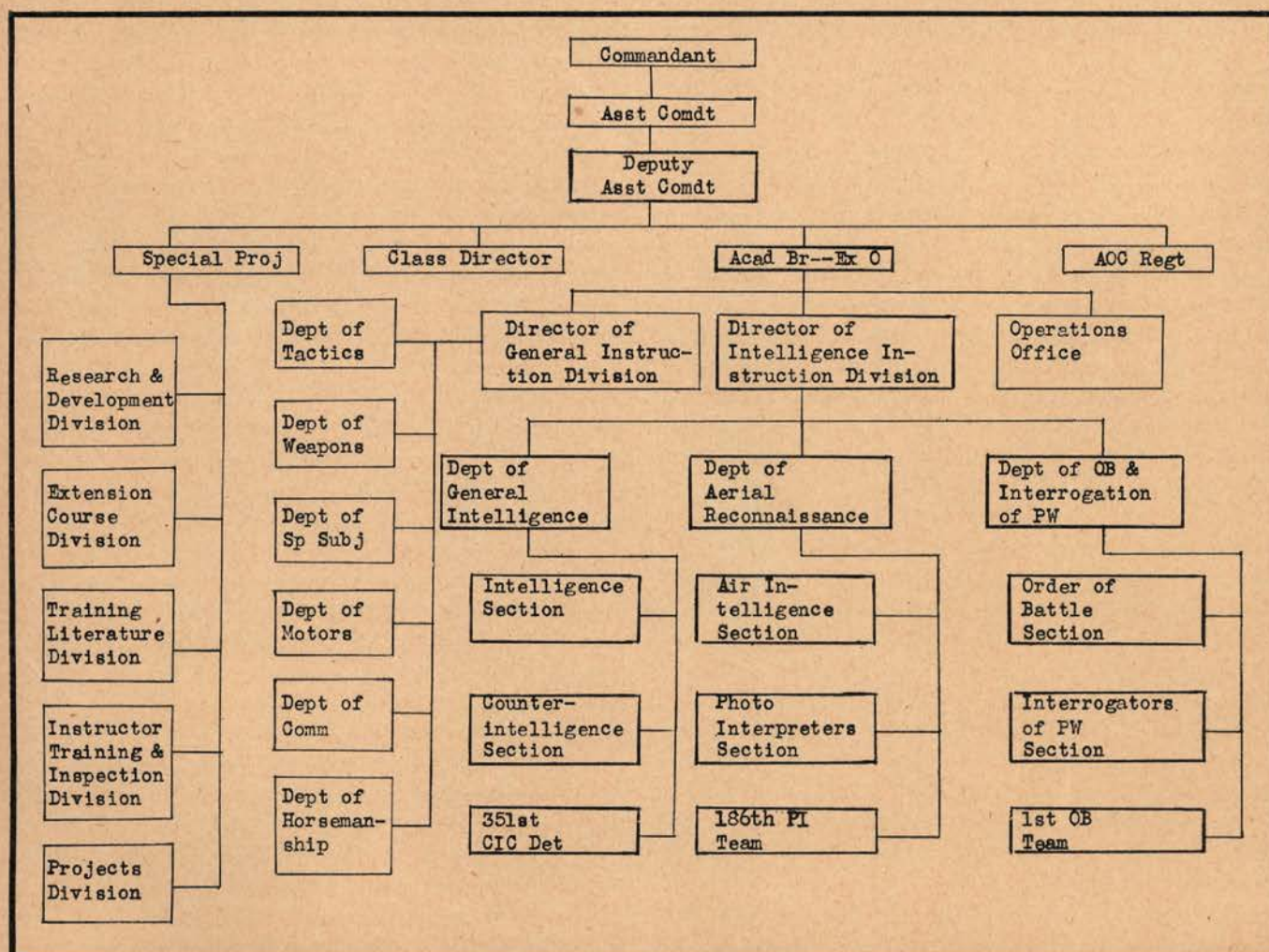
What happens to the graduates, both officers and enlisted men, of the Intelligence Instruction Division? Combat intelligence? The war is over. Order of battle? Photo interpretation? Again, the war is over and the armies of our enemies are nonexistent. How is a commander going to utilize the knowledge and skills of these graduates? Not only how, but is he? These questions could all be passed over by a shrug of the shoulders and utterance of the timeworn phrase, "That is a responsibility of command." Army Ground Forces desires something a little more—quite a little more—con-

crete than that.

The Intelligence Instruction Division, in all phases of its instruction, has kept always in mind that the graduate would be equipped to teach to his intelligence section or order of battle team approximately what he learned as a student. Outlines of the conferences, lectures, and exercises are as near complete and comprehensive as it is possible to prepare them. Further, the graduate has been given a background, or insight, into his special field of intelligence so that, through application of what he already knows plus study and work in what he does not know, he may in the future become an expert in his field.

The School cannot produce experienced intelligence experts in nineteen weeks. It can only start the officer or enlisted man on the road to becoming an expert. Commanders can furnish the opportunities for graduates to continue progress down this road. If this is not done, time, money, manpower, and effort are wasted.

An indication of the importance attached to postwar training in intelligence is the fact that about 50,000 man-hours are being spent by The Ground General School to prepare extension courses in intelligence for reserve officers. Major General W. G. Wyman, AGF G-2, probably put the whole thing in a nutshell when he stated that, "Intelligence fights wars between wars."





# Ammunition Dump Fire Fighter



Corps of Engineers Photo  
Side view of Fire Fighter.

*by Lieutenant Colonel C. M. Parkin, Jr.\**

EVERY man was at his station and all bets were down, but the betting was more out of loyalty, hard work and hope than perhaps anything else. Yes, the men who had worked long and hard on the ammunition dump fire fighter were ready to bet their last penny that the 800 gallon, 80 octane gasoline fire would be extinguished by their fire fighter within 70 seconds.

The General had just arrived and all the spectators were anxiously awaiting the demonstration. When the Colonel nodded that the General was ready, the final signal was given and 16 enlisted men, each standing behind a 55 gallon drum of the 80 octane gas, quickly overturned the drums of gasoline, picked up the empty drums and hurried away from the immediate area. Shortly after that, a lighted torch was thrown to the edge of this gasoline dampened area. Immediately there was a roar, followed by a sudden surge of air toward the fire, and because of the intense heat most of the group had to withdraw a bit from the blaze.

No sooner had the fire been lighted than the ammunition fire fighter, which was standing about 100 yards away from the inferno, started toward the blaze. As the vehicle entered the blaze, low expansion synthetic foam was emanating from both nozzles, and this stream was being directed toward the perimeter of the fire. Gradually the fire was encased by this white, three-inch blanket of foam except in the center where the gasoline was burning intensely. When the fire was completely surrounded by foam it was then only a matter of sec-

onds until the fire in the center was also covered with the white, soapy, synthetic mixture of foam and water.

Glancing at our watches we saw that this 800 gallon gasoline fire had been completely extinguished in 60 seconds. "Not very spectacular," was a comment made by a visiting expert; so I showed him the following quotations:

From the Hq. XIV Corps, dated March 24, 1944—"We've had a fire on every island that we have had ammunition; and there is no hope of conditions changing."

From another source—"Enemy artillery caused three fires early in the morning of February 7. During the 70 day period, 34 fires destroyed a total of 1,409 tons of ammunition. This is an average of 41.4 tons per fire and 20.1 tons per day. The fact that more ammunition has been destroyed is due largely to the courageous and heroic efforts of Depot and Engineer personnel in fighting the spread of fires in spite of shell fire, bombing and danger from burning ammunition itself."

When our spectator had finished reading the quotations he changed his mind, and well he should, for it is quite evident that an answer to the problem of how to put out ammunition dump fires would be a real saving in supplies, equipment and American lives.

Now let me introduce you to our vehicle, the ammunition dump fire fighter. Ordnance requested the Corps of Engineers to modify a track vehicle that would be useful in extinguishing live ammunition dump fires

\*The Engineer Board, Fort Belvoir, Virginia.



and in separating the burning ammunition from the ammunition that was not burning. This request for a development project was received at the Engineer Board, Fort Belvoir, Virginia, early in the year 1944.

The ammunition dump fire fighter is a Sherman tank equipped with a bulldozer. This tank was further altered by removal of the turret and armament. The interior of the tank was cleared of a great deal of equipment and provided with reservoirs to carry approximately 1500 gallons of water and a separate engine driven pump. A centrifugal pump was used that was capable of handling 500 gallons per minute, at 125 pound pressure. This pump is directly connected to an 85 horsepower, 221 cubic inch, eight cylinder engine, which is cooled by the pumping water.

To facilitate movement of the tank in case an emergency might arise, the bulldozer blade was designed and arranged for instant jettisoning. Another safety measure that was taken was to fasten a three-quarter-inch tow cable to the back of the vehicle. The purpose of this tow cable was to have a means of retrieving the vehicle from a hot live ammunition dump fire in case the fire fighter should be incapacitated by the exploding ammunition.

Both water turrets are remotely controlled to rotate through 180 degrees on the horizontal and 30 degrees vertically above or below the horizontal. These movements are performed by electric motors and are controlled from two stations, side by side, within the tank. It is possible for one operator to operate both nozzles.

On the back of the vehicle, as a squaw would carry her papoose, is located a separate foam reservoir of 150 gallon capacity. The foam solution may be injected into the suction side of the pump when required by means of a small electric driven pump. Thus the nozzles may be used with either water or foam or a mixture of both. The vehicle is normally operated by a crew of

three, one driver, who operates the tank and the bulldozer, and the assistant driver, who opens the foam valves and assists the driver and acts as an observer, and the fire fighter who normally operates the turrets and directs the tank operation by means of light signals and the intercommunication system.

In addition to the fact that all personnel within the tank have intercommunication with each other, radio communication from the outside is also provided. For safety reasons, the personnel stationed in the interior of the tank are provided with individual oxygen cylinders should the occasion arise when gases are encountered. Then, for further protection against blast pressures, the personnel are surrounded by an entirely sealed structure.

The armor of the tank is the same as the Sherman tank with the exception that the underneath hull of the tank has been reinforced with a five-eighths-inch plate for protection from bursts beneath the tank. The overall length of the tank with the bulldozer is 25 feet. Its total weight as it starts into a fire with its tanks full of foam and water is 80,000 pounds and the speed of the tank under such conditions is 23 miles per hour.

The technique that the fire fighters have found successful in fighting simulated ammunition fires with the ADFP is as follows:

To hit the hottest part of the fire with the maximum amount of low expansion foam and water mixture.

Next, to cut fire lanes with the bulldozer blade, thus separating the burning ammunition from the ammunition that is not burning.

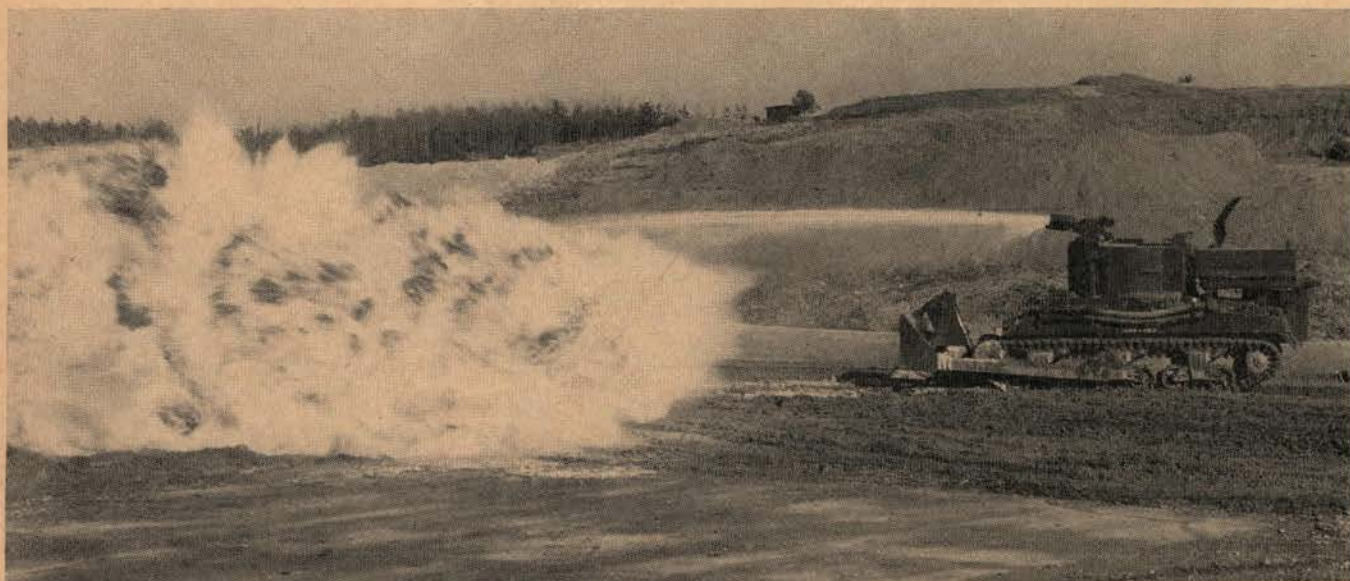
Then to bulldoze dirt on to the burning ammunition.

Now this vehicle is an experimental vehicle and not the real answer to the problem.

Plans are under way for a better ADFP and it is a generally accepted fact that the new model will outperform the other model in every way.

**Ammunition Dump Fire Fighter Entering a Gasoline Blaze.**

Corps of Engineers Photo





# DEMobilization

*by Captain Norwell M. Walker\**

**From V-E Day to January 1, 1947, 8,188,000 men and women were separated from the United States Army. World War II demobilization has been successful, but only future history will be able to determine the degree of success. Here is the story of how demobilization was accomplished.**

THE history of separation centers dates back to January, 1943, when it became apparent that such an organization would ultimately be established to carry out the War Department plans for smooth and orderly demobilization after the defeat of the Axis Powers.

One of the first steps was to review the present discharge regulations and procedures. At that time the greatest number of discharges were CDD (Certificate of Disability Discharge), except for approximately 700 to 1,000 men per month over 38 years of age, who were being returned from overseas under War Department directives to accept key jobs in industry. Most of these men over 38 were coming into Fort Slocum, New York.

In February, 1943 steps were taken to simplify the basic discharge procedures and test installations were established at Tilden General Hospital, at Fort Dix, New Jersey, the Fort Dix Station Hospital and Fort Slocum.

In the months that followed the CDD procedures were further developed. The number of discharges over 38 returning from overseas had been reduced substantially and, in that, it was deemed necessary to have a larger flow of separatees (persons being separated) to set up a real test installation, it was decided to set up the first pilot separation center at Fort Dix.

The reasons for the selection of Fort Dix for this test separation center were as follows:

1. Test procedures in separation were already operating in the two hospitals at Fort Dix.
2. The Second Service Command had a large service population and, by funneling all enlisted men entitled to travel to any point within that Service Command and eligible for discharge into Fort Dix, the desired larger flow would be obtained.

On March 30, 1944, the War Department estab-

lished its initial Separation Center at Fort Dix and designated it as the Fort Dix Separation Center, with the Commanding General, Army Service Forces charged with its operation.

From this first separation center, the War Department hoped to, and did, learn many valuable lessons that were helpful when hostilities terminated and the Demobilization or Separation Program went into full swing.

Separation centers were established to effect discharge or release from active duty of personnel transferred thereto under War Department directives. In effecting this discharge or release from active duty, Separation Centers were responsible for:

1. Bringing the records of the separatee up to date.
2. Complete physical examination of each separatee.
3. Payment of all pay and allowance accounts due.
4. Counseling the separatee as to benefits and rights to which he was entitled for his services in the Armed Forces.
5. Complete processing of the separatee for separation within 48 hours after his arrival.

Because of the reduction in discharge rate, the Fort Dix Separation Center separated only about 400 men during its first month of operation. In order to increase the flow all enlisted personnel entitled to travel pay to any point within the First, Second and Third Service Commands and eligible for discharge, were ordered sent to Fort Dix and, in addition, all men returned from overseas through the four East Coast Ports.

In order to gain experience in processing officer and female personnel, these two groups were added to the enlisted personnel formerly being processed.

The flow at Fort Dix then increased to approximately 2,000 per month and provided a testing laboratory for all the Army Service Forces staff divisions interested in the separation activities. At Fort Dix, provision was also made to train the cadre for other separation centers

\*Student, The Armored School.



to be activated and key personnel from the Fourth, Sixth, Eighth and Ninth Service Commands were sent there during June and July for training.

This led to the establishment of four other separation centers, as the number for separation had begun to warrant the establishment of separation centers to serve certain geographical areas. On July 24, 1944, separation centers were established at Fort McPherson, Georgia; Fort Sheridan, Illinois; Fort Sam Houston, Texas, and Presidio of Monterey, California.

On October 15, 1944, Separation Centers were also established at Fort Devens, Mass.; Camp Atterbury, Indiana, and Jefferson Barracks, Missouri. The establishment of the last three separation centers brought to a total of eight being run at this time and also brought about a change in the sending of female personnel to separation centers.

Heretofore all separation centers were authorized to separate female personnel and separate facilities were provided for them, but with the addition of the last three separation centers it was decided to limit female separation activities to the first five centers established. The chief reasons behind this policy being the economizing of operating personnel and the fact that the female separation facilities already established were considered adequate for the loads (number of separatees processed daily) that they were carrying.

One point that might be brought out at this time is that the Separation Centers established thus far and those to be established later on were, in most cases, located at the same stations as Reception Centers and Reception Stations. A Reception Center being an installation where individuals being brought into the Army were initially processed for clothing and records and a Reception Station being an installation for the handling and processing for assignment, officers and enlisted men returned from overseas. Wherever two or more of these installations were located at the same Post, Camp or Station, the designation of War Department Personnel Center was given to the combined installation. Chief of the reasons for this step being the economizing of overhead personnel required for the operation of the War Department Personnel Center.

Ten more separation centers were added in November, 1944, these being Camp Beale, California; Fort Bliss, Texas; Fort Bragg, North Carolina; Camp Chaffee, Arkansas; Fort Douglas, Utah; Fort Leavenworth, Kansas; Fort Logan, Colorado; Fort Lewis, Washington; Camp Shelby, Mississippi and Fort Snelling, Minnesota. The Separation Center at Presidio of Monterey, California, was discontinued at this time and its function of separating personnel was transferred to the Center at Camp Beale. Also, at this time, Fort Bragg took over the separation of female personnel for the area formerly served by Fort McPherson.

A recapitulation of the separation centers established up to this time shows 17 established, five of which separate females, and all designated to serve certain states.

The question presents itself, that why so many separation centers at this time, for it is only November of 1944, and the war is still going strong on both fronts. The answer to this query is:

(1) An increasing number of men over 38 years of age being separated from the service, and men who failed to meet the minimum physical standards for induction.

(2) A larger training nucleus for the stepped-up separations that will follow our victory on the European front, which everybody hopes is not too far off.

These separation centers were adequate to perform their job and up to May 12, 1945 had separated approximately 250,000 men.

With the advent of V-E day, the separation program was stepped up, as the point system was established and men with extensive combat experience were eligible for separation from the Army and where separation loads had been a few hundred a day, they were stepped up to several thousand a day. With this step-up, additional personnel were required in the separation centers and the then old-timers in the separation centers became busy training new personnel which had been added to help carry the load, at the same time performing their job of separating personnel received for separation.

At this time, let us consider the Separation Center processing, or procedure. In June, 1944 a group of staff officers from Headquarters, Army Service Forces prepared at Fort Dix a tentative manual for the processing of officers and enlisted men for separation from the Army. During August, 1944 this group of officers visited the five separation centers in operation and, as a result of this visit, the manual was entirely revised. During the period from August, 1944 to May, 1945 the manual was thoroughly tested and revisions were made as a result of recommendations received from the Separation Center Commanders and of actual visits to the Centers. It was then realized that the actual separation center processing could be even more standardized than it was, so Fort Sheridan became a pilot model for this program, which also included a plan whereby each separation center would operate to full capacity with daily separation figures running up into the hundreds or possibly thousands. One of the outcomes of this plan was TM 12-222, which helped to standardize operations, as well as serve as a guide for the Separation Centers yet to be established. This standardization program took place at the same time the loads were stepped up with the advent of V-E day.

May 12, 1945, V-E day, found us with an army of approximately 8,300,000 men, but soon separation is to take a heavy toll of this strength.

A check into the separation figures for the period May 12-31, 1945 shows that 56,000 military personnel were separated from the Army. During June, 1945, which was the first full month for separation following V-E day, 156,000 persons were separated, which was



quite an increase over the separation figure for the preceding month and showed that the V-E day separation plan was in full swing, for there were actually 56,000 more separated than anticipated. During this month four more separation centers were established, these being Fort Meade, Maryland; Camp Blanding, Florida; Camp Gordon, Georgia; and Fort MacArthur, California.

July 1945 saw 164,000 separations from the Army, which with the June total, put the War Department ahead on its planned separation program, and also indicated that the separation program was progressing better than expected. Indiantown Gap was established as a Separation Center this month.

August 1945, a month and a year no one will ever forget. The war was over, and to millions of men this meant release from the Army and home. Exactly when was something each individual did not know, but he was hoping it would be in a very few weeks.

Taking a quick look-back to this period, August 1945, several important factors should be kept in mind in considering the separation program.

1. A point system is the basis of the criteria for discharge and will only make so many eligible for discharge at one time.

2. There are several million troops in each theater and only so much transportation available.

3. A world war has just been won and the United States has certain international commitments as a result of this victory.

In this month the only change in the separation set-up was the moving of the Separation Center from Fort Snelling, Minnesota, to Camp McCoy, Wisconsin. August separations totaled 205,000 men.

Victory over Japan brought forth the War Department Plan for separation following V-J Day. As to be expected this plan provided for release of as many men as possible from the Army. The largest army demobilization in the history of our country was starting.

Twenty-two separation centers were in operation on September 1, 1945 and, while it was apparent that they would be able to separate more than originally planned, there was danger of these facilities being taxed beyond their extreme limits, notably housing, so authorization was given to each of the Service Commands to establish Separation Points at posts, camps and stations under their jurisdiction. A separation point was a separation center in miniature, that is they would be only set up to separate from 25 to 250 men a day, depending on facilities available. Likewise, the Commanding General, Army Air Forces was authorized to establish separation bases for the same purposes. Approximately 147 separation points and 45 separation bases were set up during September and October, 1945. While no one of these points and bases separated a great number in any one day, together they separated a very large number and permitted many more separations from the Army than the War Department thought possible at this

time. Too, they took quite a load off of the separation center system and prevented any excessive backlog being built up.

Some 597,000 discharges were affected during September, 1945. The largest number of separations to take place during any one of the months during demobilization occurred in October 1945, when 1,270,000 separations took place. Every separation activity was on a seven-day week, and some were working two shifts a day. Five new separation centers came into being during the latter part of this month, although they were not scheduled to open until November 1, 1945. They were Fort Monmouth, New Jersey; Fort Knox, Kentucky; Camp Fannin, Texas; Camp Grant, Illinois and Fort Des Moines, Iowa, the latter the only all-female separation center ever established. Number one priority was in effect for obtaining operating personnel for the separation centers, for the point system was taking its toll among operating personnel. The separation program was exceeding expectations and the results were encouraging.

Twenty-seven separation centers plus the various separation points and bases were operating on November 1, 1945 and this, too, was a big month as 1,170,000 men and women were discharged. Our 8,300,000-man army on V-E day had shrunk to less than 5,000,000 men by the end of November.

During this month it was felt that the separation centers alone could handle all separation, so instructions were issued to gradually do away with the separation points and bases. This would economize greatly in operating personnel without slowing down the demobilization program, so by the end of November approximately half of the separation points and bases were discontinued.

The question has probably arisen in quite a few minds as to the system of control in sending large numbers of men to separation centers. In brief, any installation such as a port or post with a group to be sent to a separation center would report the number of men and the center to which they wanted them sent to a control section in their Service Command. This control section would contact the control section of the Service Command concerned and request clearance for this group. If loads permitted they were given the go ahead and, if not, they were diverted to another center that could handle them. In this manner peak loads were kept coming into the separation stream and large back-ups were prevented at ports and posts.

December showed that the peak had been reached in the demobilization program, but it saw 1,102,000 separations. All separation points were discontinued then and only about 25 separation bases were left to assist the separation centers. Many separation centers separated over 1,000 a day, and Fort Dix and Indiantown Gap went over the 4,000 daily mark during this month. Camp Atterbury separations exceeded over 3,000 a day.

The peak of demobilization had passed, but there



were several million men and women still to be separated. Separating these men and women, when eligible, yet cutting down the size of the separation system with a resulting economizing, is the next cycle in which we find the discharge program.

In January, 928,000 were discharged and the separation bases were discontinued. Instructions were sent out to discontinue the separation centers at Fort Des Moines, Fort Monmouth and Fort Knox on February 15, 1946, with the flow of personnel to these centers cut off effective January 15, 1946. The flow was cut off 30 days prior to the date of inactivation so as to enable the separation centers to separate any administrative holdovers among the separatees, as well as close out all of the administrative matters found in a separation center.

Another big drop in separations occurred in February 1946, and only 690,000 men and women were discharged. Indiantown Gap, Camp Blanding and Camp Fannin centers were ordered closed as of March 31, 1946.

In March 1946 separatees totaled 413,000 and another cut in separation centers was ordered for April 30, 1946. This time Camp Gordon, Fort MacArthur and Fort Logan were the centers affected. While not originally scheduled to do so, Camp Grant also closed out in April.

During the next three months 622,000 were discharged, which was less than the total discharged for February 1946 alone. Jefferson Barracks, Fort Devens and Fort McPherson Separation Centers went out at the end of June.

The V-J Day Plan figure for discharge had been met in May, 1946, but there were still a large number of men to be separated. The size of the army had been set at 1,070,000 by July 1, 1947 and, in June, 1946 there were 1,890,000 in the Army. Separation Centers were the only answer for the separation of this group of approximately one million men in the coming year, for they alone were capable of discharging large groups such as might arrive in shipments from overseas. It was evident though that more separation centers could be discontinued, and the remaining ones still handle the anticipated load. The result was the closing of the separation centers at Camp Chaffee and Fort Bliss as of June 30, 1946 and those of Camp Shelby, Camp Atterbury, Camp McCoy, Fort Douglas and Fort Leavenworth on July 31, 1946.

Another change took place in June 1946, which was the Army reorganization. The responsibility for separation center operation was transferred to The Adjutant General, as Army Service Forces as such was abolished. This was merely an administrative change as the actual operation of the separation centers was not affected. The Armies replaced the Service Commands in regard to functions affecting the separation centers.

Seven separation centers were in operation at the end of July, 1946, a month in which 137,000 were dis-

charged.

August saw 122,000 separations which was the smallest number separated in any one complete month since V-E day.

The Armed Forces Leave Act was passed in this month and it greatly affected the separation program in that it meant enlisted men would be placed on leave rather than separated on the day they left the separation center.

In September, 1946, 102,000 were discharged. October separations jumped up to 179,000 and, in this month another change took place in the separation program. Posts, camps and stations, with adequate facilities, both physical and financial were authorized to separate army personnel. This meant that large groups coming from overseas would be the chief users of the separation centers in operation.

Separation Centers at Fort Meade and Fort Sam Houston were closed as of November 15, 1946 and Fort Bragg on December 31. Over-all separations for November were 157,000.

The War Department Separation Center System was set up as follows on December 1, 1946. Fort Dix, to take care of shipments from the Atlantic and Caribbean, with Fort Sheridan to take care of men arriving in the East and whose homes are in the West and mid-west. On the West Coast, Camp Beale and Fort Lewis, with Fort Sheridan taking groups living in the midwest and East who arrived on the West Coast. The December separations totaled 118,000.

On January 1, 1947 a separation center was established at the New Orleans Port. This will take care of the shipment coming in from the Caribbean and will give complete coverage for our coastal ports. The coverage then will be Camp Kilmer for the East, New Orleans for the South and Camp Stoneman for the West. It is worthy of note that this last change will have the net result of placing the separation and reassignment activities on individuals returning from overseas, as well as the Overseas Replacement Depots, in one and the same post. Posts, camps and stations will take care of zone of interior personnel, to be separated. July 1, 1947 will find us with a 1,070,000-man army.

From V-E Day to January 1, 1947, 8,188,000 men and women were separated from our army. This is almost the total number we had as of V-E Day, so a brief accounting must follow.

Selective Service for a time continued to operate and bring in some men. However there were no inductions under Selective Service after October 15, 1946. Also men discharged have reenlisted, so there has not been an almost complete turnover as the figures might indicate. The Strength of our Army on January 1, 1947 was 1,319,483 men and women. Our 8,300,000-man army has been depleted by separations, and separations still go on. Demobilization has been successful, but only future history will be able to determine the degree of success.



# British Veterans Return to Civvy Street

*by G. W. L. Day\**

THE fighting man in the modern army has to adapt himself to a discipline and a routine completely divorced from his life as a civilian. It takes six months of intensive training to fit a man for his job in the Army. When he is demobilized and goes back to "Civvy Street" he may find himself, particularly after long service abroad, a stranger to civilian ways and at a loss as to how to pick up the threads of his old life.

The repatriated prisoner-of-war had the biggest handicaps to overcome. To meet his difficulties, and to help him to fit into civilian life and to catch up with current events, Britain's War Office, in London, evolved a new idea—The Civil Resettlement Unit (C.R.U.). This was tried out with such good results on 25,000 repatriated prisoners that it will now most probably be used to help the regular soldier.

C.R.U. is a sort of factory for turning Britain's soldiers into civilians.

## NOT COMPULSORY

At first sight a C.R.U. looks rather like an ordinary military station, but it is really something very different. A man is not obliged to attend one when he is discharged; military discipline is relaxed, and he can leave whenever he likes. The food is excellent, and there is no standing in line to re-awaken painful memories. (It was found that men would actually go without their food rather than line up for it.) On the contrary, a man is waited on as if he were a visitor at a guest house.

Every detail in his four-week stay is worked out with great care. Arriving on Thursday afternoon, the soldier is at once given a good meal and then taken to the dormitory where he is invited to choose his bed, perhaps, next to another man he may have got to know and like. The "old boys" who have been there a week or two help the "new boys" to settle down. In the evening there is a dance for those who like it. Though a soldier may not know it, the psychiatrist has his eye on him. It is said that from watching a man's behavior on the dance floor he can tell how long it will take to resettle him.

Next morning the commanding officer gives the men a talk, not so much to convey any information as to make them feel at home. After this they are drafted into a

group of 15 men, or less, and shown round and introduced to the staff.

This staff has been carefully chosen and trained. Besides the commanding officer, the second-in-command and his assistant, there are three administrative officers, four syndicate officers and five or more specialist officers.

Each syndicate officer acts as "father" to a group of 60 men who are split up into four parties of 15 containing a mixture of "old boys" and "new boys." The five specialist officers consist of a vocational officer, with his staff of personal selection sergeants, and a Ministry of Labor liaison officer, who discover what sort of a job a man really wants to do and is best suited for, and then try to fit him into it.

Then there is a professional woman social worker, called the civil liaison officer, who helps out with the soldier's problems at home. Finally there is the technical officer and his staff who run the workshops, where they can try their hand at making something; and one, or perhaps two medical men who hold no sick parades but "run a practice" inside the unit.

Now comes one of those twists which are peculiar to the C.R.U. All four groups which have been moving round the unit are shuffled up and asked to re-group themselves into four new parties of 15 each. This is done very quickly and decisively.

The soldier now goes home for the week end with the feeling that he is already becoming a member of another community. Every week end of his stay at the C.R.U. he is encouraged to go home. Beginning married life again is usually a difficult task. He has been developing in one way, his family in another, but whereas after his long years abroad, the man is acutely aware that he must make a great effort to adjust himself to a new way of life, his wife and children may not feel the need to make any effort to adjust themselves to him.

As a rule there is a delighted and excited period of reunion lasting for a few weeks, followed by a reaction when everything seems dull and flat. This means that the process of readjustment has begun. The returned father feels a crippling lack of self-confidence and a sense of disappointment at the deflation of his rosy dreams, while to his family he seems "strange" or "dif-

\*British journalist and feature writer.



difficult." Serious difficulties arise in about one family in three. Violent quarrels over trifles break out constantly. The father begins to fancy that he is in a hostile, alien world and that even his own wife and children are turning against him. They themselves look on him as a ghost and a stranger.

#### WINNING CONFIDENCE

These are the kinds of difficulties which the C.R.U. has to help overcome. Successful intervention between man and wife is such ticklish work that the Civil Liaison officers have to be highly qualified and experienced women.

After a man is settled in, his next two weeks are spent in exploring the near-by industrial community with his group. Each group visits factories, shops and training centers, and if he wishes he can attend forums and discussions on various questions about jobs. When the C.R.U. was set up, officials of the Ministry of Labor arranged for groups representing different industries and trades to visit the unit so as to learn the returned soldier's point of view and to make suggestions as to how contact could best be made with those "on the job."

This visiting period is the time when the plans and dreams, formed perhaps in some remote military station, or prison camp, are brought up against harsh reality.

If he likes, he can spend most of his time in a "job rehearsal"—for instance, in an aircraft factory, as an amateur assistant to a bricklayer, or as a shop assistant—where he can get the feel of a job without shouldering any responsibility. In this way he finds his feet. It is surprising how much self-confidence a man gains by selling goods behind a counter, even if he has no intention of becoming a shopkeeper. The visits to factories also have their psychological effect. Here a man comes in contact with noncombatant civilians, and is introduced to a different world, where personal initiative and competitive struggle take the place of obedience to military orders.

Until quite recently resettling prisoners-of-war was thought to be chiefly a matter of remedying the effects of malnutrition and bodily illness. To show how false this idea can be, a team of ex-prisoners only six weeks after their return home won nearly all the events in a sports competition against physical training instructors. The truth is that the difficulties of these men are much more psychological. So psychiatrists lend their services to the C.R.U., help the men with their personal problems and join in the discussion groups.

Some of this therapeutic work consists of "filling in the gaps." Men who have been abroad and out of touch for several years, need re-education in many things. In the C.R.U. they see films of the recent past, they attend lectures where recent events, which most people have read about in the newspapers, are described. They can join in discussion groups and get the hang of changing views and current topics.

Most interesting of all, perhaps, is the hammering

out of a new technique for releasing pent-up emotions by a novel sort of teamwork. Some things, it was found are best ventilated in private interviews, while others are dealt with better by discussing them in groups of a certain composition, setting and atmosphere.

#### SHARING PROBLEMS

The best sized group is from six to 12 people, with a special member—usually the psychiatrist—who plays rather the role of a doctor who is treating a patient psychologically. His job is by subtle means to raise the level of the discussion far above that of mere everyday conversation. Properly handled, a discussion group of this sort brings about a sharing of emotional problems and diffuses an insight into the best way to solve them. It has been found that where an individual is powerless, a group can perform "psychological miracles," each man putting something into the pool and drawing something out of it.

Lieutenant X, who was captured in 1940 and suffered badly in a German prison camp, returned home in 1945 with a fear of crowds, of traveling and of the dark. He was "up against" his family, and when he joined a C.R.U. he had no self-confidence and was very depressed. But after a few weeks he was taking a much greater part in the group discussions, and within six weeks his confidence, in his own words, had been regained and his morale was up 100 per cent. His greatest difficulty, social relationships, he overcame almost entirely.

Private Y, who was a prisoner-of-war in Hong Kong, was ill and extremely worried about his future. After a course at a C.R.U. his health improved, his mind was at ease and his self-confidence came back. He is now in a temporary government job before taking his examination for the British Civil Service. Private Z, who spent most of the war as a prisoner in Poland and Germany, has been changed from a rather sullen and lonely man into a very good mixer with a keen interest in his work and surroundings.

The Civil Resettlement scheme will most probably be used for Britain's Regular Army. A man will hear all about it before he joins. During his service he will be reminded of it constantly by visits to C.R.U.'s, films, discussions, and so forth, and on his discharge leave he will be invited to attend a course. If he refuses to come, Civil Resettlement officers will seek him out and try to overcome his objections. His family will also be invited to visit the C.R.U. while he is there. After the course the Army will still keep in touch with him to make sure he is properly settled, and even if he did not attend a C.R.U. course a paternal eye will be kept on him for 12 months after his discharge.

Britain's Royal Navy seems disposed to join in, but the Royal Air Force has a scheme of its own. The problems of each Service are not quite the same, but eventually all three of Britain's Fighting Services may come together in a joint scheme based on the C.R.U.



# U. S. Zone Constabulary Mounted Platoon Composed Of Volunteers

**Composed of 41 enlisted men and one officer, the Horse Platoon of the 16th Constabulary in Berlin is an all volunteer unit. Material in this article on the Horse Platoon is taken from a recent feature story in the "Berlin Observer" written by Maurice Nutter, a staff member of the newspaper.**

BERLIN'S modern knights and their high-stepping mounts, known as the Horse Platoon of the 16th Constabulary, unlike other units in Berlin, is an all volunteer outfit. So writes Maurice Nutter in a recent issue of the *Berlin Observer* of which he is a staff writer.

The full strength required for the unit to function properly, according to Nutter, is a platoon numbering 41 enlisted men and one officer.

Each man before being taken into the unit is interviewed and thoroughly oriented on his future duties. A great deal is demanded of every member of the platoon. They are required to have high spirit, exacting discipline and exceptionally good military bearing, because this platoon is trained for not only show purposes but also for certain security missions. These volunteers are picked to perform the duty of honor guards, escorts, reception parties and to participate in every important ceremony that takes place in Berlin.

Nutter writes further that the platoon was formed October 1, 1945, as the Horse Platoon of the 78th Cavalry Reconnaissance Troop of the 78th Infantry Division, then located at Hofgeismar, Germany, and alerted for movement to Berlin. Major General Ray W. Barker, then commanding general of the Berlin District and the 78th Infantry Division, and Colonel John C. MacDonald, then assistant commander of the 78th Division, organized the platoon.

First Lieutenant Mathew B. Quinn, then with the 78th Cavalry Reconnaissance Troop, was placed in command. His first mission was to select and train personnel and obtain equipment for the men and horses. Colonel MacDonald personally selected the mounts for the platoon. They were shipped by the 6835th Remount Depot from Bad Homburg, Germany.

The Platoon Commander, Lieutenant Quinn, who

helped form this famous unit is still in command of it. He believes the Horse Platoon will stay on active duty in Berlin as long as there is an occupying force in Germany. Lieutenant Quinn is a New Yorker. He enrolled in the Cavalry School at Fort Riley, Kansas, graduating in March, 1943.

Right-hand men of the Platoon Commander, according to Nutter, are Platoon Sergeant Hugh E. Carwile and Stable Sergeant Flautte Wemack.

The Platoon's first big assignment in Berlin was on January 1, 1946, when it was called upon to guard the chiefs of all the Allied Powers at a reception given by the United States Deputy Military Governor in Dahlem. Another important mission the unit was called upon to perform was to act as honor guard, last June 26, for 12 newspapermen and publishers who arrived in Berlin on an inspection tour.

In May, 1946, Nutter continues in the *Berlin Observer*, which is the weekly Information and Education newspaper published for the Berlin Command, the Horse Platoon became a part of the 16th Constabulary Squadron and was attached to Headquarters Troop. It occupies the area which was formerly the Deutsche Reitschule, famous stables where many members of the Prussian nobility kept their horses. The area and buildings had greatly deteriorated during the war years but had not been bombed. The Horse Platoon has improved it. They staged some fine Interallied horse shows on the old grounds.

The men of the platoon are at present billeted in two villas in the vicinity of the stables at Zehlendorf-West, but will be moved shortly to newly renovated barracks adjoining the Zehlendorff stables. These stables were at one time occupied by the mounted SA Troopers of the German Army.



# Armored Division Associations

## 3d Armored Division

Formation of the Third Armored Division Association by the men and officers who served in the Spearhead Division of the First Army since December 7, 1941 is being planned by Brigadier General Doyle O. Hickey, former division commander, with temporary headquarters at Fort Monroe, Virginia.

The proposed association, which will be national in scope, has for its purpose the preserving of the *esprit de corps* of the division, giving assistance to its former members, and providing a periodic newsletter to keep members informed about their wartime buddies. Assistance also will be given in the organization of local posts.

A permanent organization, with regularly elected officers, a paid civilian secretary and a permanent home office, will be effected at the first annual reunion, tentatively set for the fall of 1947 at a place yet to be determined. Letters announcing the division association have been sent to approximately 6,000 former members whose addresses were available, but others are being notified of the proposed organization through newspaper stories.

Application blanks for membership in the association may be obtained by writing to The Secretary, Third Armored Division Association, Room 203, Building 134, Fort Monroe, Virginia.

The Third Armored led the First Army from the beaches of Normandy through France, Belgium and to the banks of the Elbe in Germany. It was the first division to capture a town in Germany and the first division to pierce the Siegfried Line. Led by Major General Maurice Rose, it made history when it closed the Falaise Gap, when it captured Mons and Cologne, and when it made a spectacular one-day 100-mile dash to Paderborn. This latter action resulted in cutting off 375,000 Germans in the Ruhr Pocket.

General Hickory took over when General Rose was killed at Paderborn and led the division on through to finish its last fight with the capture of Dessau on the Elbe. Since the war, General Hickey has received letters from hundreds of his former comrades in arms, all urging him to establish an organization through which they could reach their wartime buddies and keep alive the friendships made during their combat service.

## 4th Armored Division

The Editor  
Armored Cavalry Journal  
1719 K Street, N.W.  
Washington 6, D. C.

Dear Sir:

Will you please print the following information on the 4th Armored Division Association?

A national 4th Armored Division Association was organized last year with an executive committee consisting of Major General John S. Wood, Retired, now a member of the Intergovernmental Committee on Refugees; Brig. General Bruce C. Clark, Plans Secretary, Hq AGF; Mr. Graham Kirkpatrick of Birmingham, Alabama; Lt. Col. C. W. Abrams, The Armored School, Fort Knox, Kentucky; and 1st Sgt Charlie P. York, Recruiting Sergeant, Piqua, Ohio.

Kirkpatrick found business too pressing to continue as Secretary-Treasurer and turned over the fruits of his efforts to Abrams, with the result that the Fort Knox Chapter became temporarily the nerve center for the growing organization. Branch chapters have already been formed in Boston and New York, and others are in the formative stage in other cities. C. L. Caraganis, Boston Market Terminal, Boston, Mass. and Abraham Baum, 2855 Claflin Avenue, Bronx 63, New York, are respective acting presidents.

A national convention will be held on June 19, 20 and 21 at the Hotel Pennsylvania in New York City, at which time permanent officers will be elected, by-laws adopted and a central location selected for the Association Headquarters. All members of the Association are urged to plan to attend the Convention.

Membership has slowly reached five hundred and fifty due to the difficulties in obtaining current addresses. Therefore, all former members of the Division and those of the 489th AAA AW Bn (SP), the 704th TD Bn and 995th Engineer Treadway Bridge Company are urged to send in their addresses and those of any others they know to the Secretary-Treasurer at Fort Knox. An immediate answer is guaranteed. Below is an application blank which all former members of the Division desiring membership in the association may fill out and send to the Secretary-Treasurer.

Policies now stated in the temporary by-laws are as follows: The Association, formed by the officers and men of the 4th Armored Division, is dedicated to perpetuate the memory of its fallen comrades, to promote good-fellowship among the survivors, to preserve the *esprit de corps* of the Division, to assist in promoting an everlasting world peace, and to aid members and former members of the division. There are to be no political affiliations or tie-ins with unions or veterans organizations.

A few copies of the *Division History* are still available to paid members of the Association at \$2.50 each. The plates were brought back to the United States by



the author, Captain Kenneth Koyen, former Public Relations Officer of the Division, and more copies will be printed in the near future.

Thank you for your cooperation.

Sincerely yours,

CREIGHTON W. ABRAMS,

Secretary-Treasurer.

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### 6th Armored Division

The Sixth Armored Division Association is now in the process of being organized, and former members of the division may expect to receive detailed information in the near future.

Considerable progress has been made in building up an address file, and it is expected that the initial newsletter will be mailed to approximately 10,000 former division members. Additional addresses are required, and it is requested that former members send in as many as possible.

Until further notice, any correspondence regarding the association should be sent to the Acting Secretary-Treasurer at the following address:

1ST LIEUT. H. C. SMITH,  
Sixth Armored Division Association,  
c/o A.G.F. Board No. 2,  
Fort Knox, Kentucky.

On Sunday, April 13, all ex-members of the 8th Armored Division that could be rounded up met at Fort Knox, Kentucky, to initiate a division association, according to Lieutenant Colonel E. R. White, Secretary-Treasurer of the Association.

David L. Hariston of 501 Christopher Place, Louisville, Kentucky, was elected president at the meeting.

A constitution was provisionally adopted and officers were elected to serve until an annual meeting of the Association can be held.

Address of the Association's secretary is: Extension Course Department, The Armored School, Fort Knox, Kentucky.

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### 10th Armored Division

All former members of the 10th Armored Division desiring information about the association, a division history, etc., are asked to write to Secretary, 10th Armored Division Association, c/o General Delivery, Fort Knox, Kentucky. Ex-division men who have received a blank form to be completed and returned—please do so at once and mail it to the above-mentioned address. All correspondence received in the past couple of months by the JOURNAL, has been forwarded to Fort Knox, for direct reply.

Those interested in the organization are asked to write the Secretary as soon as possible.

### 11th Armored Division

Now that the *Newsletter* has been mailed out to all paid members, it is hoped that all members will mail in their reservation coupons to Bill Lipp, so arrangements can be made as early as possible, for all who plan to attend the convention in August.

The Chicago chapter is rolling along and committees have been appointed to handle the convention planning, entertainment, public relations and publicity. Future meetings of the Chicago chapter will be held the fourth Friday of each month and anyone interested in attending (who has not been contacted) may do so by writing to C. H. Hanson, 1436 West 83d St., Chicago 20, Illinois, and you will be put on the mailing list for notices.

The New York area Chapter is off to a good start now. A meeting of those members was called by George D. Halprin at the Taft Hotel, May 2. Details of this meeting will appear in the next "news notes."

The Washington Chapter is holding a luncheon on May 8, at 12:30 P.M. at the New O'Donnells Restaurant and it is hoped all of the local members will attend.

We expect the Boston, Cleveland and Denver chapters to get started within a few weeks time. James R. Hoffman (who is organizing the Denver chapter) tells us he has been appointed Chief of the Armored Section in the 505 Composite Group of the Reserves.

The response to requests for the missing "rosters" has been great, although we still do not have all of them. Carlos D. Cutler and Raymond C. Moore have sent us part of the 575th AAA—we have received Hqs. and Hqs. Co. of the 22d Tank Bn from James T. Wingard. James L. Harris sent us Co. B and Elmer Hussmann sent in Co. D of the 22d Tanks. We still need rosters of the 55th AIB and the 492d AFA. We have only Co. C of the 55th AIB sent in by Samuel Douglas of Pittsburgh and we are hoping to eventually get all of those still missing from our files.

Our "mail bag" brings the following news we hope will be of interest to you. . . . From Brig. Gen. Holmes E. Dager, now assigned to Headquarters, Vienna Area Command in Austria . . . comes this message to all former members of the 11th . . . "I have received your 11th Armored Division Association Newsletter and I would like to congratulate the officers of the Association for the fine work they are doing in establishing on a firm basis, an active 11th A.D. Association.

"It is particularly important that a Division such as the 11th should have such an association in definite active being, for the reason that we owe it to those who fought with us and are not now living and to their families, to preserve and perpetuate the glorious record to which both our living and our dead contributed so much. The 11th equaled and exceeded in aggressive combat, the record of any other allied division serving in the ETO. It drew mention by name, in the final report of Gen. Dwight Eisenhower, our supreme Com-



mander, for its accomplishments.

"I am very happy to see that you are working so hard toward holding a convention of the association some time this coming August. I do hope that every member will make an effort to attend, and if I am back in the U.S. at that time, I shall certainly be there to meet you all. We will try to organize a similar European convention at about the same time you have designated for the Chicago meeting. If this is at all possible, we will send our greetings from Europe.

"To each member of the division, to their families, and to your officers of the association, I send my sincerest regards and best wishes and my thanks for your continuing efforts and interest in the association."

We hear from Arthur S. Davis that Warren "Scrappy" Lemoine (former CO of the 492d AFA Service Btry.) became the proud papa of a baby boy, and he has been named James Alvin Lemoine. "Daddy" is at present attending Louisiana State University at Baton Rouge.

Also on the Stork's visiting list, we find the names of Lt. Col. and Mrs. A. V. Inge (former CO of the 56th Engr. Bn.) who were blessed with a boy who tipped the scales at a little over eight pounds.

Alfred Dugan (association vice president) became a "papa" several months ago, but evidently in the excitement of the event he forgot to let us know about it, 'cause we just heard the news.

Fred D. Lidka writes that he, Raymond Van Cleave, Willard Alden and Richard Stubenrach (all former members of the 133d Ord. Bn.) are all in the garage and body repairing business in Iowa, and Otto Happel is back at his old job driving a bus in Cedar Rapids. T/4 Lewis M. Gould now attached to the 1st Cavalry Division Band in Tokyo writes that although he won't be at the convention in August, he surely hopes everyone else has a swell time. Patrick H. Tansey (21st AIB) who is attending the University of Michigan says he sees a few 11th fellows on the campus—among them Kellogg (former Div. Band leader) and he sends best wishes to all who are working so hard to make "ours" the best division association going.

Seymour Kessler of Roosevelt, N. J. writes that he has sets of 20 snapshots each, available to you members who might want them, priced at \$1.50 the set, postpaid.

T/Sgt. Harold N. Hicks (now stationed in the Panama Canal Zone) wishes he could attend the convention and sends best wishes for a very successful event.

And last, but not least, we know all of you will be interested in this message from former Brig. Gen. Charles S. Kilburn, now retired and taking life easy in California. . . . "From the 14th to the 16th of August, the first postwar reunion of the Division will occur in Chicago. There assembled, we may kindle again those attributes and precepts which marked a great fighting division. We may glimpse those things which produced from that first gathering at Camp Polk, an organized, disciplined, formidable combat group of Americans, sustained from courage, loyalty, *esprit de corps* and the will to advance. We will find opportunity and occasion to toast those members of the division who made its history imperishable—those who hold eternally the field of Belgium and Germany over which we fought. . . . May I urge all . . . 'ON TO CHICAGO!'"

We will have more news of the local chapters in the next issue of the JOURNAL for you, and again, we ask that all you members send us "news items" for this column . . . the more received, the better and all contributions to readers of the association news will be welcomed.

### 12th Armored Division

Officers and men who fought with the 12th Armored Division in Europe will have a national reunion in New York City on Sept. 13-14, according to the 12th Armored Division Association.

All veterans who served with the unit during its 39 months of service are invited to attend the convention. The exact place in New York City has not yet been determined, according to Pat Harness, Association executive-secretary.

The Division's 200-page combat history is expected to be off the presses some time in May, Harness reported. The Division newspaper, *Hellcat News*, has already resumed publication.

Information concerning the 12th Armored Division's activities can be obtained by writing: 12th Armored Division Association, 2742 S. Veitch St., Arlington, Va.

## RIDING AND SCHOOLING HORSES

*By The Late Brigadier General Harry D. Chamberlin*

The Principles of Equitation are laid down in this book in language understandable by everyone. It is a book written to help the reader become a better horseman. There are chapters on Seat, Hands, Application of the Aids, Saddlery, Schooling, and Jumping. This famous book, which has been out of print for sometime, it being republished by the Armored Cavalry Journal. It will be available about July 1, 1947. The price of the book is \$4.00 a copy. Place your advance orders now.



# THE BOOK NOOK

If you are not a member of the  
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Read the Book Club advertise-  
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full details. Become a member  
now.

**THE SOVIET SPIES: THE STORY OF RUSSIAN ESPIONAGE IN NORTH AMERICA.** By Richard Hirsch. Duell, Sloan and Pearce, Inc. \$1.00.

"It was Igor Sergeievitch Gouzenko who revealed the existence of a widespread conspiracy to obtain secret official information respecting the military potential of Canada, the United Kingdom, and the United States, and to convey such information to the Government of the U.S.S.R. At eight o'clock on the evening of September 5, 1945, he left the Soviet Embassy in Ottawa with 100 documents belonging to the officially accredited Soviet diplomatic representatives. In so doing, he betrayed his government, his superiors, and his oath of office. As wards of the Canadian Government, Gouzenko and his family are now being accorded the close protection of the Royal Canadian Mounted Police."

So begins the introduction to the new book *The Soviet Spies* by Richard Hirsch that gives the first complete story of Russian Espionage in North America.

Hirsch, a former Lieutenant Colonel in the Military Intelligence Division of the War Department General Staff, has been a professional writer on law enforcement and crime problems for the past 14 years. He is well qualified to compile this record of Soviet espionage activities in North America. The Publisher's note to the book states that Colonel Hirsch's views and beliefs expressed in the book are his own and are not to be construed as reflecting the official opinions of the War Department.

*The Soviet Spies* is an important and sensational book, presenting the facts with brilliant logic and drama.

Among the book's pages will be found the answers to such questions as: What did the "hundred documents" contain; What were the Russians after; Why did Cana-

dian scientists, officers, and others give secret data to Soviet agents; and How did a Prime Minister trap a British atomic scientist caught in "the Net"?

The book is packed with facts and reprints of official documents.

Colonel Hirsch ends his important book with this paragraph: "This has been a study in betrayals. Betrayals that have worked both ways. So long as flags fly and nations endure they will continue to occur. But by practical, realistic steps they can be kept to a minimum. Unless such steps are taken, both as a nation and as individuals, we will awake, too late, to learn the irreparable harm that has been done."

Read this book. It is a must.

**WEB OF LUCIFER.** By Maurice Samuel. Alfred A. Knopf. \$3.00.

This is a novel of Italy during the Renaissance. Mr. Samuel tells a story of love, hope, decency, and idealism at war with craft and brute power. Told against the turbulent and compelling background of fifteenth and sixteenth century Italy, *Web of Lucifer* is a historical novel of grand scope and passionate sweep.

The background to this novel is the career of Cesare Borgia, son of Pope Alexander the Sixth. The French under Charles the Eighth had invaded Italy in 1495, only to be driven out the same year; they returned under Louis the Twelfth in 1499. With them came Cesare Borgia, seeking a throne. Central area of action is the Romagna province of Italy, which lies south of the river Po, between the Apennines and the Adriatic Sea.

Giacomo Orso learns from his sweetheart Leonora and his teacher Fra Matteo to believe that a great moral leader



# Read the truth behind the headlines...in The SOVIET SPIES

DAY, MARCH 27, 1947.

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COMMUNIST PARTY  
A 'FIFTH COLUMN'**

Allegiance Is to Russia, He  
Testifies, and Overthrow of  
Our Government Is Goal

SENATOR CAUSES AN UPROAR

The Story of  
Russian  
Espionage in  
North  
America

by  
**Richard  
Hirsch**

## The SOVIET SPIES

The Story of Russian Espionage in North America

By Richard Hirsch

an important and sensational book, presenting  
the facts with brilliant logic and dramatic  
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after many "hundred documents" (sic!)  
and the "hundred documents" (sic!)  
have been taken to Soviet Russia?  
How did a Russian Minister stay in British waters  
without being caught in the act?

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This book answers questions being asked every day by Congress, government authorities, the newspapers — by every forward-looking American. Richard Hirsch, formerly a Lieutenant-Colonel in the Military Intelligence Division of the War Department General Staff has done a brilliant job of presenting the facts. THE SOVIET SPIES, The Story of Russian Espionage in North America, contains documentary evidence of proven authenticity. Here is the who, why, and how of the most audacious espionage plot of modern times — what a story...!

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will shortly unify and liberate Italy. *Web of Lucifer* tells what happens to him when, under the spell of his naïve conviction, he falls into the clutches of Cesare Borgia and under the tutorship of Machiavelli. Its climax comes with his disillusionment, the re-establishing of his idealism and hope, and his final joyful recognition of the power of love.

THE DEADEYES: THE STORY OF THE 96TH INFANTRY DIVISION. By Orlando R. Davidson, J. Carl Willems, and Joseph A. Kahl. Infantry Journal Press. \$5.00.

A book reviewer reads from day to day many good and bad books, and some in between. This reviewer has just read a war history, written by three soldiers, that can be described only as terrific. Captain Davidson, Lieutenant Willems, and Sergeant Kahl have written a powerful war story: *The Deadeyes*.

This review can begin in no other way than by reprinting in whole the Foreword written by Major General J. L. Bradley, former commanding general of the 96th Infantry Division:

"Every division commander worthy of his position is convinced that his is the finest division in the Army. I am no exception, and I have read nothing in the pages that follow to cause me to think differently.

"I am intensely proud of the 96th Infantry Division. I am proud of the men who were the 96th Division and of the officers who led them. It is not vain pride, for it is they, not I, who made ours a great division. A general simply plots the course—his men do the rest.

"This book has been dedicated, and rightly, to the brave men of this Division who died in battle. I would like the privilege of offering a second dedication—to those equally gallant men who lie in hospitals from coast to coast and to others who, like them, will forever bear the scars of war. They, too, placed honor above life, and their country must never be allowed to forget them.

"To all my men, I say humbly—thank you."

This history of a fighting infantry division starts with the division's Stateside training in the Northwest. It goes on from there to cover the Leyte campaign in the Philippines and the Okinawa campaign. Divided into 10 books of several chapters each, the history also tells the story of the Division Artillery, the separate units, a list of casualties, a list of those men in the Division who were decorated, and more.

It is a book of 310 pages that tells stories of daily heroism and self-sacrifice.

On page 249 of the history is reprinted a letter written by a mother to the commanding officer of her late son that is a masterpiece of sincerity, simplicity and eloquence. A paragraph of this mother's letter reads:

"I get very little comfort from any feeling of 'patriotism.' I know my son was brave, but he had no illusions about war. He wanted to go—but not because he had any illusions about it! He wanted to go because he felt that it was as much his job as any other boy's. He loved us and hated to leave his home, and he hated the whole filthy mess of war. He loved beauty, good music, good books, all outdoor sports—well, he just loved life. And he had to say goodbye to all happiness of living when he had hardly begun to live—because some dangerous beasts in the world were allowed to go free!"



**COMMAND DECISION.** By William Wister Haines. Atlantic—Little, Brown. \$2.50.

This novel is the story of Brigadier General Dennis, commander of a division of heavy bombers in England, through whose office passed the men who ran the war. Dennis wanted to fight just the war, not the Army, the Navy, the rest of the Allies, the White House, Congress, the press and the people. His job was to finish Operation Stitch—the three-town bombing campaign to destroy the centers where the new German jet plane was being manufactured. It meant that he had to send his best men, led by his best friend, far beyond fighter cover; the losses were huge on each mission, but Dennis knew that unless the production line was destroyed the bombers might be run out of Europe. Dennis's superior, General Kane, was miserably trying to pick his way between military threats and political threats, but Dennis did not wait on Congressional Committees.

OUR VICHY GAMBLE. By William L. Langer. Alfred A. Knopf. \$3.75.

Produced at the request of former Secretary of State Cordell Hull, the author gives a firsthand account of American dealings with Vichy, both before and after the invasion. He attempts to clarify and explain our Vichy policy. Helped by Admiral Leahy, Robert Murphy, and others, the author makes numerous revelations that most Americans were not aware of. For example, he tells of General Pershing being considered as the First Ambassador to Vichy.

MARSHALL: CITIZEN SOLDIER. By William Frye. The Bobbs-Merrill Company. \$3.75.

This biography deals only with the military career of the wartime Army Chief of Staff. It does not go into General Marshall's services as a special envoy to China and more recently as Secretary of State.

General Marshall's career presents rare opportunities for the biographer to combine action and interest with historical significance. The author, William Frye, who gained much of his information directly from the War Department, has written a book about an outstanding military leader that should be read and studied by every military man.

THE CASE OF ERLE STANLEY GARDNER. By Alva Johnston. William Morrow & Company. \$1.50.

Here is the first complete biography of America's most prolific mystery writer and creator of that famous fiction lawyer-detective, Perry Mason. For Perry Mason fans, of which there are millions, this book is a must.

THE STORY OF THE FBI. THE OFFICIAL PICTURE HISTORY OF THE FEDERAL BUREAU OF INVESTIGATION. By the Editors of *Look Magazine* with an Introduction by J. Edgar Hoover. E. P. Dutton & Co., Inc. \$3.75.

This book takes you behind the scenes and shows you by means of vivid photos and clear text exactly how the FBI guards our internal security. Prepared with the full cooperation of the FBI, it is the most dramatic fully illustrated

"I wouldn't have missed it for the world..."

*A former Air Force officer, of whom we never heard before, read William Wister Haines' new novel, COMMAND DECISION, and wrote us this unsolicited letter.*

"I was a Major in the Air Forces, overseas for three years with a B26 combat squadron. Mr. Haines succeeded in crystallizing so many impressions which I had felt but had been unable to put into words, that the story came almost as a shock to me. It was as though the million nebulous things that soldiers thought about were immersed in print and presented here...we had our Casey Dennises, too, and plenty of them: men who refused DFC's and Purple Hearts, and who sought tough missions because they knew the effect on their crews. We knew the answers...but we had a hell of a time reconciling them with what we thought a war should be. We knew, but we didn't understand. I see it a lot more clearly now. We suffered Congressional investigations, political generals, improvident changes of plan with no apparent regard for the purpose of the war. To have put these things into a novel, without either burlesque or falsity, is a magnificent task.

"And it's true - a lot of us, particularly in jobs like mine (Exec officer) used to think of the crews coming in monthly to replace old men; we used to notice how they seemed to get a little younger, each batch. And we'd see the stacks of boxes of KIA boys (that's Killed In Action) and lie awake nights, visioning the long marches of men still training in the States, still finishing high school. Mr. Haines has written a book, and I wouldn't have missed it for the world."



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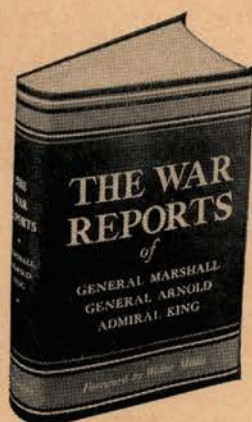
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PICTORIAL HISTORY OF THE SECOND WORLD WAR, Volume 4. William H. Wise & Company. \$2.98.

This volume, the fourth, covers World War II in photographs from September, 1944, to August, 1945, and V-J Day. It consists of more than 500 pages of action war pictures.

THE UNO HANDBOOK. By Andrew Boyd. Pilot Press, Inc. \$2.50.

Here is a complete guide to the United Nations. It fully explains the structure and procedure of every agency. The book contains texts of principal Charters and Declarations and a complete index.

THE MEMOIRS OF DOCTOR FELIX KERSTEN. With an Introduction by Konrad Heiden. Doubleday & Company. \$3.50.

Dr. Felix Kersten is the anti-Nazi physician who treated Himmler, Ribbentrop, Ley, Hess, and other Nazi leaders. In his conversations with them he learned of their unbelievable plans for the future of the world.

His memoirs contain the full, awful details of the inhuman Nazi program, related to him by the men who intended to put it into effect.

This book of 14 chapters begins in 1939 when Heinrich Himmler becomes one of Dr. Kersten's patients and ends in 1945 with the suicide of Himmler.

The titles of the 14 chapters in the book are: 1939: Heinrich Himmler Becomes My Patient; 1940: I Organize My Private Underground Resistance; SS Reichsfuehrer Heinrich Himmler and the SS; 1940-41: Rudolf Hess—Dr. Robert Ley—Count Ciano; 1941: The Nazis Have a Plan for Holland; 1941-42-43: "Los von Rom!"; 1942: Concentration Camps—and Other Matters; 1942-43: Ribbentrop—and the Swedish Match Trust Case; 1943: Germany in Ferment; The Nazis Plan a New World; Adolf Hitler: 1943-44; The Jews; 1944: Beginning of the Crack-up; and Last Days: 1945.

BLUEPRINT FOR PUBLIC RELATIONS. By D. H. Plackard and C. Blackmon. The McGraw-Hill Book Company. \$3.50.

Here is a book that every wise Army Public Relations Officer will purchase and place on his desk for continual use. This book of 300 pages gives sound and quick guidance on every phase of planned public relations programming. In addition to presenting details of many successful methods, functions, and techniques, the manual unveils practices heretofore known only to the professional.

Many case illustrations of how public relations and pub-



licity programs are planned and carried on in large and small organizations are given. Particular attention has been directed to advances in the field, and to the part which publicity plays in the over-all public relations picture.

The principles set forth in this book can be adapted to Army use to good advantage by active PROs.

**THE PURPLE TESTAMENT.** Edited by Don M. Wolfe. With an Introduction by John Dos Passos. Doubleday & Company. \$2.50.

This book is a collection of writings by 53 World War II disabled veterans. None of the authors of this book are professionals. The pieces were written in an English class taught by Don M. Wolfe as part of a course to train the writers to be counselors to disabled veterans like themselves. All money received from the sale of this book beyond the cost of publication is to be distributed to the authors on equal terms.

**THE RANKS OF DEATH.** By the late Colonel P. M. Ashburn. Edited by Frank D. Ashburn. Coward-McCann, Inc. \$5.00.

Few fields of history have been so neglected as the medical, yet it is probable that no single factor has had as much influence on history as disease. Here at last is a book which makes clear the impact that disease had on the whole course of events in half a world. The book is written so that it is understandable to laymen as well as doctors and historians.

**HISTORY OF THE XVI CORPS. FROM ITS ACTIVATION TO THE END OF THE WAR IN EUROPE.** Infantry Journal Press. \$5.00.

A 110-page history, this book is complete with maps, charts and photographs of XVI Corps operations in Europe. In the appendix are listed the names of all the officers and enlisted men that served with the Corps from September 20, 1944, to June 1, 1945.

**THE STORY OF WAKE ISLAND.** By Colonel James P. S. Devereux. J. B. Lippincott Company. \$2.75.

Here is the full story of Wake Island told by the man best qualified to tell it—the officer who commanded the Marines on the island during those terrible days against overwhelming odds. This is a firsthand account of the Wake Island siege and it is told vividly and dramatically.

When Wake Island was surrendered casualties stood at 96 killed, about half of whom were civilians. The Jap score stood at some 5,700 killed. Probably no other battle in history can match these figures for comparative losses. The initial effort of the Jap attack on December 11, 1941, was repulsed by a "battalion" of 378 men supported by four planes. In this initial assault the Japs lost some 5,350 men against Marine casualties of four injured. The Japs made their second attempt at landing under the cover of darkness and succeeded.

Heroism rarely paralleled has made Wake Island an unforgettable symbol—like Valley Forge and the Alamo. This book is its complete story.

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Has An Important

### ANNOUNCEMENT

on the Publication of

**Harry D. Chamberlin's Book**

*Riding & Schooling Horses*

**Don't Miss It**

**THE STRANGE ALLIANCE.** By Major General John R. Deane. The Viking Press. \$3.75.

General Deane, who headed the U.S. Military Mission in Moscow from 1943 until the end of the war, discusses in his book the answers to the questions as to whether Americans can cooperate with Russians and whether Russians will cooperate with us. This book also tells of General Deane's dealings with Soviet officials, Red Army officers and with the Russian people.

**THE MIRACLE OF THE BELLS.** By Russell Tanney. Prentice Hall. \$3.00.

This novel is the story of a coal town that transforms itself from a spirit of hate into one of understanding and brotherly love. The book is rapidly becoming one of the nation's best-sellers.

**THE DOCTOR HAS A BABY.** By Evelyn Barkins. Creative Age Press, Inc. \$2.50.

A warm and winning story, *The Doctor Has A Baby* tells of a mother, the author herself, who read all the scientific books on baby care, threw them away, brought up her baby on instinct and common sense, and lived to smile and tell the tale. It is a delightfully human book written by a woman with a wonderful sense of humor.

**THE FOURTH MARINE DIVISION IN WORLD WAR II.** Edited by Captain Carl W. Proehl. Infantry Journal Press. \$5.00.

This is a factual and accurate history of the Fourth Marine Division's part in the past war. It consists of 238 pages of pictures and text that tell the Division's complete story. Foreword to the book is written by Robert Sherrod, well known war correspondent, who covered many of the Division's combat actions.

**SECRET MISSIONS.** By Captain (USN) Ellis M. Zacharias. G. P. Putnam's Sons. \$3.75.

Captain Zacharias, USN (now Rear Admiral, Retired) has written the extraordinary record of his 25-year war of wits, nerves and words against the Japanese Secret Service, culminating in his master stroke of psychological warfare which broke the Japanese will to resist even before the atom-bombing of Hiroshima.

**THOROUGHBRED RACING AND BREEDING.** Edited by Tom R. Underwood. Coward-McCann, Inc. \$5.00.

This is the third edition, revised to include the latest available statistics.

**F.D.R. COLUMNIST.** Foreword by Eleanor Roosevelt. Edited by Donald Scott Carmichael. Pellegrini & Cudahy. \$3.00.

This is a collection of 19 newspaper columns written by the late President for the Macon, Ga., *Daily Telegraph* and *The Standard* of Beacon, New York. They have been printed in an attractive volume with well-documented commentary.



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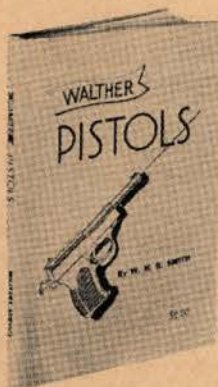
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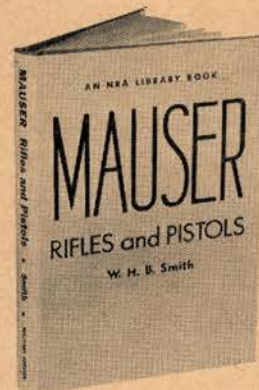
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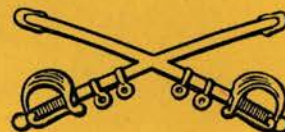
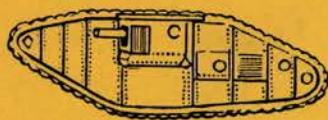
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# 2d Armored División Combat Loading Morocco

## PART ONE

*by Lieutenant Colonel F. M. Muller\**

**Combat loading and unloading of the 2d Armored Division in its three major World War II operations, Morocco, Sicily, and Normandy, is explained in detail beginning with this article on Morocco, which is Part I of a series of three. Colonel Muller, who was a Transport Quartermaster for the 2d Armored Division, is well qualified to write this important series.**

**O**PERATION TORCH, in brief, was the invasion of Morocco. This operation was executed by Western Task Force under the command of Major General George S. Patton, Jr. The plan called for landings at three different places on the coast of Morocco—Safi, Fedela, and Port Lyautey.

The force landing at Safi consisted primarily of the 47th Infantry Regiment of the 9th Infantry Division, plus a landing team of the 2d Armored Division. This operation was called Blackstone.

The force landing at Fedela consisted primarily of the 3d Infantry Division reinforced by a landing team

of the 2d Armored Division. This operation was labeled Yoke (Brushwood).

The force landing at Mehdia-Port Lyautey consisted mainly of one regiment of the 9th Infantry Division and a landing team of the 2d Armored Division.

Although this landing was on a hostile shore it was hoped that the French would not resist and would join the cause of the Allies. This invasion date—D day, was November 8, 1942.

It is not the purpose of this author to write on the economic, political or tactical aspect of the Moroccan invasion, but only that part as affected the combat loading and unloading of the 2d Armored Division.

\*Student, The Armored School.



## LOADING

All elements of the 2d Armored Division which constituted the three landing teams were to be loaded at the port of Norfolk, Virginia, except that part of the armored landing team to land at Safi, Morocco, consisting mainly of 54 medium tanks of the Third Battalion, 67th Armored Regiment, which was to be loaded at New York, N. Y.

Prior to the actual loading of the designated ships the planning stage was executed by the Staff of the Division at its assembly area at Fort Bragg, N. C. The A. C. of S. G-4, 2d Armored Division, in conjunction with the pertinent General and Special Staff Sections, mainly the A. C. of S. G-3, of the 2d Armored Division, determined the allocation of personnel, vehicles, and supplies for each ship earmarked to transport elements of the Division. These plans incorporated the debarkation phase and included the desired debarkation priority. The landing teams were formed at Fort Bragg and remained separate units for this entire operation. Selected officers were sent to the Transport Quartermaster School at Norfolk, Virginia to learn the fundamentals of ship loading, especially ship combat loading. Ship combat loading is merely the loading of personnel, vehicles and military impedimenta so that, in accordance with a predetermined tactical debarkation priority, the correct type of personnel, vehicles, and impedimenta is unloaded and put ashore in the correct sequence.

This Transport Quartermaster School was under the Amphibious Force, U. S. Atlantic Fleet, Norfolk, Virginia, and was an excellent school. The greatest detriment was that the prescribed course given the selected TQM's (Transport Quartermasters) of the 2d Armored Division was only about two weeks in duration, and this allotted time was not sufficient to produce trained TQM's. The responsibility of a TQM is quite large, especially considering the basic fact that most of the officers selected were First and Second Lieutenants. A TQM must be a diplomat, improviser, semi-ship's engineer, mess officer, billeting officer, transportation officer, and supply officer, all wrapped in one. Listed below are the major duties of a TQM:

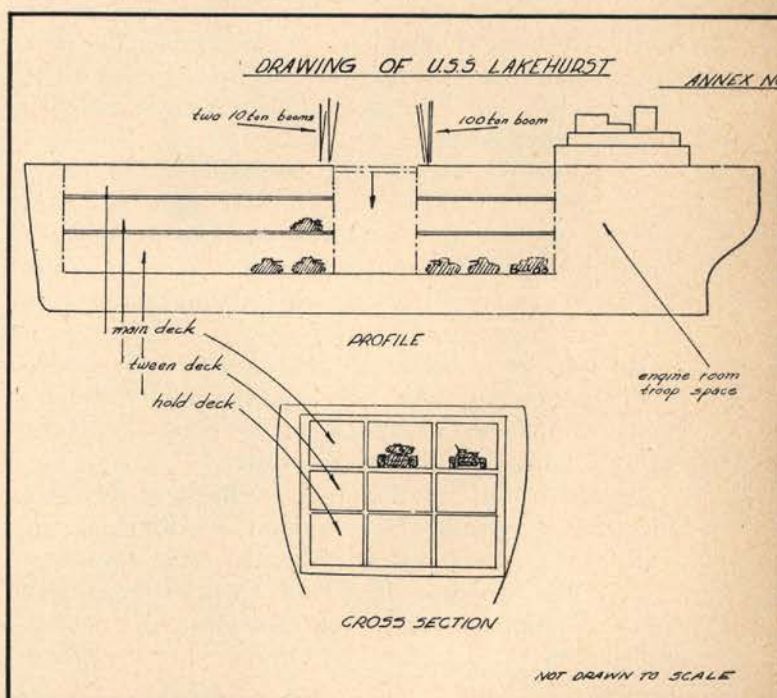
- (1) Load the ship.
- (2) Act as liaison officer with the Navy.
- (3) Arrange for ship billeting of army personnel.
- (4) Assign and supervise army ship details—cooks, KP's, police, etc.
- (5) Tabulate and maintain records for both the loading and unloading.
- (6) Inform higher Headquarters of the progress of loading and unloading.
- (7) Insure adequate troop supplies required for voyage—rations, water, medical, etc.
- (8) Insure laundry facilities, PX, etc.
- (9) Unload the ship.

Upon completion of this course the TQM's were re-

turned to Fort Bragg where they were briefed by the A. C. of S. G-4, 2d Armored Division, assigned to ships, received their allocations as to what was to be loaded on their ship and when, and given the desired debarkation priority. TQM's were then sent to their respective ports to board their assigned ships, secure the necessary nautical data to ascertain their loading plans, compile these plans, and await the arrival of the landing teams.

The landing teams at Fort Bragg were given new or combat serviceable equipment and were engaged in landing exercises on a small lake at Fort Bragg. The movement plan involved a rail movement to the ports of embarkation, and this rolling stock was then in the process of arriving at Fort Bragg.

The author was assigned as TQM of the U.S.S. *Lakehurst* at New York or Sea Train as it was commonly referred to at this time. One major factor which was apparent then was the misconception as to the characteristics and capacities of the designated ships, especially the Sea Train. In the latter case the proposed allocation called for some 300 vehicles, the majority of medium size, the 2½-ton truck type, yet including 54 medium tanks, six Carriage Motor M7's and 12 Engineer Bridge trucks (Brockaways). No information was available on the actual capacity of the Sea Train, and on arrival in New York, where the Sea Train was undergoing repairs and passing from Merchant Marine control to Navy control, it was learned that her maximum capacity was approximately 200 vehicles. This decidedly changed the composition of those elements of the landing team designated to embark on this ship and of course changed the tactical aspect of the landing plans. After the actual compilation of the loading plans it was discovered that the Sea Train could only carry approximately 156 vehicles. This again changed the whole set-up; but the vehicles designated for the Sea





Train were already moving by rail to this port and it was too late to change the train loads or divert their movement. (See Annex No. 1.)

The Sea Train was ready to be loaded on October 15, 1942, and was moored at Brooklyn Port of Embarkation. Naval supplies for the Sea Train were then taken aboard and the author took over the job of loading her. On October 16, 1942, the ship was to be loaded with approximately 60 days "B" rations and five units of fire for each weapon of the landing team. Because of the peculiar design of the Sea Train it was decided to load rations and gasoline forward on the Tank Deck and ammunition aft on this deck shoring off<sup>1</sup> each to allow for the loading of other supplies. Loading went well until about 3:00 P.M. this day when a change directed that because of the number of vehicles designated to be embarked the ration supply would be cut to 45 days. This change involved a balanced ration supply for 45 days, thus necessitating the almost complete unloading of the rations, the determination of a balanced "B" ration for 45 days, and the recommencement of the loading. Changes on the amount and type of ammunition also necessitated unloading certain types of ammunition. This materially slowed the loading.

The vehicles had been loaded at Fort Bragg on rail flat cars in predetermined sequence to facilitate the loading on ship, however, due to the switching of the flat cars in the port area this was of no avail. A string of flats was run along the ship's side and then lifted by the ship's 100-ton boom and loaded aboard. Due to the combat loading this involved considerable switching of the flat cars to get the correct vehicles at the ship's side.

All vehicles were waterproofed by Ordnance specialist teams and this phase was accomplished quite efficiently. Delay was encountered on the loading of ammunition, both on the shipment from Raritan Arsenal and in the civilian labor groups loading the ship. In the latter case it was necessary to augment these dock workers with military details to insure completion of the loading on time.

In addition to rations and ammunition, Ordnance, QM, Medical, Engineer, CWS, and Signal Class II and IV supplies were loaded in amounts as predetermined by higher Headquarters, generally 30 days' supply for the landing team distributed among the ships of the landing team.

All vehicles to be loaded aboard were fully loaded with their organic basic loads of ammunition, rations, signal equipment and ordnance spare parts. Vehicular gasoline tanks were 90 per cent full.

Because of the large number of vehicles of the landing team shipped to New York, the loading of the vehicles was executed to take the maximum advantage of all available space. The Tank Deck or lower deck was loaded mainly with trucks, 2½-ton and Engineer Bridge Trucks (Brockaways). On top of each of these

bridge trucks were loaded two trucks, ¼-ton. Trailers were loaded in any available space. Tanks were positioned as close to the vehicle in front as possible taking into consideration the necessary space required to chain vehicles down. The templet-loading of the ship called for the loading of tanks and other heavy vehicles on the superstructure deck—this was done by maneuvering these vehicles on this deck and by using a dock or shore crane. In using this shore crane it was taken into consideration that there would be no such apparatus at the objective and that the ship must be unloaded with its organic booms, one 100-ton boom and two 10-ton booms. The shore crane was used to speed up the loading as the loading of the Sea Train was then one day behind schedule.

In the templet planning and the actual loading the distribution of weight of cargo as affects the ship had to be continually remembered. Since the Sea Train had more cargo space forward than aft the ship resultantly was "down by the head"<sup>2</sup> when the ship was two-thirds loaded. This was remedied by the ship adjusting its water ballast. Difficulty was encountered in loading heavy vehicles on the superstructure deck due to the construction of the deck, objections by the Navy and the lack of chains for securing the vehicles, however, the use of this deck decidedly increased the number of vehicles in the landing force being transported. After the ship had been loaded there were still some 40 vehicles standing on the pier. The adjustment in regard to combat loading priority was computed less these 40 vehicles prior to the loading of the ship. Those vehicles which could not be taken were shipped by rail to Norfolk, Virginia, and later shipped on the D-20 convoy.

The Moroccan invasion was executed in three main echelons—the D-day on Combat Loaded Convoy; the D-5, and D-20 Convoys, which were convoy loaded.

All loading on the Sea Train was completed by October 18, 1942, and the ship left New York on October 19, 1942, for its shakedown cruise and to rendezvous with the main convoy at Norfolk, Virginia.

The TQM's loading at Norfolk experienced many of the difficulties encountered at New York. In Norfolk, both APA (personnel) and AKA (cargo) ships were loaded by TQM's of the 2d Armored Division and other units of the Task Force. The loading of an AKA ship is considerably different from that of the Sea Train. In the former case the templet system in conjunction with precise measurements was the criterion, while the loading of the Sea Train was similar to LST loading. The 700 APA and AKA ships carried landing barges on davits; these were used to unload personnel and military equipment to the beaches.

Supplies and material were loaded at Newport News, off Norfolk, using gangs of negro stevedores; they received an exorbitant wage (reported \$4.00 per hour) and did not earn it; certain of them, experienced

<sup>1</sup>Marine term meaning to bar off, separate, usually by boards.

<sup>2</sup>Nautical term meaning the forward part of the ship, i.e., the bow is deeper in the water than the aft part or stern.



operators of labor-saving equipment, worked rapidly and well; most loafed, asked sailors and soldiers to do their jobs. Actual loading operations consisted of calling on the Port of Embarkation for items, which were stacked on the dock by type and loaded per plan of the ship TQM. The executive officer of the 47th Infantry informed me that supplies were not delivered to the dock sufficiently ahead of time to permit loading prior to embarking the troops; the ships' aide to the executive (aboard *Lyons*) stated supplies arrived in dribbles, the stevedores sitting idle and then unable to pick up a fast tempo; changed cargo necessitated shifting items from hold to hold. Ammunition for ballast was made available in New York; ballast promised was late, necessitating a return to port after the shakedown cruise in the Chesapeake. The item of ammunition, which was supposed to be delivered in carload lots *per vessel*, came in carloads *per type*, necessitating sorting, shifting and stacking before it could be loaded. Troop train schedules were jumbled, and coupled with slowness in loading, arrived in port before supplies were loaded; the presence of troops aboard ship during the loading of supplies was a decided hindrance. Troops first boarded ship per passenger list (alphabetically), then disembarked, formed up in boat teams, and re-embarked. After all ships were loaded a shakedown cruise and landing exercise was held in the Chesapeake Bay. Finally on approximately October 22, 1942, the convoy sailed from Newport News.

#### UNLOADING

The three sub-task forces executed their landings in their respective areas Safi, Fedela, and Port Lyautey on November 8, 1942, with varying degrees of success. Probably the most successful was the landing at Safi.

#### SAFI

D-day Troops of the assault waves debarked in landing craft; vehicles were unloaded by LCV's between 1100 Z and 1400 Z; at 1400 Z the Sea Train and *Titania* steamed into the harbor and docked; the remainder of the transports anchored 500 yards offshore, continuing to unload by landing craft. Vehicles, ammunition, gasoline, water and food were unloaded at beaches. (See Annex No. 2.)

D-1 day—All types of supplies were unloaded on the two beaches, although vehicles were routed to one beach only. As the beaches became more and more crowded, landing craft entered the Fisherman's Wharf area tying to the floating pier. By nightfall unloading on both beaches ceased and only limited unloading continued on all docks.

D-2 day—All unloading on the beaches ceased and unloading was made to the floating pier in the Fisherman's wharf, the south end of the Phosphate Dock and the angle of the Phosphate Dock and Jetty Transversale from landing craft.

D-3 day—No change.

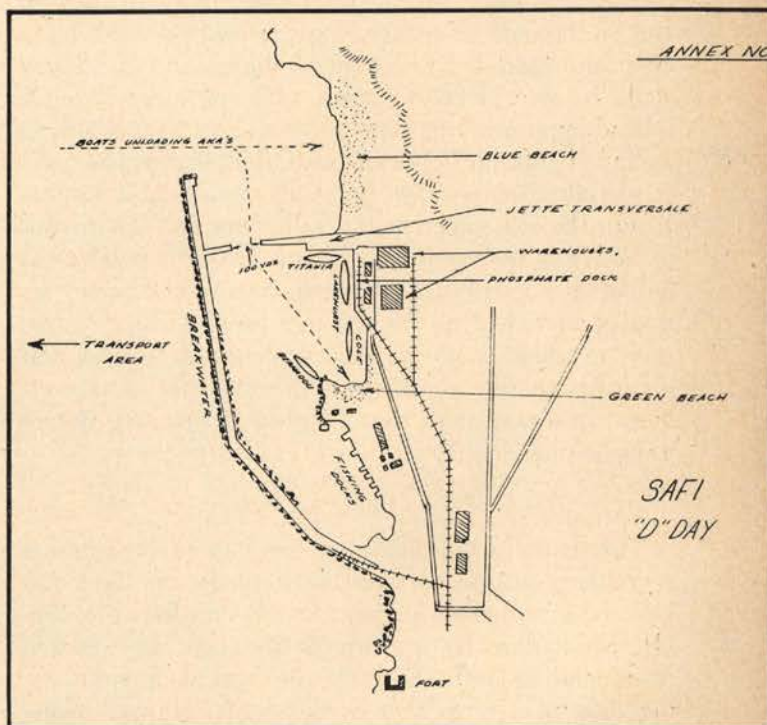
D-4 day—Calvert replaced *Titania* at the Jetty Transversale.

D-5 day—Lyons replaced Calvert at dock; unloading ceased about 1600 Z and convoy sailed about 2000 Z.

The shore parties consisted of two companies of the 540th Engineer Battalion. These troops were not sufficient to handle the large amount of unloading. Nearly all troops of this unit were absorbed in running the bulldozers and amphibious tractors. The beaches and quays were continually crowded with landing craft awaiting unloading, waits of four hours in daylight and all night long being common.

The unloading of the Sea Train was commenced about 1500 D-day. The unloading went exceptionally well, due mainly to the training of unloading crews during the voyage; these crews were from the Engineer Battalion of the 2d Armored Division. Tanks were unloaded at the rate of one every five minutes until the 100-ton boom broke which delayed unloading about three hours. In spite of this accident, all combat vehicles were unloaded within 24 hours.

The difficulty of unloading began in the unloading of the supplies, mainly gasoline and ammunition. The major difficulty was the piling up of the supplies on Phosphate Dock. No army personnel were available to move these supplies farther inland; Arabs were used but these natives proved quite unsatisfactory—they were slow, indifferent, and unreliable. Stealing by the natives was quite common and it became necessary to post guards and native overseers over every group. Troops of the 47th Infantry Regiment were pulled out of the line and sent back to the port area to aid in the unloading of the ship. This policy proved unsatisfactory: the men were tired, insulted (to do what they considered boring and non-infantry labor) and inexperienced.





enced. As a result the unloading of the cargo was materially delayed; it took four days and nights to unload.

By 1800 Z, D-2, all the combat elements of the 2d Armored Division landing team were ashore, and commenced moving north toward Casablanca. It was decided to utilize two destroyers, the *Cole* and the *Bernadou*, loaded with ammunition, fuel and lubricants, and rations as supply carriers. These ships were to proceed to Mazagan, when this port was taken, to resupply the landing team to enable the continuance of its mission to Casablanca. These two destroyers were moored alongside the Sea Train and were loaded with supplies from the Sea Train. The loading of the two destroyers was made at night while the unloading on the pier continued on the opposite side of the ship. The loads for each destroyer involved definite amounts and types of supplies and this requirement proved extremely difficult to execute because of the bulk loading and shoring-off methods by which the ship had been loaded. By unloading channels of supplies, employment of double unloading crews, and vigorous work by all personnel concerned, this loading of the destroyers was accomplished in about six hours. It was necessary then to send experienced unloading crews with these destroyers and these crews came from the Sea Train; this greatly hurt the unloading efficiency of the Sea Train, leaving only a few inexperienced personnel to unload her.

The control on the beaches and the docks was inefficient. Continual minor problems arose by both the Army and Navy and no central control agency was there to solve these problems. The Beachmaster's job was a tremendous one and he had little assistance to enable him to properly execute his responsibilities.

Night unloading was found to be tedious and difficult. It was imperative to have some light in the ship and on the dock in order to expeditiously unload, however, one light led to too many lights and the lights could be seen at far distances. The problem of night unloading at a hostile port was not satisfactorily solved at Safi—lights must be provided that will enable efficient unloading, yet not be visible for great distances. It must be remembered that as late as D-3 the harbor of Safi was under direct sniping fire which harassed and often stopped the unloading. Spasmodic enemy air raids interrupted the loading to a limited degree, however, in most cases the enemy planes were over and gone before the personnel unloading the ship even knew there was an air alert. A good air warning system must be provided.

#### FEDELA

This landing was made on the face of determined resistance and under a cross fire from the French Coast Defense installations at Point Fedela and Fort Blondin. Unsuspected reefs in front of the beaches wrecked many landing craft. The surf rose and made any landing difficult. Inexperienced coxswains allowed many

landing craft to beach and be destroyed. Several landing craft lost their way and discharged their passengers at the wrong places. The landing which was designed to cover a front of four miles, with its bulk on a front of two miles, had its extreme flanks landed 42 miles apart. A large percentage of the landing craft made only one trip to the beach and were wrecked.

In view of failure of the ships to maintain their positions on which the employment of boats had been based, the Commanding General of this force directed all combat troops to go ashore in whatever boats were available on the ship on which they were loaded. As a result, combat teams embarked and went ashore more or less in increments.

In the landing many craft were swamped by the swells while the ramps were lowered. The necessity of power-driven ramp equipment is acknowledged. Some of the boats stuck on the beaches could have been saved had tugboats been available. The magnetic compass proved unsatisfactory and gyroscopic compasses, in spite of their cost, appear to be necessary.

The highest casualties of the campaign were from drownings of men loaded with equipment. The individual load was far too great. Leading waves could not carry the load and move rapidly, nor was there any necessity for such loads. Excess equipment was discarded on the beaches and quays along the streets of town and across the hillsides. Approximate loads for soldiers were as follows:

(1) Full field less roll (includes change of socks and underclothes, toilet articles), (2) 1½ days "K" ration, (3) entrenching tool, (4) individual weapon, (5) trench knife, (6) 2 canteens (full), (7) helmet, (8) ammunition (18 clips M-1, 32 clips 03, 10-20 rd. magazines BAR, 15-30 rds clips T5G), (9) 6 grenades, and (10) gas masks.

#### MEHDIA-PORT LYAUTEY

The landing forces, consisting primarily of the 9th Infantry Division (minus the 47th Infantry Regiment) and a landing team of the 2d Armored Division met determined opposition and it was only after difficulty that this beachhead was secured. From the unloading aspect many of the difficulties encountered at Safi and Fedela were confronted here.

One major detriment was that on embarking, it was found that attached units had never received amphibious training and that 10 per cent of the men had not fired the rocket launcher or even the Thompson sub-machine gun. Many landing craft were lost and due to this, only 11 tanks were ashore by D-1.

#### RECOMMENDATIONS AND CONCLUSIONS

Prior to my recommendations and summation of this operation, it must be remembered that this amphibious assault was across the vast distance of the Atlantic Ocean; that inexperienced personnel were being given their baptism of fire, and that it was conducted against



a country felt to be friendly to the Allied cause though appearing hostile as it was under the relentless influence and pressure of Nazi Germany. No such operation, involving an amphibious attack from one continent to another, had ever before been attempted—it was a bold and aggressive step—mistakes were inevitable.

Enumerated below are recommendations for improvement, as pertains to the combat loading and unloading of an armored division, as a result of the valuable lessons learned on this campaign:

(1) Shore and beach party personnel should be highly trained specialists under one commander (Army). This training should be continuous.

(2) Boats should be pooled and under centralized control. Control of these boats, especially at night is essential—all boats should be equipped with TBY radios.

(3) Boat coxswains must be trained personnel—time is paramount in the initial unloading stages, every minute should be utilized to get more equipment ashore.

(4) All transports should be prepared to load boats at the rail.

(5) An adequate lighting system to permit unloading at night which is not visible to the enemy so as to endanger the ship, boats, and unloading personnel, should be provided.

(6) A standard rig for boat lines should be used on all transports to facilitate handling boats alongside during darkness.

(7) Loading of all equipment should be in such a manner that a major caliber hit in any part of a ship will not destroy the entire supply of any one item. All stowage should be low and tight, with concentration of weights near the keel, and even distribution of load.

(8) All equipment should be loaded on almost every ship to prevent "putting all the eggs in one basket" and the loss of that item if that ship is sunk.

(9) The installation of a mechanical driven ramp hoist on the LCM(3) is imperative and such a mechanism on the LCV's is highly desirable.

(10) The pneumatic belt type of life jacket should be worn by all troops. The kapok type is unsuitable; it is too bulky.

(11) LCM's, LCP's, and LCV's although generally well designed and capable of giving excellent service, are definitely unsuited for landing through a surf higher than seven feet. In more than one case in this operation when a ramp was lowered the receding seas entered the ramp opening and weighed down the boat, however, expeditious unloading, followed immediately by closing the ramps, would have reduced the number of these casualties.

(12) All troops participating in such an operation must have thorough amphibious training as teams, not individually, prior to such an invasion.

(13) Beaches and docks must be kept clear of supplies in order to unload other supplies. The loss of time

by boats standing off awaiting their turn to unload was considerable. All cargo must be moved quickly to less-exposed locations. The huge stocks of supplies on the beaches and docks not only created a bottleneck but a decided hazard in the event of enemy air operations.

(14) Individual equipment of the assault waves should be limited to the bare essentials required for combat. Other equipment can be moved to these troops after the landing has been effected.

(15) Transportation, especially 2½-ton trucks, must be available in sufficient quantities to clear the beachhead of supplies and to supply the advance of the exploiting troops on the beachhead, especially in an armored division. The most vulnerable point of armor is its supply lines—as much consideration must be given to cargo vehicles as combat vehicles.

(16) Transport Quartermasters should be superior officers, thoroughly trained, and preferably either Transportation or Naval personnel, assisted by Transport Quartermasters of the respective units making the landing. The average officer does not know much about the combat loading of ships, nor can he learn this in two weeks. TQM's must be experienced maritime personnel; the responsibility is too great to delegate to officers of combat units, they do not have the necessary qualifications to accept this great responsibility. Such TQM's (Maritime) should remain with that ship and load it, unload it, as long as she remains in amphibious operations. It is much easier to teach Transportation or Naval personnel the essential characteristics and requirements of combat units than it is for an army combat officer to learn the characteristics and requirements of efficient loading and unloading of ships.

(17) It is essential that the loading phase be definite and that loading plans be based on full knowledge of the characteristics of the assigned ships. It is imperative that these plans once formed be adhered to as much as possible; changes result in delay, confusion and inefficient loading. It is also essential that all equipment and supplies be on hand when the actual loading is executed and that all necessary loading preparations have been completed.

In summation, the lessons learned from the Torch operation were not of a novice character, such mistakes were frequent in varying forms before this operation and some are even today prevalent in landing operations. A landing operation, whether over the Atlantic Ocean or a small envelopment along a coast line, presents to a great extent the same problems, and such problems are not unique to amphibious operations. These problems can be overcome by thorough and conscientious planning, and efficient and vigorous execution of these plans. An amphibious operation is difficult, control is the criterion, however, the majority of all problems so encountered can be solved long before the first troops hit the beaches—the answer is training and good sound planning coupled with violent application.

*(To be continued)*



# MOBILE GROUND TROOPS OF THE FUTURE

by Colonel Hamilton H. Howze

CARDED

*(Author's Note: It has been difficult to select a title for this article. What constitutes the future for the branch I call "Mobile Ground Groups" is a highly controversial issue, and opinions on the matter are apt to be expressed with some little heat. The whole subject of the future is linked up—though perhaps not vitally—with the name selected for the branch, and that in turn with the old branch allegiances of officers concerned; I have, therefore, agitated this nests of hornets too, to the best of my ability.)*

THESE are the questions to be answered: What are the new problems facing the fighting vehicle? What sort of vehicles should we have? What organization do we want?

Throughout the last war, all of us whose principal business it was to fight tanks kept up an incessant pleading for bigger tanks and faster guns. My own voice was not one of the quietest. Certainly we were out-gunned by the German tanks, and certainly their armor was thicker and stronger than ours. Their motor power appeared to be at least equal to ours, and their flotation was greater. I recall that we were reassured periodically that the greater weight of the German tanks was, all in all, a grave disadvantage to the enemy, what with his difficulties of shipment, crossing bridges, etc. This was all very well; however, if we ran head on into a half a dozen well emplaced Mark Vs or Mark VIs, they had successfully solved their problem, for there they were. The next problem was all ours.

It is difficult, though, not to let our planning for the future become unbalanced by our experience in the last war. I think it is unbalanced: the vehicles and organizations we are now developing seem (with one notable exception) to be designed to continue the last war's fight. I believe that this attitude is wrong, and will lead to trouble.

I contend that the heavy tank, as the basic vehicle of the armored division, has had its day. By "heavy tank," I mean all tanks of weight greater than about 25 tons.

The heavy and medium tanks and self-propelled guns as they are now designed, as well as one or two behemoths that are being produced in experimental form by our Ordnance, are based upon this premise:

that a vehicle can carry enough armor to wall itself off from the danger of what goes on outside of it. The very idea of heavy armor is to absorb a hit and deflect it. In the present stage of development of guns and rockets and mines, not to mention what the future may hold for those weapons, the task is unequal. Consider that task: the heavy tank seeks to interpose between its engine and crew, and the enemy weapon, a wide area of metal everywhere so thick and strong that it will deflect, at any point, the projectile which may be thrown at it. The enemy weapon attacks an area perhaps only three inches square.

It is well to recall how our medium tankers managed to stay alive in the last war. Against the German 88 and 75 millimeter tank and antitank rifles, the principal protection to the tank crew was not in the capacity of the tank to absorb a hit, but rather in the ability of the tank to avoid a hit and to destroy the enemy gun. The number of hits which we took without serious damage were a small proportion of the total.

The result of the concept of heavy defensive armor can only result in relative immobility. Even though it may be acknowledged that motor power will be improved alongside of gun power, it will nevertheless remain true that a heavy vehicle must always be more difficult to move than a light vehicle.

American tanks have not, to this moment, been subjected to a number of weapons which presently exist, and some of which we used against the enemy. One of these weapons is the antitank rocket fired by aircraft; another is the variable time fuse fired by artillery (which will serve effectively to drive infantry away from tanks); a third is the antitank rocket, which may be used to saturate an area by the use of multiple barrel projectors massed behind enemy defensive positions; a fourth is the improved bazooka (which in its American 3.5 variety is capable of a long range and an impressive armor penetration); a fifth is the recoilless rifle with a range of upwards of 5,000 yards.

The use of these weapons by the enemy can hardly facilitate the success of our tank onslaught. Taken in addition to the other weapons which were used against us in the recent war, it may appear that the situation is well nigh hopeless.

On the other hand, whatever the arguments which



may be presented against the tank, it is inconceivable that the internal combustion engine will have no function on the battlefield. When we consider that the engine is capable of moving heavy loads and tremendous fire power at speeds far greater than that practicable to the dismounted soldier, it becomes obvious that it will be used by all modern armies on every battlefield of the future. We are left then with the serious task of overcoming the admittedly efficient antitank weapons, many of which are new, so that we may take advantage of the fighting potential of the vehicle.

#### "MOBILE GROUND TROOPS" REQUISITES

What are the basic requisites for "mobile ground troops"? It is important that we consider this matter without previous mental commitments.

The precise name for the branch is not of paramount importance. But, although no mere name can forever nullify the effectiveness of a major arm, it is inadvisable that the mission and expansion of the branch should be limited by its name. The name "Armor" was entirely applicable and descriptive in World War II, but it was applicable only because the tank of that war was designed and armored to turn an enemy blow. It is impossible for us to prophesy positively, in the light of scientific development, what form of vehicles the mobile branch will utilize in the near or distant future; however, steel armor in its present form is losing its contest with gun power, and until and unless a new type of armor is developed which has perhaps three times the ballistic strength of the present armor, per pound of weight, armor will continue to hold the dirty end of the stick. It follows then that the main characteristic of this force probably cannot, in the future, be defined by the word "Armor," since defensive plate will be a relatively unimportant feature of it. In such a case, new developments which will assist, perhaps, in the accomplishment of the offensive and exploiting role of the arm may be denied it, or only grudgingly permitted, on the basis of the fact that "it is not armor."

It is infinitely preferable that the branch—of whatever name—should have its mission defined to it in the clearest terms, and then be permitted and encouraged to include the weapons, vehicles, and personnel in an organization which will best serve to accomplish that mission.

Certainly the branch should include all of what may be termed the "assault forces" of the branch division—reconnaissance, fighting vehicles, riflemen—and be supported by the branch known as "Artillery." By the same token, whatever mounted fighting elements that are organic to the Infantry Division should be released to the Infantry branch, for their reason of existence is only to assist the Infantry in the accomplishment of the Infantry's mission.

#### WHAT TO REPLACE HEAVY TANK?

I have previously argued against the "heavy" tank of

thick defensive armor; in its stead, what sort of vehicle should we have? Our basic vehicle, and the one around which our organization should develop, should be the light tank, of low silhouette. Its armor should be light, sufficient only to turn small arms and the fragments of grenades and artillery. Its strength should lie in its great offensive fire power. That fire power should take three forms: that delivered by its main armament, which should be capable of destroying at medium ranges enemy tanks of the heavy variety, as well as delivering a good high explosive accurately at long ranges; secondly, that of machine guns; lastly, that which effects blanket destruction close in to the vehicle itself. Attempts are already being made along this line by means of grenades, mines, and white phosphorus which is spewed in all directions alongside the vehicle. These require much more extensive development, but that may be confidently expected if the need is clearly defined. It will be this great offensive power, the ability to kill, and the ability to avoid hits rather than a capacity to absorb hits, which will be the strength of this tank of the future.

Additionally, our tank must be capable of very steep hill climbing; it must have excellent traction, and good flotation; it must carry a crew probably of four men. It will be capable of crossing small bridges, including types of self-propelled light bridging which may be carried organic in the tank battalion; the advantages of this are numerous and important. There must be many of these tanks, so that they will travel in companies of 30 or 40 rather than companies of 17; thus the loss of several tanks of the company will be of lesser moment, and we will pass a burning tank with the same relative disregard that we passed the dead infantrymen in the last war.

It is obvious that the production difficulties in keeping the battle forces supplied with these tanks will be tremendously less than those encountered with the medium and heavy tanks; the same may be said for the difficulties of their transport. By utilizing a light tank, the strategic mobility of our divisions will be made greater, and road and matériel damage and wear, lighter. Air transportability of the standard division will become feasible in the very near future.

Additionally, we shall want personnel carriers for our riflemen. They also must be light, fast, and carry light armor. They must be designed to get riflemen, under reasonable conditions of safety, close up behind the tanks on the objective.

Our reconnaissance elements can readily utilize the above-described light tanks and personnel carriers; these need be supplemented only by improved jeeps (equal peeps) to satisfy the demands of reconnaissance missions.

Finally, of course, we must be supported by self-propelled artillery.

Our organization must be built around the characteristics of mobility, lightness, and shock, and should be



designed to accomplish our mission, totally without bias. The basis of the division should be the tank battalions, and these should number appreciably more than battalions of any other type in the division. It is the present tendency to increase the proportion of infantry in the armored division; this appears to stem from our experience in the last war, without sufficient anticipation of the problems of the next war. To illustrate my point, I present a small (and certainly typical) tactical problem for the consideration of the reader.

Assume that you are in command of an armored task force which is engaged in the pursuit of a withdrawing but nevertheless strong and determined enemy, who is confident that he will eventually win the war. To accomplish your mission, it becomes apparent that you must dislodge the enemy from a position where he has established himself (precise location, as usual, unknown) in strength. The enemy is armed with aforementioned long-range bazookas capable of very deep armor penetration, with recoilless rifles capable of effectively engaging your tanks at 5,000 yards if they can be seen, with several rocket launchers of the Nebelwerfer type which can saturate an area with rockets capable of penetrating the top armor of very heavy tanks; he additionally employs a VT fuse in his artillery, and he is supported by aircraft carrying antitank rockets which will go through the top armor of any tank.

Aside from the other difficulties which face you, the problem is: how shall you employ your infantry in order to assist your tanks in their effort to drive the enemy from his position?

Enemy artillery firing VT fuse will tend to disperse infantry which attempts to travel alongside your tanks, but aside from that, how will your infantrymen assist you against the long-range antitank weapons which are carried by individual enemy infantrymen?

If you put your infantry 500 yards in front of your vehicles, the tanks are relegated at best to a supporting role of doubtful value and certainly are not functioning in the manner of assaulting tanks. If you attempt to form your infantry alongside your tanks, they will have little effect on these weapons. The longer that you take in crossing the terrain intervening between you and the enemy, the longer you will be susceptible to the other antitank weapons, including the aircraft carried rockets, the banks of rockets, and the enemy artillery. The speed of attacking infantry is slow indeed.

It is my opinion that the solution lies in making the vehicle more self-sufficient. To the maximum extent which our inventive capacity will carry us, we must develop vehicles with an ability to close on and overrun an enemy without benefit of infantry except in a mop-up role. To fall back on the concept of large quantities of accompanying infantry is begging the question, and contributes little toward a realistic solution.

It is not meant to indicate that the problem facing the vehicle is not a very serious one. It is serious

whether we adopt the concept of light, fast vehicles and many of them, or a lesser number of ponderous vehicles with heavy armor protection. It does appear evident, however, that our attempts to solve the problem should be directed along the lines which follow:

1. Increase vehicular mobility in order to:
  - a. Reduce the time of exposure and therefore lessen the chances of being hit.
  - b. Make vulnerable to vehicular attack large areas of the enemy position which are not vulnerable to attack by the present cumbersome tank.
  - c. Facilitate strategic movements of tanks.
2. Lighten the basic vehicle to:
  - a. Increase cross-country mobility.
  - b. Relieve difficulties of production.
  - c. Reduce shipment difficulties.
  - d. Increase air transportability.
  - e. Lessen the blow of a tank loss.
  - f. Ease bridging difficulties.
  - g. Ease difficulties of crossing mine fields.
3. Increase fire power to:
  - a. Increase shock action and damage to the enemy.
  - b. Provide better protection for the tank.
4. Lower silhouette to:
  - a. Reduce target area.
  - b. Assist in concealment and deception.
5. Organize the mobile division in such a manner as to require of the fighting vehicle units the development of matériel and tactics which will reduce the reliance on dismounted men.
6. Delineate the mission of the branch so that there are no limitations to its development and adoption of vehicles and organization. The branch should not be tied down permanently to the tank; any combination of vehicles and personnel which will serve to accomplish the mission should be permissible without running the risk of having the resulting organization labeled "infantry" and therefore taken away from the branch and placed in another. An officer assigned to the branch should serve in all type units which compose it.

Above all, let us remember the function of the mobile division. It should be capable of attack of a strong (and partially fortified) enemy position, of deep punishing exploitation, of relentless pursuit, of acting as a mobile reserve as part of a larger force, and of a measure of defense. It must be capable of losing a large number of vehicles, yet retaining operative a considerable battle strength. The wherewithal of the division to accomplish its mission should not be limited by preconceived ideas of branch, nor should the composition of the branch be limited to those vehicles and that personnel which now come under the definition of the word "armor."



# Technique Of The Tank Platoon As The Point In An Exploitation

*by 1st Lieutenant Thomas W. Burke\**

RIDING in the leading vehicle in an armored exploitation can, and often has proved to be, rather deleterious to one's health. At the very best, it is something of a strain to the nervous system. Of course, there is no way to make this task just wholesome, clean fun such as would appeal to any red-blooded American boy. However, certain techniques learned over a long period of time, by trial and error, and from watching and noting the trials and errors of others, have worked well for the writer.

As a tank platoon leader in an Armored Division, the writer was often called upon to be the point commander in exploitation missions.

The division used a "married" formation throughout. Consequently, when a tank platoon was assigned to the point, the armored infantry counterpart also became part of that point.

Ordinarily it was left to the tank platoon leader to command this group and to decide on the formation to be used. Many, many variations were tried out by platoon officers. Several factors had to be considered. Flexibility was an important item. Terrain, weather, expected enemy resistance, and speed of the advance all entered into the picture.

One troublesome factor was the lack of communication between the half-tracks of the infantry platoon. If a fight developed and these half-tracks were scattered, the problem of control was acute (particularly after replacements had been made).

As has been previously stated, several variations became somewhat standard. One of these was tank and half-track alternately. This formation has several disadvantages. For example, it spreads the tank fire power out too far and makes the tank platoon leader's control problem more difficult. Then, too, the infantry control

problem is extremely arduous. An outstanding tank platoon leader used this formation, however, and it worked pretty well while he lasted. His chief argument for it was the fact that each infantry squad could protect the tank ahead of it from close-in antitank measures.

However, the writer believes the disadvantages outweigh the advantages in this case.

Another formation used by many platoon leaders, was three tanks, the infantry platoon leader's half-track, the other two tanks, then the four other half-tracks of the infantry platoon. This system enabled the infantry platoon leader to be far enough forward to see and size up the situation or to confer with the tank platoon leader when necessary. In addition, his platoon was all together and far enough back so that it wasn't necessarily under fire and could form and attack as a unit.

The formation worked out quite successfully but it left a thin-skinned vehicle rather far forward and the infantry platoon leader was still too far from his platoon. Then, too, the half-track hampered, to a degree, the firing of the two tanks behind it. The writer used this formation for several months but finally lined up with the tanks in front and the infantry behind in column and all together.

This formation put all the tanks up where they could be fired and maneuvered at will. Each tank supported the one in front, each had its sector to cover and opposition quickly felt the weight of the combined fire. Several instances occurred when a tank was hit but seldom did the antitank weapons get more than one.

The infantry riding as a group were in good order and could, and did, dismount and get into action quickly on several occasions. A feat seldom, if ever, achieved by the other formations which have come to the writer's attention.

A great deal of eyewash has been written and spoken

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about the subject of riding infantry on the tanks. This was the rule in certain outfits. It was not uncommon to see a half dozen thoroughly uncomfortable doughboys, often wet, often cold, and always unhappy, clinging precariously to the deck and sponsons of the leading tanks.

They were there as close-in antitank protection. Peculiarly, many died when the bazooka hit. Others were killed by antitank gunfire, machine gunfire, et cetera. If they hadn't been there the tanks by using wing man tactics and reconnaissance by fire had little or nothing to fear from bazooka men. If you were bazooked in an exploitation, you were sleeping!

Of course, in a night movement, two or three doughboys on every tank is a good idea and will offer some protection to the tank when it is standing still. Even then they should be relieved often so that they will be alert and energetic in playing this role.

In this advance party, where should the platoon leader ride? In our division and others, he rode the lead tank. As the late General Patton said, "You can't push a piece of spaghetti, you've got to pull it." Actually, of course, there were several advantages, chiefly the ones of officer prestige and platoon morale. However, it was not good for the morale of the platoon leader's crew necessarily, although the writer detected a bit of quiet swagger cropping out in his own.

Also, a trained officer should have been able to follow a prescribed route more easily. Unfortunately, this wasn't always the case. In fact, it is the writer's firm conviction that had the Germans torn down the signposts, half the American armor would have been lost, or at least, noticeably slowed down.

The "book" says the point should be a tank section, then the platoon leader, then the other tank section. This is a good idea. It is sound and workable. Too often when the platoon officer was in the leading vehicle, he became embroiled in a fire fight and was too busy properly to employ his platoon. Too busy, in fact, to report the situation to his company commander. This was confusing, ineffectual, and time wasting all around.

If the platoon leader was riding third he might have that moment or two in which to make his dispositions and to report, before becoming locked in the old "do or die" business.

Another advantage is the one of rotating the point job among all the tanks, keeping a fresh, alert man in front. Then there is the obvious saving in platoon officers, on whom the government spends certain sizable sums to train.

Once the formation or order of march is decided upon the question arises: how should this advance party move? In the exploitation phase speed is of paramount importance. Speed makes for surprise and saves lives and cannot be underestimated. The fact that a swift, aggressive advance actually saves lives in the long run is undisputable. Nevertheless, there are certain methods of movement the advance party can use which will

offer a better chance for survival, while accomplishing the mission, than others.

In short, there are certain small techniques which, if employed meticulously, contribute to a fast, uninterrupted advance and minimum losses. The most commonly overlooked of these techniques, apparent in many of our Armored Divisions, was caused by self-styled "aggressive" commanders, who in a mistaken lust for speed "threw the book away." This error which caused needless confusion and actual loss of time was the one of allowing no distance between elements of the advance guard.

What occurred was this. When the leading element ran into fairly stiff resistance it was committed piecemeal, chopped up, and a delay was occasioned by the resultant confusion. If there had been an interval, that is to say, a distance between the point, the advance party and the rest of the advance guard, the situation would have developed more slowly and clearly, and the commander of each element would have had time and space to exercise his command function and use his troops in a deliberate, sound, tactical manner. Thus he could have brought to bear the necessary force quickly to overcome the resistance.

Of course, the distance between elements should not be great, as one of the precepts of exploitation is to hit 'em hard and quick. However, a blind hammering, taking unnecessary losses, is not a part of the art of war, dependent, as it is, on the tank production capacity of the home front.

How should the point platoon move? Should it move in column down the road at an uniform pace? This was the usual manner in most divisions in exploitation phases. However, it is not the most intelligent and it is not the fastest. Furthermore, it is not the steadiest.

The best method in every sense is a movement by bounds; that is, within the advance party. The way it has worked superbly is this: the Advance Guard commander (leading tank company commander) rides behind the point platoon at some distance. This distance, of course, varies with the terrain, but usually should be sight or not more than 500 yards. This Advance Guard commander rides at an even pace (often set by the combat commander). He is accompanied by an artillery forward observer, and possibly, by a forward air controller.

In front of him the point platoon works. The leading three tanks moving rapidly from cover to cover under protection of the second section. Great speed can be obtained by making these bounds in an alternate manner. When resistance is met the Advance Guard commander stops, sizes up the situation and takes action immediately. There is a distance between him and the point and he is free to employ his support intelligently or to by-pass obstacles or strong points without the necessity of back-tracking and reversing the column.

This system was employed by the writer in the latter



stages of the war during the advance to the Elbe River. It was discovered that by moving this way the Advance Guard actually had to be requested to slow down by an exceptionally fast moving Combat Commander.

While on the subject of movement let us consider the method of advance employed by this lead platoon. As has been stated, the lead three tanks move quickly from cover to cover under the support of the other section. By quickly is meant *top speed*. In addition these moving tanks should take what might be called evasive action (only, of course, if contact is believed imminent). If possible, terrain and weather permitting, these tanks should move abreast or in a modified wedge formation. Usually one on either side of the road and one continually crisscrossing the road. The writer has said they move from cover to cover. Naturally the distance from one covered position to another may be great, in which case the length of the bound is limited to good fire support from the stationary section. Better not make it more than 600 yards. These tanks now halt suddenly and the other section moves up fast.

The fastest method is for the platoon leader to pull out in front of this second section and lead it in a fast alternate bound. The safest way is to displace forward successively because the forward section, while halted, has had a chance to size up the route ahead, pick the next stopping place and perhaps reconnoiter by fire. This seems a good place to take up the small matter of the use of binoculars.

The writer feels he can state without fear of contradiction that binoculars intelligently, quickly and ceaselessly used by tank commanders saved many and many a tank. As is readily apparent to anyone who has tried they cannot be employed in a moving tank, even on the smoothest of roads. All of which is one of the greatest of arguments for movement by bounds. A hasty reconnaissance through the glasses saves many a round of ammunition as the alternative is reconnaissance by fire. This, too, is the reason the writer stresses the fast move and the sudden stop.

Early in the writer's experience, in fact, during his first hour or two of combat, he made the discovery that his driver was too well trained in the smooth stop. When ordered to halt, he coasted to a nice, easy stop. The writer put his binoculars to his eyes as the tank slowed and tried to observe ahead. The vibration made this absolutely impossible until the vehicle actually came to rest. During this 15 or 20 yards of coasting, the writer was virtually blind and the tank was an easy target, not having even the small advantage of relative speed. Needless to say, it became a part of the driver's technique to halt as abruptly as possible when commanded.

This mention of binoculars leads naturally to a discussion of reconnaissance in general. In the exploitation phase of an armored advance, speed and surprise are essential ingredients. There will be no covering force, no reconnaissance ahead of this leading tank platoon.

However, if this platoon leader wants to give himself a chance for survival, he resorts to three types of reconnaissance (always remembering, though, that speed and surprise are potent advantages for him and must not be marred by wishy-washy, overcautious progress). These forms of reconnaissance are: use of binoculars, reconnaissance by fire, and personal dismounted reconnaissance. Added to these might be a fourth. This fourth one is beyond words to describe. It is incredible to many people. This is the much sneered at "Nose for Krauts," which many of us believed, and still believe, we had.

Be that as it may, we can discuss the more orthodox methods. The use of binoculars has already been discussed to some extent. It is nearly superfluous to say that scrupulous care must be taken of them. Cleaning material must be handy to wipe away dust and rain. There is a nice, very precise length of the neck strap. Naturally the focus settings must be known, in fact, they must be instinctive. It might be mentioned here that, as he moves, the tank commander picks his danger spots and as soon as he stops, quickly scans each one, then goes back over them again more slowly.

We come now to that highly controversial subject: reconnaissance by fire. On this subject the writer had two complete changes of opinion. During his first days in combat, he employed it extensively. Later it seemed to be distracting, to destroy the element of surprise. The writer began to depend on observation. Then he gaily rode into a neat ambush just across the Rhine. From there on in he fired on everything remotely suspicious on the ground that it was German in any case. Of course, the life span of tractors and other farm vehicles of suspicious silhouette was short indeed.

More seriously it should be said that reconnaissance by fire is almost a necessity if moving steadily. It is sometimes a waste of ammunition but it has a decided morale factor. It is good for your morale and decidedly disturbing to the other fellow's. However, it should be carefully controlled and done intelligently. A movement by bounds, permitting a good look through the glasses eliminates much firing. It is good also to have some sort of signal to notify those behind that you are merely reconnoitering by fire. Say two short bursts from the co-ax. If this isn't done some of the infantry behind in the half-tracks will start shooting 30s, 50s, and rifles at everything in sight, thereby thoroughly confusing the issue. Certain conditions call for fire reconnaissance such as heavy woods, hedge lined roads, isolated buildings on the flanks and others. The ammunition supply, particularly that readily available in the turret, must not be depleted and in some cases may be an important factor restricting this probing fire.

The third type of reconnaissance is the one most often overlooked by tank officers. That is the dismounted personal reconnaissance. Often there wasn't time. More often the writer is inclined to believe it was merely an unwillingness to leave that steel shell and



expose one's person in that lonely, lonely and so very quiet no-man's land. Drawing again from his own experience, the writer became a believer on the third of August, 1944 when in Yvre, France, he turned a right-angle corner in a narrow street and came face to face with a MK IV tank at the ridiculous range of 30 yards. The tank was manned and obviously waiting. Thanks to a gunner who needed no urging nor even a command, the writer is presently able to pen this article.

Thereafter, the writer dismounted and took a peek whenever it seemed indicated. It is better to sneak a peek over the crest of a hill and around the corner than to barge over or around with a tank. You can stretch your luck just so far!

Much has been said about control. Control of the individual tank, the platoon and the company. First things must come first. Until one is able to control a tank almost as readily as a good rider controls a horse, he is not ready for the designation, Tanker. This control is by interphone but that doesn't tell the whole story. First there must be a system, a code, a standard procedure. Incidentally this should be standard in the platoon and the company at least. Actually it should be standard throughout the Armored Cavalry. Coupled with this procedure are certain other factors less tangible but mainly based on a close understanding of each other by the commander and driver. This obviously can only be achieved through long practice and, while highly desirable, is not necessary as long as there is a standard procedure. That this procedure pays off was evidenced to the writer during the recent misunderstanding in Europe when, because of breakdowns and losses, it was necessary for him to fight with seven entirely different crews for varying short periods.

Once this control of the individual tank is achieved, incidentally it involves set procedures between the turret crew members as well (a gesture or a poke or a slap is quicker than the interphone), we move into control of the section and platoon. For speed and ease hand and arm signals are a must and are only limited by the intelligence, state of training and ingenuity of the people involved. Another factor which makes these signals a necessity is the constant radio failure. This ever present failure was due not to design but to the tremendous abuse it was necessary to give the tank radios in pursuit operations. They were turned on constantly and no time was available for maintenance.

Closely coupled with hand and arm signals was the setting up of simple but rigid standard operating procedures. Some of these were simple plays something like the plays used in football. Others were the sectors of responsibility. Each tank commander had his own and stuck to it. A system the writer employed involved his tank and the first section. When he halted or signalled a halt, the No. 2 tank habitually pulled up abreast, if possible, and on the right and immediately scanned in that direction. The No. 3 tank performed in like fashion on the left. The following section took

the responsibility for the extreme right and left flanks and prepared to move in either direction upon receiving a signal.

Connected with this is a lesson we learned through bitter experience. The German antitank guns, whenever possible, were sited to be mutually supporting and designed to suck one in, that is to say, to mousetrap the unwary. At first while using the system outlined above the No. 2 and No. 3 tanks would pull into their positions in good style. However, if the platoon leader was firing to his front their attention naturally was attracted and without order they began to fire at targets to the front. Some of our people then got knocked out by fire from the flanks—the worst part of which was the fact that no one saw where the shot came from. This experience made it necessary for the No. 2 and No. 3 tank commanders to ignore the front and to cover their own areas. Naturally they glanced quickly every moment or two toward the platoon leader for orders but rigidly covered the sector for which they were responsible.

It can be said that control within the platoon depends on many things. Experience and practice, of course, are the best ways of developing this control. Then there is the method of control often listed as the final resort in the texts. This is usually referred to as "example of the commander." Nothing can take the place of this method. However, it will have no effect unless the commander has achieved a reputation for intelligence, for skill and has been able to inculcate in his people an unswerving all for one, one for all spirit. While the writer doesn't necessarily advocate this policy for units larger than a platoon, he is convinced that nothing short of unqualified respect will do. If coupled with this respect, he can generate a spirit of absolute, utter comradeship his path will be easier; his chances for success then will be most likely.

The tank platoon leader is faced with a situation unique among officers. Each crew has five men. He is part of the crew of his tank. Obviously as a tank commander he has many menial, purely physical duties to perform. He must help with the refueling. He must clean guns. He must help change tracks. He stands guard duty in combat. It is necessary for him not only to perform these duties but he must do them expertly. He cannot ever exhibit fear for he must zealously guard the morale of his men. During an exploitation when men and machines are pushed to the limit, his job is multiplied many times. These are the times when his good nature cannot, even momentarily, fail. All this can be accomplished easily if the leader has a genuine affection for his men and thoroughly understands their weakness and their strength and respects their inherent nobility.

This article has no footnotes, no references but it is the result of one man's research, his trials and errors and the trials and errors of many others who are now represented by a white cross somewhere in Europe.



# 26TH CAVALRY (PS) BATTLES TO GLORY

*by Lieutenant Colonel William E. Chandler*

*(Editor's Note: Here is the concluding part of this first complete and authentic history of the 26th Cavalry (PS), written by Colonel Chandler, former S-2 and S-3 of the regiment during the days following the Jap attack on the Philippines and until the Islands fell in April, 1942. Part II ended with the regiment bivouacked north of Bagac. Captain Wheeler, commander of Troop E-F attacked the Japs at Moron on January 16, 1942. He then withdrew his troops, but was unable to pull out about 25 of his horses. The history continues.)*

## CONCLUSION

A DETAIL under First Lieutenant Hardewicke was sent at daylight to Moron by motor to regain the horses. He found that the enemy had again wrested most of the town from the 1st Division, but he believed he could get to our horses by stealth and a little fighting. He was joined by Major C. A. Thorpe, 26th Cavalry, who was on detached service as Provost Marshal I Corps. After a short discussion, it was decided to make the attempt and Major Thorpe went along for the fun.

Hardewicke's detachment was lured into an ambush by a Japanese in Philippine Army uniform and Hardewicke was killed and Thorpe wounded at the first volley. Major Thorpe managed to extricate the detachment from the ambush and with the aid of First Sergeant Belhara, Troop F, who had protected the horses

throughout the night with one light machine gun and two soldiers, brought most of the horses back to our lines. Belhara arrived at Bagac late in the afternoon, very apologetic because he had lost two or three animals in the action. That was the type of noncommissioned officers with which we were blessed.

January 18 and 19 were quiet, but on the 20 the regiment was alerted for action. Japanese were reported near Bani and Guitol north of the Pilar-Bagac road between the I and II Corps and well behind the front-line positions. Captain Barker's motorized unit was sent to the threatened area prepared to counterattack on orders from the Commanding General of the 31st Division (PA). Meanwhile, it had been decided by General Wainwright and Colonel Pierce, both old horse-cavalrymen, that the jungle terrain of Bataan in a de-



fensive situation was no place for horse cavalry. It was reluctantly decided to send all our animals to a pasture area near Agloloma Point and there turn them over to the Quartermaster. Plans were made to make this move on the night of January 22, employing practically all men not in Barker's unit or otherwise engaged.

The Bagac-Moron road was cut on January 21, at Kilometer Post 164 by bands of Japanese infiltrating over the western slopes of Mt. Silangan. At first it was believed that the enemy force was small in numbers, and reserve units of the 1st Division attempted to reopen the road, but met with little success due to the towering trees and deep gorges of the area where Japanese snipers lurked unseen until practically stepped upon. General Wainwright sent in a composite force of Philippine Scouts made up from gun crews of the 155mm Coast Artillery guns in the sector, but they had no success either. It was now evident that the hostile force was considerably larger than at first supposed and that more force would be needed to subdue it, and quickly too, as the 1st Division was receiving heavy attacks on its front and was completely cut off from support by this obstinate group of Japs astride the sole route of communication to the rear.

General Wainwright ordered Colonel Pierce to send Captain Barker's motorized unit to the threatened area and accordingly it was withdrawn from the Guitol-Bani area and sent to Kilometer 164. The remainder of the regiment was by now engaged in moving the horses to Agloloma Bay. Captain Barker attacked late in the afternoon of January 22, driving the enemy northward along the road four and one-half kilometers, but was there stopped by a deep ravine and almost impenetrable jungle. On January 23, the Second Battalion Philippine Constabulary and Company K and a Mortar Platoon of the First Battalion, 1st Constabulary were added to Barker's force, but further attacks were stopped in their tracks by terrain and enemy fire.

Meanwhile the 1st Division had begun to break up under repeated enemy attacks from the north and began to stream back by the beach trails west of Barker's position. By January 24, it was evident that even if Barker did succeed in opening a way through the Japanese position they would find no organized line on the 1st Division's position. On the contrary, enemy units pouring through the gaps in that line were constantly reinforcing the forces opposing Barker.

In the meantime, General Parker's II Corps on the Abucay line was having its own troubles. Repeated heavy attacks had been thrown back and one major penetration of the line rectified by counterattacks. Now, however, Japanese units, by just such infiltration tactics as had been used on the west, had moved around General Parker's left flank over the eastern shoulder of Mt. Natib and were now threatening his flank and rear. It is obvious that the Moron-Abucay line was no longer tenable and plans were made to fall back on the Reserve Battle Positions running from Bagac to Orion.

Orders were received January 24, from General MacArthur's Advance Command Post to occupy the Reserve Battle Position on the night of January 24 and 25. Orders from General Wainwright directed that the I Corps' withdrawal would be covered by the 26th Cavalry with the Second Battalion, 2d Philippine Constabulary, and Company K, 1st Constabulary attached. Before more than preliminary plans could be made, the time of withdrawal was changed to the night of January 25 and 26, and Captain Barker was ordered to hold on for one more day.

To make things more difficult, while our front was giving way, the Japanese had made several landings on the west coast of Bataan well behind our lines and were threatening to cut the West Road, only communication route to the Army supply dumps near Mariveles. Should this line be cut, our situation would indeed be precarious and the number of our days short. General MacArthur was throwing everything he had into the balance, one battalion of the 45th Infantry, some planeless air crewmen, Philippine Army Air Corps men, shipless sailors under Lieutenant Commander Bridget, who later lost his life under heroic circumstances on a Japanese prison ship, and portions of the 71st Division which had suffered so severely at Sison.

#### PIERCE MADE BRIGADIER GENERAL

The task of welding these diverse units into an efficient fighting force capable of repelling the repeated attacks of Japanese landing forces was a formidable one. General MacArthur added the sector to General Wainwright's zone and promoted Colonel Clinton A. Pierce to Brigadier General at General Wainwright's request. General Wainwright entrusted this new task to his old friend who had already proven his mettle in Northern Luzon. Accordingly, General Pierce left his old regiment at this rather critical time, leaving the situation in the capable hands of his executive officer, Lieutenant Colonel Lee C. Vance.

Upon the departure of General Pierce, Colonel Vance immediately called a staff conference and after appointing Major T. J. H. Trapnell to be executive officer, he set forth his plan for the forthcoming operation. Captain Barker's force would hold its present position just north of Kilometer 168 as long as possible. When forced to retire, he would do so by bounds securing the maximum of delay. Troop A would take a position on the high ground north of Bagac prepared to take over the action as Barker's force passed through its lines. Troops E-F and G were held in the bivouac area for use as the situation dictated. Other delaying positions were selected and reconnoitered and the regiment waited for the kick-off.

Late in the afternoon of January 25, Captain Barker's force, having executed repeated brilliant delaying actions along the heavily wooded and winding Moron Road, passed through Troop A and with its cohort the



Second Battalion, 2d Constabulary, marched past Bagac to an assigned bivouac area on Saysayin Ridge about two kilometers east of the West Road on Trail 9. Troop A took over the action and Troop E-F moved up behind in readiness to take over in turn. Troop G prepared to take over from Troop E-F on a position just north of the regimental bivouac area.

The plan clicked like clockwork. Each unit, as it was outflanked by Japanese units toiling through the jungles on each side of the Moron road, moved through the already prepared line of the troop to the rear and moved southward to the assembly and bivouac area. The delay provided was sufficient to enable the other units of the I Corps to occupy their assigned positions on the Reserve Battle Line without enemy interference. The regiment reassembled after dark at its new bivouac area on Trail 9, once more behind the lines of the I Corps.

The regiment settled down in I Corps reserve on January 26, and continued refitting and reorganization. One troop was sent to I Corps headquarters to act as a guard troop as small groups of Japs were loose in the mountains behind our lines. For the next five days patrols of officers and key noncommissioned officers made planned reconnaissances covering the entire I Corps front and approaches thereto, familiarizing all concerned with the terrain where the regiment might be called upon to counterattack. It was during this period that the regiment learned with pride of Troop C's successful raid on the enemy airfield at Tugugerao. Though completely cut off from support, Captain Praeger and his men were carrying on their own war in fine style.

A call from headquarters I Corps on January 28, sent Captain Barker's unit to Kilometer 200 on the West Road where Japanese snipers had been reported firing on traffic on that vital supply route. The jungle was scoured on both sides of the road without success. These alerts continued at odd intervals all during and after the fighting on the west coast. Individual Japs were evidently slipping through General Pierce's lines at night and then interfering with traffic on the West Road. None were ever caught in the act, however.

A program of training in jungle warfare started on January 30, and continued whenever possible throughout the ensuing two months.

On the night of February 1, the regiment was alerted by I Corps and ordered to move at once to a point on the coast just north of Bobo Point. A hostile landing was reported there and all other troops were engaged with the landings farther south. The regiment moved at once, preceded by Scout Cars, but when the advance guard arrived at the designated spot all was quiet. It afterwards developed that a landing had been attempted about 1,000 yards to the south, but had been stopped cold by General Pierce's artillery and our remaining P-40s which had strafed and bombed the landing barges from improvised bomb racks. So far as is known,

not a single craft reached the shore.

The regiment was ordered on February 2, to be prepared to assist General Pierce's forces if required, but were not to get into action under any circumstances except by express authority of the Commanding General of I Corps. The 26th Cavalry was now the only reserve on the west coast not committed to action. We remained in bivouac north of Bobo Point and the S-3 contacted General Pierce and the S-3 of the 57th Infantry, and brought their situation maps up to date for this new area. This day also marked the return of Major J. C. Blanning from Headquarters I Corps, where he had been Headquarters Commandant since passing through Bambam en route to the action in north Luzon. Captain Houston Farris was sent to Headquarters I Corps to take over from Blanning who was given command of the Second Squadron.

Word came on February 3, of a penetration of the 11th Division's line west of the Pantigan River and the regiment was ordered to move to the junction of Trails 8 and 9 and stand by to counterattack if needed. The 11th evidently managed to scrape up a reserve somewhere, because our orders were cancelled before we got under way. More serious trouble seemed to be brewing in the Agloloma Point area where fanatical Japs were making repeated attempts to break through the line of General Pierce's conglomerate forces. A section of scout cars, previously patrolling the West Road for snipers, was ordered by I Corps to patrol the Agloloma Road in search of a group of Japanese said to have broken through the Philippine Constabulary lines. This, of course, was impractical at night for scout cars and nothing, unfortunately, was found.

If we could have disposed of this group of Japs here we would probably have been spared a severe shock some weeks later. At daybreak a platoon of Troop A, under Lieutenant William Leisenring moved into the area and found no trace of the Japs, but they did find a 300-yard gap between a battalion of the 45th Infantry and a unit of Philippine Constabulary. Leisenring closed the gap and notified Regimental Headquarters where the information was passed on to the units concerned and hole was plugged, relieving Leisenring. The fact that the regiment received a reprimand for allowing even this one platoon to become involved in action for a few hours is a good indication of how desperate General Wainwright was for reserves at this point. The 26th Cavalry was his only means of influencing an action and he was determined to keep it in hand until the proper moment. This situation doubtless saved our depleted ranks from many small actions in the following weeks. In consequence, when we next went into action we had recovered much of our strength.

#### I CORPS SITUATION SERIOUS

Meanwhile the situation on the front of I Corps was becoming serious. It now appeared that considerable



Jap forces had managed to get behind the Reserve Battle Position on the night of January 25 and 26, during the confusion of our occupation of that position, and were well dug in in the thick jungle in rear of the 11th Division's left flank in the Tuol River Valley. A penetration by the enemy between the left flank of General Brougner's 11th Division and Brigadier General Jones' troops of the West Subsector, I Corps, had permitted reinforcement of this hostile pocket with both men and arms and what came to be known as the Tuol Pocket had become a formidable threat to our front lines. The fortress of Bataan had suffered another serious breach that must promptly be walled off as those on the west coast had been. Generals Brougner and Jones had seriously weakened other positions of their lines to send troops to the danger spot and General Wainwright had obtained a battalion of the 45th Infantry (PS) from General MacArthur which had been sent there also.

The situation by February 6, in the Agloloma area was sufficiently under control to permit alerting the 26th Cavalry for a possible move to the Tuol Pocket where the situation was becoming serious. Orders were not received, however, until about 10:30 A.M., February 7, and the regiment moved out at 11:00 A.M. for the junction of Trails 8 and 9. The nearest practicable bivouac area to this point, however, was on Trail 17 just west of its junction with Trail 19 and this spot became the regiment's home for the next five weeks.

Lieutenant Colonel Lathrop, commanding the 45th Infantry Battalion at the Tuol Pocket, was given complete command of the operation by Generals Brougner and Jones, together with all troops assembled by both generals for the operation. This unified command, under a capable officer, soon began to show results although the gain was pitifully slow, sometimes only a yard or two a day against a well dug in and fanatical enemy. In any event, while prepared to go to Colonel Lathrop's assistance at any moment, and kept familiar with the situation by daily contacts of the two S-3s, the 26th Cavalry was never called upon to do so.

The regiment slowly and rather unbelievably settled down to what was to be our longest period of quiet in our short war. This does not mean that we were inactive. On the contrary, Colonel Vance initiated as intensive a period of training and preparation for the final battle as the condition of the men would permit. Rations had been cut to a substandard of seven ounces of rice per man per day and all were feeling that lack of sustenance. Malaria and dysentery were prevalent throughout the command and the short rations provided small resistance to these plagues. Men and officers responded nobly to the demands of their commander, however, and new techniques of jungle warfare were evolved and practiced until they became second nature. New formations and stratagems were invented, dis-

cussed and tried out. Those approved were adopted and practiced for use in the inevitably forthcoming struggle.

Systematic reconnaissances of the I Corps front from the Pantangan River to Pucot Hill were carried out under the supervision of the Regimental S-3 and maps were made of new trails and of the positions of all front-line troops. Preliminary plans were prepared for movements to and action at all likely points of attack. These plans were tested and squadron and troop commanders thoroughly familiarized with them. Daily contact was maintained with front-line troops and the situation map kept up to date so that the regiment would be completely familiar with the situation and terrain in any area in which it might be called upon to function.

Only one action interrupted this long period of training and preparation. On February 15, Troop A, en route to I Corps Command Post to relieve Troop G as Corps Headquarters Guard, encountered three Japs. One was killed and one captured and turned over to G-2, I Corps. One escaped. At dawn February 16, the regiment was awakened by heavy small-arms fire from the near-by motor pool of the 1st Division. Investigation disclosed that a large party of well armed Japs had stumbled upon the motor pool in the dim morning light. The regiment turned out in a hurry and went to the assistance of the Philippine Army troops. Several Japs were killed and two wounded prisoners taken. The balance of the enemy disappeared into the thick jungle to the north and, although our combat patrols searched for several hours, no further sign of them was found.

Questioning of the prisoners disclosed that they were a part of a group of about 80, commanded by a lieutenant, which had slipped through General Pierce's lines on the west coast about three weeks previously, possibly through the gap Lieutenant Leisenring had found on February 3. The prisoners said that their officer intended to break through our front lines and rejoin the Jap forces on our north front. These men were in good shape physically and had evidently been raiding Philippine Army supply dumps in the rear. The last of our patrols came in late in the morning with negative reports. I Corps was notified and we settled down to wait for the next outbreak of this band of Japs. It was obvious that they would be heard from soon somewhere near the front.

Word was received from I Corps at 4:00 P.M. that a large group of Japanese had been located in the rear of the 91st Division which was the left flank unit of General Jones' West Subsector near Bagac. The Japs were in the Tiis River Valley behind the 91st Infantry's right flank and General Stevens, 91st Division Commander, had no reserves to clean them out. Consequently it was up to the 26th Cavalry.

It was assumed that this was the group which had come so near us that morning and Major J. C. Blan-



ning, who had been bemoaning the fact that the regiment had seen no action since he rejoined from I Corps Headquarters on February 1, was given the welcome task of eliminating them. He took the Second Squadron, less Troop G, and set off joyously on his mission. Troop G was held ready to send after him if he ran into more opposition than had been estimated.

#### ENEMY IN THIS RIVER BED

Major Blanning located the enemy after dark in the Tiis River bed on Trail 41. Plans were made to attack at dawn and the squadron settled down to wait. When the attack was launched at daybreak, however, only a half dozen Japs were found in the thicket where they had been concealed. The balance had slipped away under cover of darkness leaving these few to deceive our force. Blanning was not long at a loss. Patrols were immediately sent in all directions with orders to report to Blanning as soon as the enemy was located.

Captain Wrinkle, who had relieved Captain Wheeler as Commanding Officer of Troop E-F when the wound received by the latter at Moron forced his hospitalization, took a patrol in the most likely direction of flight and soon located what he assumed to be the fleeing Japs in front of a battalion of the 71st Infantry near Bagac. The Japs had evidently slipped through the lines in the dark and were now in a ravine between the 71st Infantry position and their front-line wire, well within sight of their own troops to the north. Wrinkle's fire combined with that of the 71st held them pinned down, however, and word was sent to Blanning who hurried up with the balance of his force.

Major Blanning, hurrying forward with his advance guard, was ambushed by a considerable force of Japs hidden in the jungle thickets in the rear of the 71st Infantry. It now became obvious that the enemy located by Wrinkle was only a small part of the hostile force. Blanning was pinned to the ground with the point of his advance guard, but by hand signals to an alert NCO in his rear he managed to move a light machine gun squad around the flank of the enemy position and relieve the pressure.

After that, it was all over but the celebrating. Blanning moved in with his entire force and wiped out all opposition, then stormed up the ridge to the 71st Division position and down into the ravine. Captain Wrinkle joined to lead the rush into the ravine and was killed at the head of his men. Seventeen dead Japs were counted in the ravine in front of the 71st Infantry and over 60 in the thickets to the rear. No prisoners were taken. Blanning's losses were one officer and one noncommissioned officer killed and two men wounded. His total force did not exceed the enemy in numbers. Our losses, however, were hard to bear because of the value of these two men to the regiment.

After this little flurry of excitement, the regiment again settled down to its routine of training and reconnaissance until every officer and noncommissioned

officer in the command was completely familiar with the maze of trails in the I Corps sector and the units were thoroughly trained in the jungle warfare tactics which had proved their value in Major Blanning's little engagement.

General Wainwright on March 12, became Commanding General Luzon Force when General MacArthur left for Australia on orders of the President. Soon after assuming command, General Wainwright designated the 26th Cavalry as a part of Luzon Force Reserve and we were ordered to bivouac at Bobo Point where we moved by marching the night of March 15 and 16.

The regiment was no longer attached to I Corps, but might still be called on to assist units of that force if needed. The regiment now also might be required to operate on the east coast in II Corps sector, however, and permission was requested to send reconnaissance parties to the east coast to continue the work of familiarization already done in I Corps sector. This permission, unfortunately, was refused due to lack of gasoline and when the regiment next went into action it was on the east coast, in unfamiliar terrain, and in conjunction with troops with whom we had not had the constant friendly contact which we had had with all I Corps units.

Late in March, G-2 reports began to indicate that the enemy was preparing for a great and final attack. The quiet of the past six weeks obviously could not go on forever. Our troops were ill-prepared to resist an all out attack. Their ranks thinned by malaria and dysentery and those remaining weak from malnutrition, none of the front-line divisions were able to put up more than one thin line to oppose the foe who had been gathering strength for over a month. It looked as though the time of decision was at hand.

Reports of heavy shelling and a minor breakthrough on the left of the II Corps reached our Headquarters on April 2. On April 3, the regiment was ordered to the junction of Trails 8 and 9 prepared to counterattack on right of the I Corps and cover the Pantangan River, or to attack on left of II Corps east of that river. The regiment moved after dark in busses and took over the bivouac of a battalion of the 45th Infantry (PS) which, with the balance of the regiment, had been ordered to support General Parker's left by an attack northward along Trail 29. This bivouac was not as satisfactory as that on Trail 17, but was nearer the scene of action and well placed to cover the right flank of I Corps, should the attack of the 45th Infantry not be successful.

A reconnaissance and contact detachment, under Major H. J. Fleeger, consisting of Troop B and one section of scout cars, was dispatched to contact the 45th Infantry and to keep the 26th Cavalry advised of the progress of their attack. Major Fleeger located the rear echelon of the 45th Infantry Command Post, but the jungle was so thick and the terrain so rough that



even these officers did not know what progress their regiment was making.

#### MAJOR BREAKTHROUGH ON II CORPS FRONT

Late in the afternoon of April 6, news came from Luzon Force Headquarters that a major breakthrough had occurred on the II Corps front and that the 45th Infantry attack had bogged down and been by-passed by the enemy. Trail 8 now was either cut or about to be cut and was not safe for travel. The 26th Cavalry would move by busses supplied by I Corps Motor Pool, via Mariveles to the junction of Trails 2 and 10 just west of Limay and there await orders in Luzon Force Reserve. Before the regiment pulled out word was received that the Mt. Samat position in General Parker's center had completely folded and the situation there was obscure and probably critical.

The regiment moved out at 7:30 P.M. in charge of the Regimental Executive Officer, Lieutenant Colonel Trapnell. Colonel Vance and the S-3 went ahead in a Command Car to Luzon Force Headquarters and then to junction of Trails 2 and 10 in order to obtain as much information as possible and to pick a bivouac before the arrival of the regiment.

Colonel Vance arrived at Luzon Force Headquarters at about midnight and found the Chief of Staff, Brigadier General Arnold Funk, and the G-2 and G-3 sitting before the situation map. They were unable to give a detailed picture of the situation due to almost complete breakdown of front-line communications. What information they did have was not encouraging. It appeared that Brigadier General Clifford Bluemel's sector had received the brunt of the attack which had pierced the lines near Mt. Sumat and was now hammering away at the shoulders of the gap. General Bluemel's thin line of undernourished and exhausted Philippine Army troops and those on his left were unable to withstand the vigorous attacks of fresh, well armed Japanese troops and the line had collapsed in great confusion.

The 45th Infantry attack east of the Pantingan River had been stopped and Trail 8 cut thus isolating the 45th from the bulk of the II Corps troops. They had attempted to cut their way through the enemy astride Trail 8, but without success. The 57th Infantry (PS) and 31st Infantry (US), the last available reserves except for the 26th Cavalry, had been thrown in to help General Bluemel, but no definite word had been received from either regiment or from General Bluemel for several hours. That was all the information General Funk could give us. The 26th Cavalry would proceed as ordered to the junction of Trails 2 and 10 and await orders. As soon as General Funk received more definite information on the situation our regiment would be committed. It was obvious, although no one put it into words, that the defense of Bataan was about over.

Colonel Lee C. Vance, 26th Cavalry Commander, proceeded from Headquarters Luzon Force to the regiment's assigned area on Trails 2 and 10. No proper

bivouac area was available except a large mango grove.

Unlike the I Corps sector, this east coast area was not jungle covered. It was open and rolling, sparsely covered by low bushes and dotted here and there by large mango groves. In the absence of other cover, those groves always drew hostile artillery fire and bombing, but in the dark no other cover was found and it was imperative to get the regiment out of sight before daylight. The regiment arrived just as day was breaking and managed to get under cover without being spotted.

Orders were received at about 11:30 on April 7, directing the regiment to report to General Bluemel "Somewhere north of Trail 10 on Trail 2." This was the most definite information available and the last we were to receive from Luzon Force. Colonel Vance and the S-3 again moved out by Command Car and the regiment followed in approach formation led by Colonel Trapnell. Upon arrival at our scout-car outposts on a hill about two kilometers north of Trail 10, further advance by vehicle was stopped by a large bomb-crater in the trail. Colonel Vance remained at the outpost to await the arrival of the regiment and the S-3 continued on foot to find General Bluemel.

About a kilometer farther north, the S-3 encountered General Bluemel on foot carrying a rifle and accompanied by two Philippine Army Staff officers. He was moving slowly and reluctantly southward listening to small-arms fire about a half kilometer to the north. He had lost all contact with his troops sometime before when his last line was broken, but said that his troops should be withdrawing through the jungle on either side of the trail. Upon learning of the addition of the 26th Cavalry to his forces, he cheered up a bit and determined to place the regiment in position on the high ground where our scout-car outpost was then located in order to halt the enemy long enough to reform his scattered units. Accordingly, the S-3 led General Bluemel to where Colonel Vance was waiting with the regiment which had meanwhile come up under Colonel Trapnell. The Second Squadron was placed in position at once with the First Squadron about a kilometer to the south. The regiment was again prepared to execute the delaying action with which it had become so familiar.

Units of the 31st Infantry (US) began to drift in toward the trail from the surrounding jungle and they were directed to an assembly point on the high ground just south of the Mamolo River. Messengers were sent to the 57th Infantry (PS), which was still holding a line to the northwest of the junction of Trails 2 and 10, informing them of the situation and of the new assembly point.

#### ENEMY CLOSE ON 31ST INFANTRY'S HEELS

The enemy appeared close on the heels of the 31st Infantry and were stopped by the Second Squadron line. A lively battle ensued, but did not last long as the



position was soon outflanked on both sides by the greater number of enemy. The Second Squadron withdrew through the First Squadron's line and took up another position just south of Trail 10. The First Squadron was in time outflanked and had commenced its withdrawal when a storm of interdiction fire fell on the junction of Trails 2 and 10. This combination of artillery fire and dive bomber attacks was continuous and much more severe than anything the regiment had ever gone through before. Fortunately, the Second Squadron had already passed the junction and Regimental Headquarters, the scout-cars and Bren gun carriers were almost clear when the firing began.

All trucks and other heavy vehicles had been started for the East Road and an assembly area at Rodriguez Park several minutes earlier and only an ambulance and two Bren carriers were lost. The First Squadron caught the brunt of the fire and was forced to pass the junction on either side by short rushes of small groups. Even so, casualties were high and a much reduced Troop A and a portion of Troop B were all that reached the Mamolo River. The north side of the Mamolo River Valley was very steep and only a narrow one-way trail for motors had been built by the engineers. Here an ammunition truck was hit on the narrowest portion of the trail and set afire, thus completely blocking it for motor vehicles, and necessitating the destruction of three scout cars that were caught behind the obstruction.

General Bluemel had gone to the assembly point on Trail 12 south of the Mamolo with Colonel Vance. There he met the commanding officers of the 31st Infantry (US), the 57th Infantry (PS) and the 14th Engineers (PS) and held an immediate conference. General Bluemel, in the absence of orders from II Corps, decided to withdraw to the southern bank of the Alongan River, breaking contact with the enemy at night if possible, and thereby gain time to organize a new position with his scattered troops. An order was issued about 2 P.M. giving the order and route of march and, inevitably, assigning the rear guard position to the 26th Cavalry.

By this time night had fallen and the enemy advance had stopped except for nuisance patrols of snipers and noisemakers. The column was formed and the march began. The Second Squadron remained in position until midnight to deceive the Japanese patrols and then followed the column, reaching the Alongan River at daybreak.

Due to a confusion of trails, the units of General Bluemel's command had become separated during the night and although all were on the Alongan River by daybreak their positions were not exactly as planned. The 14th Engineers were on the left of Trail 20 on the high ground south of the Alongan. The 26th Cavalry was on the right of Trail 20 and in contact with the 14th Engineers. There was a gap of almost a kilometer of practically impassable jungle between the

26th Cavalry's right and the left of the 31st Infantry and then another gap between their right and the 57th's left. Colonel Jack Erwin more or less continued the line with a mixed force on the East Road and to the east of it. There was absolutely no communication between these separated units except by dismounted messengers who required hours to make the round trip.

General Bluemel was with the 26th Cavalry on Trail 20 and had adopted Colonel Vance's staff as his own and appointed Colonel Vance as his executive. Major Jones pulled a telephone out of thin air and managed to get contact with Major Ralph Rumbold who was holding down a telephone in the recently evacuated advanced CP of II Corps. Major Rumbold was just preparing to leave himself when Major Jones contacted him. He remained alone at his self-imposed station throughout the day, and relayed General Bluemel's messages back to II Corps.

Telephone contact with II Corps was of little or no value, however, as they were unable to send help or furnish information. General Bluemel was placed in command of the entire line by General Parker, but this was of no practical use as the only units General Bluemel could contact were the 14th Engineers, the 26th Cavalry, both in his immediate vicinity, and Company G, 57th Infantry which had become separated from its regiment and was now held by General Bluemel in rear of the 26th Cavalry as his only reserve.

General Bluemel was in an almost complete state of physical exhaustion but, refusing to spare himself, personally supervised the preparations made by Colonel Vance and Lieutenant Colonel Frederick Saint, Commander of the 14th Engineers, to meet the inevitable attack. The positions of the two units were coordinated and a roadblock, improvised from a disabled 155mm gun, was placed on the precipitous trail leading up from the Alongan River and covered by fire of a detachment of Troop B. An officer patrol from Company G, 57th Infantry was sent to contact the 31st Infantry on the right. The patrol was gone for several hours and returned in midafternoon to report that the 31st was in position but that the gaps on both its flanks were wide open although no trails ran through them. Inasmuch as absolutely no troops were available to close the gaps, it could only be hoped that the enemy would stick to the trails.

#### JAP DIVE BOMBERS CAUSE CASUALTIES

During the afternoon, enemy dive bombers could be seen thoroughly working over Colonel Erwin's position and he reported to II Corps that he was suffering so many casualties that he could not hope to stop even the lightest of attacks. General Parker had managed to scrape up one battalion of Philippine Constabulary which he planned to send General Bluemel to plug the gap between the 26th Cavalry and the 31st Infantry. This was now diverted to support Colonel Erwin but it is doubtful if it got there in time.



A battery of Lieutenant Colonel Joseph Ganahl's self-propelled 75s arrived early in the afternoon, led by Colonel Ganahl himself who placed his guns in position to cover the high ground north of the river. With artillery support for the first time in the war the 26th Cavalry began to feel that the forthcoming struggle might not be so one-sided after all. Unfortunately, enemy tanks were reported on the East Road and Ganahl's guns were ordered by II Corps to meet the new threat just 30 minutes before the Japs hit our lines. We were fated never to have that artillery support. It is doubtful if the guns ever reached the East Road and the tanks turned out to be ours anyway.

The tanks that appeared 30 minutes later, at about 4 P.M. on our front were decidedly not friendly. They opened fire promptly with machine guns and 47s, a wickedly high velocity weapon which burst in your midst before the sound of the gun's report reached you. These were soon bursting in the bamboo overhead by scores and doing a good job of keeping our men's heads well down.

The tanks, fortunately, were stopped by our roadblock but Japanese infantrymen by the truckloads were following in the rear of the tanks and they were soon swarming over the terrain to the front. It was not long before our exposed right flank had to be refused in a right angle due to Japanese groups penetrating the gap between our right and the 31st Infantry. Darkness again saved us from complete encirclement and General Bluemel decided to withdraw under cover of night and try to find another position some distance to the rear.

The withdrawal from position was made without untoward incident although enemy forces were well around to our right and rear. Near the junction of trail 20 and trail 24 the column was increased by units of the 31st Infantry (US) which had been forced to withdraw from its position by enemy forces penetrating the gap on its left flank.

Troop G, acting as rear guard, received a report that enemy tanks had come in from Limay and were now between it and the main body which had gained distance in the darkness. To avoid these tanks, reportedly moving toward him, Major Blanning who had been marching with the rear guard, moved Troop G into the jungle to the right of the trail and was soon well lost. He decided, after floundering around in the dark for sometime, to halt until daylight.

Meanwhile General Bluemel, leading the column on the main trail, had met a courier from Luzon Force Headquarters who informed him that General King would surrender Bataan the following morning, April 9. The news was a blow although by no means unexpected. It was obvious that if trained regular army units such as the 26th Cavalry, 31st, 45th and 57th Infantry and the 14th Engineers were in a situation as muddled as ours then the less well-trained and less well-armed Philippine Army Units must be in the last

stages of exhaustion and disintegration, regardless of their spirit and courage. General Bluemel determined to get the remnants of his force as far as possible out of the path of the attacking Japanese front-line troops who might not receive the news of the surrender promptly. Accordingly, the movement southward was resumed at daylight with the 1st Squadron 26th Cavalry as the advance guard.

Shortly before 11 A.M. April 9, the advance guard ran into a strong Japanese force which had evidently passed our column on the right of the trail during the night by what must have been a gruelling march through the jungles on the east slopes of Mt. Mariveles. The First Squadron was soon engaged in a fire fight. The opposition of the enemy indicated a large force, later determined to be about a regiment supported by small mountain guns, and General Bluemel reluctantly decided to send forward a white flag in hopes that the hostile unit had heard of General King's surrender. Whether or not they had was never determined, but they did accept the surrender.

Meanwhile Major Blanning, marching with Troop G a few kilometers to the northwest but off the main trail, had run into two military policemen who told him the news of the surrender. He determined to try to reach Signal Hill on the southwest slope of Mt. Mariveles but in several hours of gruelling marching he failed to find a trail leading there. Many other stragglers were encountered in the hills, however, all of whom confirmed the story of the surrender. Major Blanning was faced with the question of whether or not to lead Troop G to the main road and turn them over to the Japs or disperse them in the hills. The men were given an opportunity to express their preference and elected to trust to the jungles rather than the Japs, a thoroughly wise decision.

Thus ended the 26th Cavalry (PS), the last cavalry regiment in United States history to go into action on their traditional mount, the horse. A regiment with no combat history prior to this war but with a well earned right at the end of it to hold its head proudly in any company. From Damortis to the last organized stand on ill-fated Bataan, it had fought courageously, steadfastly, and efficiently to uphold the finest military traditions of both countries from which its members were drawn.

This history is presented with a heartfelt hope that the reorganized Philippine Scouts, recently ordered by General MacArthur, will not fail to include in its roster of regiments the name of the 26th Cavalry which gave the last full measure of its devotion to duty, and country in the defense of the Philippine Islands. Such hard won honors and traditions, garnered on the field of battle, are a regiment's heart and soul. It is hoped that this record will be a prized possession of a new and rejuvenated 26th Cavalry (PS).

Yes, they wrote their names in Filipino history with blood.



# Plan For Philippine Army Armored Units

*by Major M. Azurin\**

**The Philippine Army never had and, at present, does not have a single armored unit. This article presents a suggestive plan for an armored unit that might be organized by the Philippine Republic. The author of this article emphasizes that the ideas presented are his personal opinions and that he does not speak for the Philippine Army or Government.**

**D**URING the past war mobile warfare has developed to such an extent that almost all armies of any consequence have relied on their armored force for their striking power. The Germans overran Poland, France, Belgium and the Lowlands with their Panzer divisions during the first phase of World War II. The American Army, on the other hand, did a better job of overcoming all German resistance with their armored force.

The French Army just after the first World War believed that they would have to build elaborate fortifications to keep away from French soil any invading force. They were convinced that with a network of concrete pillboxes and trenches on their border they could ward off any enemy attack. They put much faith on stabilized warfare, on defense, and built their Maginot Line. They suffered the consequences of their lack of foresight during the recent war. The Germans did build, also, their line of fortifications by constructing the Siegfried Line. They did not place their safety on this alone, though. They went further and built their mobile striking force—their Panzer divisions.

The Philippines, with a coast line longer than that of the United States, aside from financial considera-

tions, cannot possibly build pillboxes, not to say, fortifications all along its coastline. That will be next to impossible. General MacArthur, as head of the American Military Mission in the Philippines, in his report to the defunct Assembly of the Commonwealth regarding his plan for a Philippine defense, said in part: "In order to defend the Philippines with any degree of success, it must have a highly mobile striking force." He conceived and built the Philippine Army with this objective in mind. But his work was half done when the war broke out in the Pacific and he had to use what Philippine Army foot troops he had so far trained, to ward off the Japanese menace. If he had been able to realize his plan for a highly mobile army, I believe without any fear of serious contradiction that the result of the Battle of the Philippines would have been a different one.

To emphasize the necessity of a highly mobile army to defend the Philippines, I will cite an instance on the outbreak of the war in the Philippines. The 26th Cavalry (PS), was engaged in a mission of delaying the enemy from Lingayen Gulf to Bataan. It was a magnificent delaying action. Yet, it could have been more effective had it been an armored unit instead of a horse-cavalry. This regiment was pitted against Japanese

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tanks and before it got engaged with the enemy the result was foregone—annihilation. So much valor and lives were sacrificed and lost for lack of armor.

In this article I do not have the intention of talking for the Philippine Army, much less for the Philippine government. This is only a suggestive plan for any armored unit that might be organized and whatever ideas embodied in these pages are purely my personal opinions based on what I have learned and observed in The Armored School at Fort Knox.

The Philippine Army never had and, at present, does not have even the smallest armored unit to speak of. To keep up with modern trends of warfare and to correct errors in the past, it should have an armored unit. In planning the organization of this unit there are several major functions to consider, namely:

1. Finances.
2. Philippine terrain and weather.
3. Roads and bridges.
4. Organization and setup of the Philippine Army.
5. Training of personnel.

The present state of finances of the Philippine government is such that it will be inconceivable to plan a large armored unit. Nevertheless, money consideration should not deter us from putting up one. I am firmly convinced of the soundness of such an investment. Every peso spent in this undertaking will be fully paid back in the future in terms of lives and national security.

To begin with, vehicles, equipment, radio sets, tools and spare parts for a light tank company may be purchased. Needless to say, this will be a modest beginning but it will be in the right direction considering the dearth of trained personnel to man and maintain this equipment. The initial sum of P1,000,000 (\$500,000), the approximate cost of 17 M-24 tanks and accessories and tools to operate and maintain them may be set aside for this purpose. With an eye to economy and to other considerations which will be discussed in subsequent paragraphs, the light tank will best suit our particular situation. As personnel get trained, additional tanks may be purchased. A gradual acquisition of equipment is more desirable rather than a wholesale purchase for the obvious reasons of lack of personnel to operate them; it will be less burdensome to the national purse and it will give the Army opportunity to be equipped with modern tanks that might be developed in the future. Purchase and use of a few medium tanks may be considered later after a special and definite purpose for their employment has been worked out and decided.

In figuring out the appropriation for the establishment of an armored unit, cost of maintenance of equipment should not be overlooked. In the past, before and after the war, it was my sad experience to have worked with maintenance units which were so ill-equipped and poorly supplied with the barest necessities in tools and

spare parts for weapons and vehicles alike that deadline equipment had to be brought to private maintenance shops. Such deficiency may be corrected by an increase in the appropriation for tools and spare parts. The army cannot leave to chance the maintenance of any mechanized unit by makeshift and niggardly appropriations. Neglecting maintenance of vehicles, weapons and radio sets will certainly lead to very serious consequences during war.

The most important factor influencing the selection of the type of tanks to be used in the Philippines is the terrain and the weather conditions. The Archipelago, except in Central Luzon, has narrow coastal plains, mountainous, and is thickly vegetated with tropical growth in the interior of the islands. Unlike other countries, it has no rolling terrain. In other islands, like Mindanao, the terrain is broken by steep-banked rivers and deep ravines. The central plains, roughly 150 miles long and 80 miles wide, would be suitable for tanks but tank operations would be limited to the dry season of the year. The operation of tanks in this part of Luzon during rainy seasons would be restricted to the roads. In the narrow coastal regions, the radius of tank operations would be considerably less. And during wet seasons, tanks would be road-bound.

The M-24 tank is light, has a narrow hull, has speed and mobility. These characteristics of tanks will determine to a considerable degree the choice for the type to be adopted in the Philippines. Armor and fire power are also desirable qualities. But the weight that goes with them makes it impracticable for the use of tanks with such qualities. Our narrow and lightly constructed roads and bridges will bar their use. In the event that we have to fight during the rainy season the light tank will have more chances of moving around and surviving in the mud and muck of rice paddies than the medium or heavy tanks. The limited number of tanks that the army may be able to put up is another reason why these tanks should have speed and mobility. Units will have to be moved long distances to meet invasions or attacks at widely separated places. Considering all these factors—terrain, weather, narrow roads and light construction bridges, speed and mobility of tanks—they all point to one choice—the light tank. True, it has its drawbacks; it has thin armor and low muzzle velocity of its 75mm gun. But I have hopes that in the near future improvements on this tank will incorporate the 76mm gun and more armor to it.

The armored units that will be organized should conform to the tactical organization of the Army. To get the utmost benefit and combat efficiency of tanks, they should be highly integrated with the infantry.

Working on this premise, I would venture to make an analysis and suggestion as to the size of these units and just where they fit in. I am not a tactician, not by any stretch of the imagination. I do not presume to know much about tanks, either. However, to fully understand the question of where and what size will



our future armored units be, a brief study of the Philippine Army organization is necessary. The Army is basically infantry. Its Regular Force has a strength of 37,000 officers and men. This number might gradually decrease when peace and order in some parts of the country has become normal. The decrease, I believe, will not affect as much the Regular Force proper as the Military Police Command which is purely a constabulary unit of the Army. With the present move of Army Headquarters of reorganization, I have hopes that an infantry division may be formed out of the loosely integrated arms and services. If and when an infantry division is formed, a tank unit may be incorporated into the division.

I am convinced that the place of an armored unit is in a regularly organized command; in this case the infantry division, and not under the General Headquarters of the Army or anywhere else. Training and tactical employment demand that this armored unit should be administratively and tactically under the infantry division. Granting this to be the case, the next question is: how big will this unit be and where will it come in to the over-all picture of the infantry division? Any attempt on my part to answer definitely these questions will be indulging in presumptions. Needless to say, the final answer and decision will be in the hands of the War Plans Section of Army Headquarters. However, my suggestion is: it should be a tank battalion. The tank battalion is the smallest tank unit that can support to an appreciable degree the three infantry regiments of the division. A tank company is too small and a unit bigger than a battalion will be beyond the financial reach of the government. Like the field artillery regiment or the engineer battalion, the tank battalion should be an organic part of the division. The battalion commander exercises staff function in the division and command in the battalion. The tank battalion shall consist of four light tank companies instead of only one of the standard medium tank battalions. The incorporation of the tank unit into the division will add to what fire power the division has, the shock effect, and armored fire power of the tanks.

Thinking in a different vein of thought, say, creating a separate armored division will be more in the realm of wishful thinking. The cost of the equipment of an armored division, not to say the cost of their maintenance, will be prohibitive. What our Army needs now are small tank units that can be integrated with existing infantry organizations. To build now or even to plan a war machine the size of an armored division will invite much skepticism. When the Army has grown in size, then and only then will an armored division be warranted.

Having decided what type and what size the tanks and tank units will be, the next problem for the Army headquarters will be the training of personnel. Training of personnel cannot be overemphasized. Key officers and men should be thoroughly trained before they can

train in turn the men in the companies. The best and only place for these officers and men to be trained will be in The Armored School at Fort Knox, Kentucky. It is regrettable that the Philippine Army is sending only two officers annually to this school and that it has not sent them earlier than last year. Whereas, it is sending more than double this number to other lesser U. S. Army schools.

Evidently, the importance of the role of armored units in battle is not yet thoroughly appreciated by our Army. To accelerate the organization of the armored unit, more officers and men should be sent to The Armored School. A quota of two officers in the Basic Course, one officer in the Communication Course, one officer in the Motor and Track Vehicle Course and four enlisted men in the noncommissioned officer course should be detailed to this school every year with the permission of the U. S. War Department, of course. With a complement of thoroughly trained key officers and men, the Army will then be ready to take in additional men to fill up the units to table of organization level. The job of turning out and moulding these green men to efficient tankers and tank crews will rest in the hands of these officers and men.

The first obstacle that they will be confronted with in their instruction will be training equipment and aids. Training equipment, aids and diagrams should be procured first before an attempt to teach the highly technical phase of instruction is made. The second obstacle will be range facilities. Ranges must be located where service firing of small arms and tank guns and tactical field exercises may be done without endangering persons and private property. In Luzon this will be a real problem considering the area involved in this type of range and the fact that most rolling terrain in Luzon is parceled and owned by private individuals. Other minor difficulties in training will spring up so that officers and men responsible for training must foresee and surmount them. Careful planning and preparation will insure a high degree of training.

Summarizing the preceding paragraphs; plans for a Philippine Army armored unit should take into consideration: (1) the appropriation available for the procurement of equipment and for their maintenance, (2) Philippine terrain and weather, (3) effect of narrow and lightly constructed roads and bridges on tank operations, (4) contemplated tactical employment of tanks and (5) training of personnel. After having considered all these factors the logical conclusion would be that a tank battalion of light tanks as an organic part of the infantry division would be the most appropriate tank unit under our financial, topographical and tactical circumstances. Additional tank battalions may be formed later as divisions, regular as well as reserve, get organized.

In conclusion, the creation of an armored unit will be a step toward making the Philippine Army a more potent guardian of our national integrity and security.



# GUERRILLA WARFARE IN LUZON

*by Major Jorge A. Sanchez\**

GUERRILLA warfare is an accepted phase of modern fighting. It is resorted to by a people whose means for organized resistance against an invader have been reduced to the minimum. In it is manifested a nation's stubborn refusal to admit defeat or impending defeat. More often it is inspired by hopes of ultimate victory.

The primary aim of guerrillas must be to harass the enemy. The enemy's efforts to completely subjugate a locality and to institute therein an effective political and economic control must be opposed vigorously. In this manner he will be made to realize that the locality is still unconquered; the spirit of resistance against him is still prevailing. Thus, he is prevented from withdrawing his forces which, otherwise, may be employed elsewhere.

Guerrilla warfare is not unknown to the Filipinos. During the Filipino-American War, after the major forces of the Philippines had been destroyed in the field and even when all hope of victory was gone, the people continued fighting. The military leaders sought refuge in the mountains where plans for continued resistance were formulated. People in the cities became intelligence agents, and farmers in the valleys provided the guerrilla armies with needed food supplies. Women and children were in the fight. It was more than three years after American sovereignty had been firmly established in the Islands that the last guerrilla leader surrendered and the guerrilla resistance finally ended.

## THE ISLAND OF LUZON

The island of Luzon is the largest geographical subdivision of the Philippine Archipelago. Its valleys and plains are the most extensively developed agricultural regions of the country. Its mountains treasure vast stores of natural resources. Beneath the ever-green foliage of the mountain trees are rich mineral deposits such as, gold, iron, copper, silver and manganese. Its cities are the centers of Philippine industries. It is obvious, therefore, that the control of the island of Luzon is most essential to the control of the whole Philippines.

The city of Manila, the political, educational and

commercial center of the country, is the capital city of the Philippines. Manila is the nerve center of all Philippine activities. It is here that political and military undertakings are planned, coordinated and initiated. In addition, the Japanese used the city for a vast supply and replacement depot for his scattered armed forces. The city of Manila is located on Luzon.

The foregoing attributes of the island of Luzon made it the most fertile and profitable ground for guerrilla activities in the Philippines. But due to the incessant military activities which necessitated a greater degree of vigilance on the part of the Japanese than in other regions of the country, Luzon became, likewise, an unhealthy place for guerrillas.

## GUERRILLA ACTIVITIES BEFORE BATAAN FELL

The situation in Bataan was hopeless. The soldiers in Bataan and the people all over the country knew it. Every time they turned in their radios, Filipinos living far remote from the scenes of battle expected to hear the terse announcement that Bataan had fallen. Yet, in every home, even while the inevitable was expected, the people prayed for a miracle that could save that last bastion of hope. They prayed and hoped that the hungry and disease-ridden but valiant army that faced the invaders might stay the tightening claws of death and defeat.

But the soldiers in Bataan were not fighting alone. Long before the guns of Bataan were silenced, long before the heroic defenders had died or lived in surrender; the people in the cities, in the valleys, in the hills—in enemy occupied or unoccupied regions—prayed, hoped, and fought.

In Meycauayan, 13 miles north of Manila, civilians armed with rifles, pistols and shotguns, ambushed a Japanese advance guard. Fighting lasted several hours. Japanese planes, artillery, mortars, and machine guns, played havoc among the poorly armed civilians. Many Filipinos were killed. But many Japanese also died. The fall of Bataan was stayed a few hours longer.

The Japanese entered the city of Manila on January 2, 1942. That same day a Japanese patrol of more than 20 men left their company never to return. The next day another patrol—this time about 60 men—ventured too far in the night. No man was seen alive again. The defenders in Bataan reckoned with the enemy minus

\*Philippine Army officer attending The Armored School.



80 men.

All over the plains of Luzon rice and sugar cane fields burned. Towards the hills, cattle, hogs, carabaos, and horses were driven. In the towns and in the cities people cried and were sorrowful; but while crying, feasted on fried or roasted beef, pork and chicken, eggs and other delicacies. They ate until they could eat no more and then threw into garbage cans the leftovers—leftovers that even now after the war would adequately grace a feast table. No, the people of the Philippines would not feed the conquerors.

There were reprisals. The Japanese forces were treacherous in their strategy and ruthless in their reprisals. People were hog-tied and beheaded or shot. Innocent blood was spilled. But barbarity portrayed the weakness of the enemy. Reprisals reaped hatred and boundless contempt. Every Filipino murdered was a dry twig thrown into the mounting flame of detestation. Every Filipino dead was mourned for and every mourner thirsted for revenge.

#### WHEN BATAAN FELL

Bataan fell. The inevitable came; yet when it did, it came as a shocking surprise. Surprise, because Bataan seemed the only hope, and hope cannot just fade away. Hope was victory!

Before Pearl Harbor the Filipinos knew that if there would be war, Japan could not win the war. Yet, on this fateful day—April 9, 1942—Bataan fell and the war seemed to have been lost and the Japanese the victors.

But this could not be so. This could not be defeat! The Japanese should not be the victors. The fight must go on and defeat would be the watchword of victory. Remember Bataan!

The horrors of the "Death March" were imprinted in every Filipino mind. The brutalities in the concentration camps became known to everyone. The overbearing manners of the Japanese military yielded abhorrence.

Many survived the "Death March" and the concentration camps. Many did not surrender at all. Armed with the knowledge of Japanese brutalities and a much more intense hatred of the enemy, these battle-wise veterans augmented the guerrilla ranks.

Thus, a new hope was born. A new impetus was added to the resolve to win. A bigger bunch of dry twigs was thrown into the flame.

#### GUERRILLA ORGANIZATION

By the middle of 1943 there were more than a dozen poorly armed but well organized guerrilla bands in Luzon. Each of these bands was distinct from the other. Nevertheless, their organizations, policies, and lines of actions differed but slightly. There was one common enemy. There was but one common cause. Methods varied but the objective was the same—Japan must be beaten.

In the ranks of the guerrillas were laborers, farmers, lawyers, doctors, engineers, soldiers—men of every profession and social standing. They were men and women, young and old. They were parents, children, widows, brothers and sisters of the hapless victims of Japanese atrocities. They were a people who once enjoyed the blessing of peace and liberty; who enjoyed life and sought happiness in their own individual ways. They were a people who hated war and its inherent ruthlessness; but who, because war had descended upon them, wanted a share of its horrors.

Unfortunately, the guerrilla bands were not united under a single command. Sectors of activity of one often overlapped that of the other. Coordination of actions was nil and duplication of efforts was prevalent. Most of the guerrillas were not professional soldiers. They knew nothing of the rudiments of war. All they knew was that they wanted to fight. Attempts were made to unite these guerrilla bands, but, due principally to the refusal of one leader to subordinate himself to another, these attempts failed.

#### SABOTAGE

Guerrilla activities were confined mostly to sabotage, propaganda, and intelligence work. Open combat with the enemy was foolhardy and most often evaded unless the situation presented no other alternative. Arms were few and inferior to those of the Japanese and ammunition was available in only very limited amounts.

It is impossible to narrate here all the accomplishments of guerrilla saboteurs. A few illustrations are deemed sufficient.

In April 1943, a Japanese regiment in Baguio received orders to proceed by train to Manila from whence it would embark in troopships for some Pacific island. The train left Manila for Damortis early in the morning. A couple of hundred yards from the railroad station at Caloocan, the train was mysteriously derailed, the locomotive wrecked. The troopship left Manila Bay three days behind schedule. Japanese reinforcements arrived at New Guinea too late.

In the same year, 1943, Manila was visited by a storm. Japanese warehouse guards had no desire to get soaked in the heavy rain and relaxed their vigilance that day. Suddenly and simultaneously three warehouses in three different parts of the city were afire. Hundreds of drums of gasoline and oil perished in the flames. Japanese vehicles in Saipan stood still.

A Japanese tanker filled with oil to the limit of its capacity lay anchored out in Manila Bay. It was scheduled to leave for its destination in the Pacific the next day. The Japanese crew were enjoying their beer and their song. The sound of their voices reverberated in the waters around them. From the shore an empty wooden barge approached the ship unnoticed by the drunken crew. Suddenly the barge exploded; flames leaped high and into the ship. A few hours later the ship was no more. The crew had drunk their last beer.



Several truck loads of rifles, hand grenades, small arms ammunition and spare parts were unloaded one evening into a warehouse in Caloocan. The Filipinos around were very helpful. They carried the heavy boxes and piled them up inside the building. They asked no pay for their labor. The following night the warehouse was burned down, the guards dead.

#### PROPAGANDA

Fires of mysterious origins breaking out at very undesirable places enraged the Japanese. Stories of Japanese defeats, of American landings at such and such islands, of the approaching day of Philippine liberation, surreptitiously whispered from ear to ear enraged him no less. He became violently furious when he awoke in the morning and found the street in front of his quarters littered with wrappers of American chocolate bearing the ominous message, "I shall return."

Filipinos were forbidden, under the penalty of death, to listen to foreign broadcasts. During the early part of the occupation, radio receivers were collected. They were returned minus the short wave receiving unit. But there were Filipino radio engineers and there were those who were not afraid to die. Soon station KZEI in San Francisco became a favorite radio station.

But not every Filipino is a radio technician; not every Filipino home afforded safety to radio listeners. However, everyone hungered for war news; and everyone can read. In no time, carbon and onionskin papers were in great demand and people passed around typewritten war news. No newspaper was more welcomed in Luzon.

Inside the American civilian internment camp at Santo Tomas University, the newsette, "The Voice of the Underground," found way. Internees' morale rose to a new height. Privations became more endurable.

Later, the Japanese called the guerrillas "misguided elements." The newsette, thanks to the Japanese, had a more sarcastic name—"The Voice of the Misguided Elements."

The guerrilla propagandist accomplished his mission excellently. The importance of his work cannot be overlooked. For more than three years the Philippines was isolated from the rest of the world that was not Japan. Day in and day out the Filipino was fed with Japanese propaganda lies. He had been defeated. His children were sickly, hungry, in rags. His misery was unbearable. Cooperation with the conquerors meant medicine, food, good clothes—life. But the Filipino's loyalty to the cause wavered not. His stomach was empty, but his morale was high and hope deserted him not. Thanks to the guerrilla who listened by his radio and pounded at his typewriter.

#### INTELLIGENCE ACTIVITIES

Few Japanese understand English. Fewer still can comprehend any Philippine dialect. In order to make

police work more effective, native spies should be employed. The spy was well paid, given extra ration, and issued arms. Handsome rewards were offered for the capture of guerrilla leaders. Many Filipinos volunteered to spy for the Japanese. Very few guerrillas, however, were turned in, and most of the information that reached Japanese hands was false and misleading. Espionage worked the other way. More information that was accurate and reliable sped across the seas, or traveled on ether waves, to Australia. More families enjoyed additional rations, and more guerrillas were armed.

Filipino laborers worked in airfields. They mounted antiaircraft guns in position and dug trenches for the Japanese crew. Native stevedores loaded and unloaded ships in the harbor. The Japanese had a saying, "An idle body breeds an evil mind." The Filipinos were kept busy. Then, almost daily, sketches of airfields and the number and types of planes therein; reports of ships in the harbor, including their time of arrivals, departures, loads and destinations; location and caliber of guns and the quarters of their crew; identification and names of commanders of units that arrived or left Luzon; poured into guerrilla headquarters. These intelligence reports were consolidated and transmitted to G.H.Q., SWPA.

It is unbelievable, but it is true. Most Japanese soldiers did not know, but Filipino laborers knew, that Yamashita was in the Philippines.

#### JAPANESE COUNTER-RESISTANCE MEASURES

The Japanese propaganda was an inexhaustible as it was preposterous and idiotic. Manila newspapers published incredibly successive Japanese "victories." The guerrillas had many moments of mirth.

Perhaps the only Japanese propaganda that caused a state of agitation in the guerrilla ranks was the promise of independence to the Philippines. The Filipinos have always cherished the thought of national freedom. If independence were granted, the guerrillas would suffer the loss of popular support and the resistance movement would crumble. But the state of apprehension existed only for a short while. "Independence" was granted, but the Japanese remained the masters of the country. Japanese military police continued to enforce military law, Japanese soldiers still confiscated rice and trespassed and looted Filipino homes; Japanese worthless paper bills remained the only legal tender in the land. It did not take long for the people, even those in the remotest barrios, to realize that the "Independence" was a farce and the "Philippine Republic," a puppet. More people came under the guerrilla banner.

The Japanese set up a "Gestapo" institution in the Philippines. Towns and cities were divided into "Neighborhood Associations," each association under a leader. Families must join the association to be able to draw rations. Every individual must register with the "neighborhood" and should secure the permission of, and report his departure and destination to, the leader



whenever he desired to leave the community. Every leader was required to report the presence of any non-member in his district. The Japanese thought he had a way of checking the activities of every Filipino. But he misjudged native ingenuity. Filipinos were "neighborhood" leaders. The population of the Philippines was less in 1943 than it was 20 years ago. There was always a way about the ration system.

Whenever the presence of guerrillas in a district was suspected, Japanese soldiers would swoop down upon the place. They would search houses and herd the male inhabitants into churches or school buildings. Here they would line up the men and order them to pass before a hooded spy. Guerrillas and guerrilla sympathizers would then be loaded into trucks and brought to Fort Santiago. Many guerrillas were captured in this manner. Frequently, though, the guerrillas had fled and the town was empty when the Japanese arrived.

Behind the grim walls of Fort Santiago, guerrillas were subjected to most inhuman torture. Few came out of the Fort alive. Those who survived the inquisition came out maimed—pitiful human wrecks. But the Japanese did not choose wisely when they elected Fort Santiago to be the chamber of human sacrifice. The Filipinos have always linked Fort Santiago with freedom. It was here that the greatest Filipino hero, the father of Philippine nationalism, Dr. Jose Rizal, was imprisoned and tortured by the Spaniards. The threat of Fort Santiago, therefore, contributed more to the people's determination to resist the enemy.

#### GUERRILLA ACTIVITIES DURING LIBERATION

The landing of American forces in Lingayen marked the beginning of the end of Japanese domination in Luzon. It also signified the change from passive to active guerrilla resistance in the island. The day of reckoning had arrived. As American might rolled on nearer, the people rose up in arms. Fighting broke out everywhere. Bataan was avenged.

The Japanese forces entrenched themselves inside the city of Manila. Others withdrew to the mountains east of Manila and around Baguio. The guerrillas knew these mountains. They know every cave and every trail by heart. The mountains were the former hideouts of guerrillas. Guerrillas, therefore, proved excellent guides to the United States forces that sought out the enemy.

The story of Manila was different. The Japanese felt secure in their trenches. They fought like cornered animals determined to kill or be killed. Every concrete building was a Japanese fortress. Every avenue of approach was blocked. Every bridge was blown. The guerrillas knew all these. They knew every pillbox, every street barricade, every gun position. They knew the enemy strength; the identity of units. Even while the American forces were miles away from the city and while the Japanese were preparing the defensive installations in Manila, guerrillas were drawing

sketches of these installations and forwarding the sketches and other intelligence reports to headquarters of United States forces. The forces of liberation were well supplied with information about the enemy.

Guerrillas fought in the front lines, too. They were attached to American units; were issued uniforms, equipment and arms. In numerous encounters they were beside the forces of liberation fighting fiercely and enjoying the fight. And, when after the day's combat, the forces went into bivouac, the guerrillas manned outposts and stood guard to secure the area from counterattack by the enemy.

#### CONCLUSION

The mission was accomplished—the job well done. Again man can go about and seek happiness in his own individual way. Gone was the threat of torture, of horrible death. Gone was the dreaded Japanese military police. No longer would soldiers break the tranquility of homes. The victims of Japanese brutalities have been avenged. The cause for which they suffered and died was won. Now they can rest peacefully in their graves.

The accomplishments of the guerrillas cannot be underestimated. Indisputably, their unquestioning devotion to the cause, their unconquerable spirits in the face of defeat, their valiant resistance against the enemy when resistance seemed hopeless, contributed to some degree to the liberation of the Philippines and to the early termination of the war.

In acknowledgement of their service and of their invaluable contribution to the successful prosecution of the war against Japan, "recognized" guerrillas were incorporated into the Philippine Army. Unfortunately, however, many deserving guerrillas were left out in this matter of remuneration.

The United States Sixth Army promulgated a policy to the effect that only those guerrillas shall be recognized who can produce certificate of attachment with the United States Army units. This policy, perhaps, was sound, but certainly was faulty in foundation. During the three years of defiance against the Japanese and before the arrival of the American forces in the Philippines, hundreds of guerrillas have died in Japanese prisons or were killed in action. Needless to say, these dead guerrillas could not have been attached to any United States Army unit. Moreover, many guerrillas who joined and fought with American units were ignorant of this policy and did not bother to ask for certificate of attachment. When finally they came to know of this prerequisite to recognition, the unit to which they had been attached had been transferred elsewhere. If anyone deserves recognition for his sacrifice and labors, the guerrilla who made the extreme sacrifice or who was active in the resistance movement during the darkest days of the Japanese occupation, deserves it more. Perhaps, in the near future the omission will be rectified. Then the guerrilla, and the widow and orphans of the dead will not feel forsaken.



# Tank Destroyer Development

*by Major Ralph W. Lang\**

**The primary mission of Tank Destroyers in World War II was the destruction of enemy armor. In this article the author discusses the development of TDs from the very beginning.**

ON September 16, 1915, the British introduced the tank into modern warfare. With the idea in mind that there is a defense against every offense, many minds on both sides were put to work at once to find a defense against this new weapon. The Germans developed the armor-piercing machine-gun bullet. Both sides, to a limited extent, employed field guns in a direct-fire antitank role. These were the major antitank developments during the war. At the end of World War I, the tank was still the king of the battlefield and could roam almost at will.

Antitank thought continued after the war and generally paralleled the development of the tank. Since the trend in tanks was toward the light type, this produced a light antitank gun, such as our 37mm gun. The Germans were the exception to this and unveiled the now famous "88" in the Spanish Civil War.

During the early days of World War II, the British found that the most effective defense against the German tank was ambush, since that enabled the antitank gunner to hit the tank on its flank which was more lightly armored. This was developed into defense in depth as we know it today. However, since they employed a light antitank gun, the heavily armored German tank, with its tactics of fire and movement was not subdued. It was further found that, for any one gun to survive the onslaught of the Blitzkrieg, it had to be supported by at least one other gun. These two principles—defense in depth and mutual support—have been the basis of all later antitank doctrine.

At the time of the German invasion of France, General George C. Marshall, World War II Chief of Staff, directed that a study be made with the view of finding an adequate defense against the tank. One of the consequences of this directive was the conception and development of the tank destroyer. Shortly after, the Tank Destroyer Center was opened at Camp Hood, Texas. The mission of the Tank Destroyer Center was not only to train the new tank destroyer units but to continue research along this line.

Since all new ideas go through a process of change to gain the desired objective, tank destroyer matériel and doctrine underwent considerable change since the time it was first conceived. The first tank destroyer used in combat in Africa was the M-3 half-track mounting a 75mm gun. Due to the gun's inability to penetrate the heavy German armor and the poor armor protection given to the personnel by the half-track, this destroyer gave way to the high-velocity, flat-trajectory, three-inch gun on the M-10 motor carriage. In many respects, this vehicle was similar to the M-4 medium tank, except that it had an open turret and lighter armor. The gun was powerful enough to destroy the German PzKw IV tank, and the M-10 motor carriage offered the personnel protection from small-arms fire and shell fragments. As German armor was developed, tank destroyers had to keep pace in order to meet the newest threat.

In the spring of 1944, the M-18 made its appearance. The M-18 was a full-track, highly mobile, lightly armored vehicle, mounting a high-velocity 76mm gun. This was the first vehicle designed especially for the tank destroyers and is one of the finest track vehicles we have ever made. It was not long, however, before the German Panther and Tiger tanks appeared on the battlefield and it was found that the 76mm gun did not have the necessary power. The M-36 was created as the answer to these new German tanks. The M-36 is similar in appearance to the M-10, except that it mounted the 90mm antiaircraft gun.

Like matériel, the organization of the tank destroyers underwent considerable change in its early days. They were finally organized as battalions, groups, and brigades. The battalion was the tactical and administrative unit and was classified either as self-propelled or towed. The self-propelled battalion consisted of headquarters and headquarters company, a reconnaissance company, three gun companies, and a medical detachment. Each of the gun companies had three platoons of four self-propelled guns each, giving the battalion a total of thirty-six guns. The towed battalion was similar

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to the self-propelled battalion in most respects, the main differences being that the guns were towed instead of self-propelled and the battalion reconnaissance consisted of only two platoons which were a part of headquarters company.

The group was a tactical organization only and consisted of group headquarters, a headquarters company, and two or more battalions. Normally, one group was attached to each corps. However, in combat, the group exercised very little command function over the battalions since the battalions were usually further attached to one of the divisions of the corps. The only time that the battalion I was with operated under a group directly, was when we were attached to VII Corps. In this case, the group had the mission of protecting the rear echelon of corps against possible parachute attack. The battalion was ordered to establish road blocks and maintain patrols in conjunction with other battalions. Generally, the group functioned as the tank destroyer section of the corps or in close cooperation with the tank destroyer section if such a section had been set up by the corps. In practice, the role of the group was to act as advisor on tank destroyer matters, as coordinator of tank destroyer employment, and as general supervisor of antitank defense.

#### PRIMARY MISSION

The primary mission of the tank destroyers was the destruction of enemy armor. It was for this purpose that they were organized and trained. It was believed that the best way to accomplish this mission was to hold the battalion in division or corps reserve until an enemy armored attack appeared imminent. During the period that the battalion was held in reserve, it made a thorough reconnaissance of all likely avenues of approach and the selection of positions to repel any attack coming through these approaches. As soon as the direction of the attack was determined, the battalion would move to the previously selected positions and await the tanks. It was found that we could beat the Germans this way, but could not, because of our light armor, slug it out with them. Our motto was "Seek, Strike, and Destroy." The "Seek" was made by reconnaissance and intelligence—the "Strike" by hitting the enemy on the flank as he entered our position—and the "Destroy" by cutting him off by fire and delivering massed, close-range, direct fire on him.

However, by the time that we landed on the European continent, the Germans had suffered tremendous tank losses and their production of tanks was seriously hampered by the strategic bombers. The large-scale armored attacks of the Blitzkrieg had practically ceased. Instead, the usual tank formation seen consisted of from two to 10 tanks. In view of the reduction of the size of the attacking armored force, it was no longer necessary to employ the tank destroyer battalion in mass with its tremendous fire power. It was found that a company, or even a platoon, properly employed, had no difficulty

in overcoming this new type of German tank attack. Therefore, it was generally decided that the tank destroyers should furnish close antitank support to the front-line units. Thus, the companies were attached to the regiment or the combat command, and, often, the platoons of the company were further attached to the battalions.

This, of course, made a considerable change in the employment of the tank destroyer battalion headquarters and the service elements. If the division did not have an antitank officer, the battalion commander functioned in this capacity under either the artillery commander or the G-3. Either he or one of his staff officers made frequent visits to the regimental and battalion headquarters not only to recommend but to supervise the employment of the tank destroyers. Very often, it was found to be most practicable to have a staff officer stay at the regimental command post. This officer would act in the dual capacity of liaison officer and commander. Whenever a trouble spot was encountered, the tank destroyer officer was right on the spot to recommend employment as well as to receive the orders. He would then radio the orders to the company or would have the company commander report to him so that he could give the company commander the situation and mission while the company was being moved up.

The job of the service elements of the battalion became more difficult. The companies, under this plan, were usually rather widely spread out. It was necessary, therefore, to plan and maintain two or three different routes of supply and evacuation. This, plus the fact that many supplies and services could be obtained only at army, kept the personnel of the service elements going morning, noon, and night.

When the tank destroyers were in direct support of the infantry, they had to be as close to the forward elements as the terrain would permit. In general, this meant that the tank destroyers would overwatch the infantry from positions 100 to 500 yards to the rear. A careful but rapid reconnaissance of the terrain was necessary to do this since the destroyers always attempted to get some defilade or cover, as well as good fields of fire. In the final analysis, the position chosen had to be one from which the tank destroyers could destroy the enemy tank before it could overrun our own infantry.

In order that the tank destroyers could intelligently cooperate with the infantry, close liaison was essential. Being the supporting arm, the plans of the tank destroyers were, of necessity, based on those of the infantry. It was, therefore, essential that the tank destroyer officer advised the infantry on the capabilities and limitations of the tank destroyers before the plans were made and the combat orders were issued. Further, the tank destroyer plans had to be tied into the antitank plan. In order to do this, the tank destroyer command post was usually immediately adjacent to that of the infantry and the tank destroyer commander became a member of the special staff of the infantry commander. Com-



munications, radio, telephone, and messenger, were constantly maintained between the two.

#### ROLE OF ASSAULT GUN

The role of the assault gun naturally developed from this close front-line support. Toward the end of the war, this became the most commonplace mission of the tank destroyers. They were fairly well suited to this role because of their mobility and tremendous fire power, as well as armor protection. Here, the closest cooperation possible was necessary. We borrowed a sufficient number of SCR 300's from the infantry so as to be able to install one in each platoon leader's destroyer. We also put a EE-8 telephone on the outside of each destroyer for communications with the infantryman on the ground. Further, whenever resistance became sporadic, the infantry would ride on the backs of the destroyers, thus insuring even closer cooperation.

An example of this close cooperation and how the tank destroyers operated as assault guns was had by one platoon in the vicinity of Marienloh, Germany. One of the destroyers was brought under tank fire as the town was approached. The infantry immediately jumped off the destroyers and the destroyers hurriedly sought the best available firing positions. The tank, a Mark IV, was soon knocked out. The tank destroyer platoon then took the buildings in the vicinity of the tank under fire with HE ammunition. A considerable number of the enemy infantry were flushed out and were immediately killed or captured by the accompanying infantry.

When the tank destroyers supported an armored unit, they would be employed in much the same manner as when in support of an infantry unit. They formed the base of fire for the assaulting tanks and overwatched them to the objective. Often, in the assault on a town, the tank destroyers would swing around to the back of the town and take positions from which they could close the enemy's avenue of retreat by fire. Also, they were frequently employed as the flank guard for the armored division.

The tank destroyers were a welcomed attachment to cavalry units, primarily because of their fire power and punch. They were employed by the cavalry either in a close support role or to greatly increase the power of their reserve. When an important roadblock was established, you would usually find the tank destroyers there reinforcing the cavalry troops maintaining it. They were also used to quickly knock out any small stubborn resistance that would otherwise delay the advance of the cavalry.

The normal deployment of the division was to attack with two regiments abreast and one in reserve. This meant that the gun company attached to the reserve regiment was idle, that is as far as its fire power went. Also, it was not uncommon for the entire battalion, or a part of it, to be held in corps or division reserve, in which case a number of guns were silent.

Since a large proportion of the tank destroyer officers were field artillery officers, they began to think of the possibilities of using the battalion on indirect fire missions. This line of thinking was encouraged by most commanders since an idle gun is a wasted gun. The method of such employment was worked out with the assistance of the artillery. In the spring of 1944, indirect fire became another of the missions of the tank destroyers.

Originally, it was contemplated that a tank destroyer platoon would be attached to a field artillery battalion for operations. In practice, however, this did not work satisfactorily because of the differences in the guns and the fact that this would spread the battalion out over such a large area that it could not readily be assembled for its primary mission. In order to meet these objections, each gun company organized and trained a fire direction center, a survey crew, and a wire crew. The personnel for these various crews were taken mainly from the security section of the company and operated under the direction of the company executive officer. This meant that the company could be fired as a unit or that one platoon could be used in indirect fire at any one time. The targets were generally designated by the field artillery battalion to which the company was attached.

In a few cases, the battalion set up its own fire control center and operated directly under division artillery. During the halt, just prior to the crossing of the Rhine, such a plan was adopted and utilized by my battalion. We had a platoon from each of two companies in indirect fire positions during this period. The battalion S-2 and S-3 sections operated a fire control center. Here the targets were plotted as directed by division artillery and the fire missions were assigned to the companies. While this was mainly for practice and training, it was proven to the satisfaction of all that the battalion was capable of operating in this way.

#### ROER RIVER CROSSING

"In the crossing of the Roer River, the tank destroyers were employed in indirect fire as well as direct fire. During the early hours of the assault crossing, fires were placed on enemy positions and installations across the river using indirect laying methods; in most cases, ranges were from 2,000 to 3,000 yards. Fires for the initial assault were scheduled. Targets selected were enemy assembly areas or avenues of approach which had been determined previously by infantry patrols, aerial photographs, air observation, reconnaissance company (Tank Destroyer) observation posts, and from G-2 information. Targets were plotted on the map by inspection and firing data computed; indirect fires were delivered during hours of darkness. As the infantry advanced up the escarpment, scheduled fires ceased and all fires were delivered on call from the infantry. Contact with the infantry was maintained by reconnaissance company personnel, equipped with radios, who



crossed with the leading infantry elements. During the assault crossing and the establishment of the bridgehead, tank destroyer guns were in indirect fire positions reinforcing division artillery fires in the corps sector. Targets selected were those suitable for harassing and interdiction fires, such as towns, roads, and road junctions. All fires were scheduled. Tank destroyer guns also fired illuminating shells according to a scheduled fire plan for the purpose of illuminating and directing the movement of the assaulting infantry."<sup>1</sup>

While the destructive effect of the tank destroyer shell was not as great as that of the 105, its harassing effect is believed to be greater since the high-velocity shell gives no warning of its approach. Also, the range of the tank destroyer was considerably greater than that of the 105—approximately 14,000 yards with both the three-inch gun and the 76mm gun, and 19,560 yards with the 90mm gun. This made it suitable for harassing fires, interdiction fires, and reinforcing fires. The tank destroyer gun was able to relieve the 105s of a number of their longer range missions so that they could be more effectively utilized in close support of the infantry.

Because of the absence of an armored, high-velocity weapon other than the tank destroyer, still another mission was given to the tank destroyers—the mission of destroying pillboxes and other fortifications. Since most of the forts encountered were found to be mutually supporting, the platoon was employed as the working unit. Two guns were placed in position to bring fire on the embrasures of the forts, while the other two were in an overwatching role. This prevented the Germans from manning their weapons while our infantry advanced the assault parties on the blind side of the fort to be knocked out. When the infantry were in their final assault positions, the infantry commander would lift the fire of the tank destroyers. This was usually done by radio but various other types of visual signals were used. The M-10, with its three-inch gun, proved to be an excellent weapon until the advent of the M-36, with its 90mm gun. The 90mm gun would penetrate three and one-eighth inches of concrete at 1,000 yards with one round. From three to 10 rounds were generally used to obtain a complete penetration. However, the maximum effort was made to secure firing positions from which the embrasure could be hit and it was not usual to attempt to penetrate the concrete of the fort.

When firing at the embrasure, it was often only necessary to get one hit. This would generally jam the shutters or would cause considerable flaking on the inside with consequent casualty effect. Whenever a penetration was made, a quick round of HE would bring the crew to its knees. One of the best-known operations of this type took place at Cherbourg. The infantry hit a particularly difficult fort which they were unable to approach because of the intense machine-gun fire from other forts which were so located that fire could not be

brought on them. The tank destroyers were called up and immediately placed their fire on the steel door of the fort. The American commander then called on the Germans to surrender. The answer was that General von Schleiben, the defense area commander, Admiral Henneke, commanding naval forces in Fortress Cherbourg, their staffs, and about 800 other Germans capitulated. This was, virtually, the end of the defense of Cherbourg.

Our first mission, after leaving the staging area, was one that was unusual in the ETO but was commonplace in the Pacific. We were assigned the mission of protecting the southern coast of the Cotentin peninsula from possible attack by the Germans occupying the Jersey and Guernsey Islands. Contact was established with the CIC and the Navy. From these sources, we learned that the Germans were incapable of any large size attack. They had sufficient personnel but they had only a few small fishing smacks and possibly a few midget submarines. However, since it was believed that their food supplies were almost exhausted, it was very probable that they might stage several raids in order to get at the then vast dumps that were located on the Cotentin peninsula. After a thorough reconnaissance of the area was made, the sector was divided between two gun companies. The third gun company was held in reserve. The guns were emplaced on the commanding ground along the coast with each gun supported by at least one other. They were further tied together by patrols. It was also found that a British naval radar station was operating in our area and we established telephone communications with it. While we were on this mission, I heard my first newscast from Germany. The newscaster was saying that the German troops on the Jersey and Guernsey Islands were performing a very important mission in that they were keeping thousands of crack American troops tied up on the Cotentin Peninsula guarding the dumps.

There are probably many other missions that were performed by the tank destroyers; however, I believe the foregoing missions were the most important or at least the more commonplace. The tank destroyers were one of the most versatile units on the battlefield. They not only performed many varied missions but often found themselves performing two or three of them at the same time.

The tank destroyers have passed into history. However, recently one heavy tank battalion was made organic in both the infantry and armored divisions. At present this battalion is to consist of headquarters and headquarters company and three gun companies. Each of the gun companies will have four platoons equipped with M-26 tanks in each. I believe that these battalions were created to fill the job that was performed by the tank destroyers during the war. If this belief is correct, the officers in the new heavy tank battalion will do well to study the history of the tank destroyers thoroughly and profit by their experience.

<sup>1</sup>T D Information Letter No. 6 Hqs 1st T.D. Brigade.



# Sound Peacetime Pub

**The purpose of this article written by an experienced public information officer is to explain how public relations experience in wartime can be used to peacetime advantage.**

A SHARP decline of public interest in the Army and its activities takes place at the end of every war. The moment GI Joe returns home from the war and dons civilian clothes Mr. and Mrs. John Q. Public lose active interest in the nation's peacetime military establishment.

The problem facing Army public information officers today is to revive and maintain public interest in the Army and its activities by a sound and thorough public relations program.

Once a war ends the Army does not directly affect the lives and interests of the millions of persons that it did during wartime. The American press withdraws its hundreds of competent war correspondents. Only important news events in the Army are covered personally by the press in peacetime. Why? After all, it's the same Army although not so large.

In peacetime it is the public information officer's job to see that the American public is fully informed on military matters. He must be capable of creating and producing information that will interest editors of all media.

The job of being a public information officer *entails more than just producing a volume of press releases for home-town newspapers on individual soldiers*. He must be capable of supplying professional prepared copy for all mediums of information, such as: newspapers, magazines, radio stations, books, trade papers, house organs, etc.

It is the purpose of this article to explain how public

relations experience in wartime can be used to peacetime advantage.

War correspondents in most every case during the war were assigned to units prior to their going into action. The period between time the correspondents joined a unit and the time it was scheduled to go into action was used by the public information officer and his staff for orienting the news writers and briefing them on the coming operation. The newsmen were furnished with a history of the unit and biographical sketches of the general officers and other commanders. These were always filed in advance by the correspondents.

Today when an event takes place at a military installation, either in the United States or overseas, the same procedure should be followed. The news writers should always be briefed in advance on what is scheduled to happen. They should have an opportunity to meet all the persons who will take a leading part in the event. A pre-event tour of the installation or area will also be in order. If possible, the public information officer should handle this tour and all the introductions on the way personally. But, at no time should he interfere with a newsman who is interviewing.

Advance stories were always written on the men and units to take part in a coming action. This too, should be done today. The public information staff should have prepared for all concerned a complete résumé of what is to take place and who will take part in it. When preparing the press releases don't forget to include the home-town address (both street and city) of each military person mentioned.



# Public Relations

by  
Major Hal D. Steward\*

Adequate transportation was always available during the war to help each correspondent cover his story. The same should be true in peacetime. The public information officer must make certain at all times that sufficient transportation is at hand to accommodate all newsmen covering the event. There is nothing that irritates a newspaperman more than to be left without transportation to a spot where news is developing. This one thing is of utmost importance.

The speed with which news moves determines much of its value; therefore one of the public information officer's first considerations must be the establishment of a quick method for filing the correspondents' stories. The public information officer will do well to establish a messenger service that will function on a flawless time schedule, such as, one trip each half hour or one trip every hour on the hour, etc.

In wartime campaigns public information personnel were always assigned spots where news was most likely to pop. Newsmen couldn't be everywhere so it was up to the public information staff to cover what they missed. Then the public information stories would be handed out to the correspondents to give them complete and thorough coverage. It is the job of the public information staff to be as much help as possible to the correspondents. This is one way to help. The public information officer should make certain that no news event goes uncovered. The correspondents will appreciate this important service.

Regular and fruitful press conferences with military commanders pay off. The public information officer should make arrangements with his commander beforehand so that the commander will talk to the correspondents when they have queries of importance to ask. A regularly scheduled press conference that has been announced to all correspondents in advance usually works out the best.

A correspondent covering a story should also be provided with the necessary paper, carbons, typewriter and a place to write his story. The quartering and messing of newsmen must also be handled efficiently. They should never be required to perform any personal task that will interfere with their coverage of a news event.

It was discovered in World War II that press releases always got a better play if they were filed by the civilian correspondents. Therefore press releases should be handed out to the press representatives on hand rather than mailing the releases to individual newspapers and wire services. Of course, in the case of a press release for a weekly newspaper they should be mailed. But, no other exception.

To operate effectively, a public information officer must establish a working system; however, he must still plan moves ahead of time. When a big story is about to break, he must inform correspondents in advance, and arrange for the facilities they will need to cover it. And, to repeat, he must see that the stories are transmitted.

To illustrate, the commanding general of the First Cavalry Division received word on January 29, 1945, that the Division would move on Manila. This gave little time for arrangements, which were carried through as follows:

First, the war correspondents, who were at GHQ 60 miles away, were notified barely two days ahead of time that the Division would begin its race for Manila at midnight, January 31. Fourteen correspondents signified their desire to accompany the now famous "Flying Column."

The radio transmitter that would be used to send the stories out to the States was located at the GHQ public information office. It was necessary, therefore, to arrange for them to send a courier to the division's rear echelon, where he would pick up the stories that were sent back from the advanced echelon. En route, the division public information office operated in two separate sections. One of its jeep messengers, at one time, was traveling 75 miles to the rear echelon, and another the 60 miles from the rear echelon to the GHQ radio transmitter station.

On the way to Manila, the division commanding general held a press conference each night to keep correspondents informed on the military situation as it developed.

When the city was reached, a field artillery liaison plane was used to transport the radio correspondents and the written stories of correspondents to the transmitter at GHQ. The result was that news coverage on the First Cavalry Division beat that on other units by more than 24 hours.

The liberation of prisoners at the Santo Tomas University civilian internment camp drew practically all of the war correspondents in the theater, and to these the division public information officer was a host, whose duties included rationing and quartering them on the spot.

During this time the division public information personnel, which consisted of five men, were kept busy writing feature articles on the division and the men in it. Again the best feature stories were given the correspondents, and were invariably used.

News releases on every officer and man that entered



Manila with the "Flying Column" were sent immediately to home-town newspapers, and because they were timely, got a pretty fair play. To get them out fast, troop clerks were pressed into service.

In addition to caring for war correspondents and preparing hand-out releases, the public information section continually wrote stories about decorations and promotions. The stories behind the awards of the higher decorations were turned into general releases for the correspondents.

When publicizing any military unit, whether company or army, a public information officer must slant his material for possible use in all publishing media, and not concentrate his efforts on newspaper publicity alone. The other media are magazines, motion pictures, still photographs, radio networks and individual stations, and books. Magazines are on the lookout for feature stories about units which are built around one or two of its outstanding individuals; radio stations will use spot news, spot news features, and interviews with men who have done the unusual; motion picture and still cameramen always welcome any idea that will lead to good news or feature pictures; many war correspondents are writing books and will welcome material to include in them.

Public information officers should avoid "polishing the brass"; that is, spending a great deal of time writing

about the high ranking officers in the unit. No story should be written unless it will stand up to a news or feature test. Only about 10 per cent of a unit is officers, and therefore about 90 per cent of the releases should be about enlisted men.

The public information officer should work directly under the Chief of Staff or Executive Officer as do other staff sections. This plan works best as it puts the public information officer on par with the other staff officers, which is a decided advantage.

There is no set of rules to follow in handling publicity for a unit, and a public information officer must make his policies as the various problems present themselves. For this reason a policy book should be formulated for the section as work progresses; from time to time it will be of great assistance.

If the Army public information officers will "play ball" with the newspapermen they will do the same with him. This writer has never, in years of Army public relations experience, known a newsman that wouldn't. Certainly, some are tougher to handle and please than others, but the successful handling of them attests to the public information officer's professional proficiency.

The reward to the Public Information Officer who does his job well is that self-satisfaction that comes from seeing that his unit gets public credit for what it does.

## PUBLIC RELATIONS BOOKS

### Three Outstanding Ones

PRACTICAL PUBLIC RELATIONS. By Rex F. Harlow and Marvin M. Black. This book by two expert public relations counselors should be on the desk of every Army Public Information Officer. Price \$4.00.

YOU AND YOUR PUBLIC. Revised Edition. By Verne Burnett. This is one of the famous Harper & Brothers public relations series as is *Practical Public Relations* listed above. Price \$3.00.

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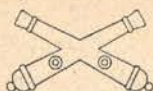
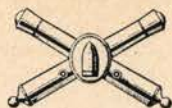
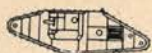
BOOK DEPARTMENT

*Armored Cavalry Journal*

1719 K Street, N. W.

Washington 6, D. C.





# OTHER BRANCHES



Major General Everett S. Hughes

"Let me congratulate you on the inspiration that fathered your Other Branches Section. To my way of thinking, there is no question that it has great value as a forum where we all may meet to consider our mutual problems and cultivate a unity of thought and understanding. It gives us a chance to speak our minds.

"The thing on my mind now is the oft-repeated assertion that the advance of modern science in warfare has outmoded many traditional weapons.

"I don't agree at all. There has been change, it is true—a violent change; and there are doubtless more changes to come. But men and tanks and guns will still be needed in the next war. The tanks and guns will probably be quite different from those we used in World War II. More of them will be transported by air but, at their destinations, they will deploy and fight much as they always have.

"On this subject, as with so many others, too many

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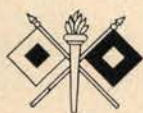
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By James Niland

(Editor's Note: The "Other Branches" section in the next issue of the ARMORED CAVALRY JOURNAL will feature a statement by Major General Spencer C. Akin, Chief Signal Officer of the Army, and a full-length article entitled "Significant Signal Corps Developments" by Gerald Egan.)

people are too ready to make predictions supported by scant experience. Actually, as the history of gunpowder shows, revolutions in warfare are usually relatively slow evolutions. It is up to us, therefore, to keep our own counsel and continue to work out our long-range problems."

Major General, U. S. Army,  
Chief of Ordnance.





# Postwar Ordnance Problems Of Storage And Maintenance

*by Brigadier General J. Kirk\**

**Between the Armored Cavalry and the Ordnance Department there is a closer bond, perhaps, than exists between any other segments of the Army and Ordnance. The Armored Cavalry is Ordnance's best "customer" from the standpoint of tonnage of such primary matériel as tanks and guns. Ordnance designs, procures, stores, supplies, and maintains the matériel with which the Armored Cavalry fights and moves.**

IN peacetime, the great "corporation" that is the Ordnance Department finds itself confronted with a monumental task of storage and preservation of matériel. Having designed and perfected both great fire power and high mobility to meet its "customer" demands, and having incorporated these characteristics in items produced in quantities for which there is no longer a large immediate need, Ordnance must store and then issue matériel in a direct proportion to the requirements of the using arms. Within the Department, Field Service performs this task.

Between the Armored Cavalry and the Ordnance Department there is a closer bond, perhaps, than exists between any other segments of the Army and Ordnance. The Armored Cavalry is Ordnance's best "customer" from the standpoint of tonnage of such primary matériel as tanks and guns.

Ordnance designs, procures, stores, supplies, and maintains the matériel with which the Armored Cavalry fights and moves. These "corporation jobs" are carried out at the behest of the using arm, with Ordnance coming up with ideas for perfection across the board.

To understand the magnitude of the postwar Ordnance problem, it is well to examine a few wartime figures.

During the war, Ordnance became the greatest single "industrial corporation" ever conceived. Ordnance expenditures for matériel ran close to 38 billions of dollars, or more than 50 per cent greater than the entire American national debt following World War I. Ordnance procurement in the urgent years of World War II was actually higher, in dollar value, than for all other War Department technical services combined. Included in this procurement were about 85,000 tanks; 600,000

\*Chief of Field Service Division, Ordnance Department.



artillery pieces; 12,000,000 rifles and carbines—five times the number of rifles made for our army in World War I; and 18,000,000 tons of ammunition.

Mountains of Ordnance matériel were expended during the fighting. At the war's peak, for example, one month's expenditure of small-arms ammunition was 293,000,000 rounds. Artillery ammunition was supplied to the guns at the rate of one ton of shells per gun per day to support such barrages as that of the Third Army's XX Corps before Metz. During that 10-day assault, the Corps threw at the enemy 1,000 tons of projectiles.

Our Air Forces dropped over Western Europe 1,500,000 tons of bombs, while the British dropped another 1,000,000 tons of American-made bombs. In addition to battle losses, considerable quantities of ordnance matériel were expended through ordinary wear, weather, accidents, and the like.

When the war was over, however, the task ahead of Ordnance's Field Service was complicated by a number of things.

In the first place, depots were full to overflowing with peak-of-production matériel. This was particularly true in the case of artillery ammunition, for an accelerated rate of production had been instituted a few months before Germany capitulated, at the time of the Battle of the Bulge. In the spring of 1945, ammunition of all types was being produced at the phenomenal rate of 700,000 tons per month, which figures out at an annual rate of more than 8,000,000 tons!

The turn-around of loaded ships after VE-Day was a second factor. In those latter days of the war in Europe, the Atlantic was more crowded with ordnance-laden ships than ever before. Most of these vessels were turned back so the matériel, and particularly the ammunition, could be re-routed to the Pacific. In many cases, circumstances dictated that cargoes be unloaded on the east coast and shipped by rail to the west. Depot and rail-shipping problems were further complicated by this expedient.

After VJ-Day came double aggravation of the storage task. For a considerable time, matériel continued to flow from production lines to the depots until all contracts could be cut back. At the same time, quantities began returning from overseas. Both the Atlantic and the Pacific areas contributed, primarily in ammunition. It, therefore, became necessary for the Ordnance Department to arrange for the reception and storage of quantities excess to the needs of the armies of occupation. There was the exception that much noncombat matériel such as motor transport vehicles and parts could be declared surplus at its overseas location.

#### SPEED VITAL IN PLANNING

Speed in planning was vital, for ships had to be freed for other purposes, and returned ammunition was arriving in huge tonnages. In June, 1945, there were just over 4,000,000 tons in United States depots. By

October, the total had risen to more than 5,250,000 tons, the increase representing final receipts from ammunition plants plus shipments diverted to this country. Additional tonnages continued to arrive so that by February, 1947, the total ammunition, including bulk explosives and components, stored in United States depots, arsenals, and plants was more than 8,000,000 tons.

This amount is greater than the quantities on hand in Zone of Interior at any time during the war! And it remains higher despite demilitarization of obsolete and deteriorated ammunition for the salvage value of the metals.

General supplies constituted the bulk of the matériel other than ammunition which came home. As early as 1943, the need was seen for reconditioning much of this matériel and returning it to useful service. Yet the inflow of returning Ordnance parts, tools, accessories, and other supplies was so great that its storage would have impeded the outflow of new production through Ordnance depots. Therefore, the Department established four returned matériel centers. These were devoted solely to the segregation, identification, repair, and return to stock of supplies pouring in from home installations and overseas.

Greatly accelerated returns were noted immediately after VE-Day. Thus the handling capacity of these centers was taxed to the extent that matériel had to be diverted into other Ordnance depots.

That the load was heavy is indicated by the fact that between January 1945 and December 1946, tools, accessories, and supplies received from Zone of Interior establishments totaled almost 500,000 tons. At the same time, overseas theaters contributed about a third of a million tons. Add such major items as vehicles and artillery, but excluding ammunition, and the total returned in the period from the middle of 1945 to the end of 1946 was just over 2,500,000 tons.

Here was an enormous augmentation to Field Service's handling, storage, and maintenance task. Fortunately, however, it has been possible to declare some of this matériel surplus, while some, badly damaged in use or otherwise in poor condition and no longer fit for economical reconditioning or repair and return to stock, has been salvaged for metal values.

A further difficulty that early forecasts indicated would plague the Ordnance Department was the decrease in number of depots that would inevitably come with the cessation of hostilities. Just before that time, there were 46 Ordnance depots. In addition there were a number of Ordnance sections of General depots. By January 1947 many depots had been made subdepots and some had been placed in a "caretaker" status due to decrease in funds and personnel.

The size of the job done by Ordnance for the war effort, the quantities of matériel on hand at the end of the war, the storage space available, and the future plans of the using arms all combine to determine Ord-



nance's storage and issue task. Specifically, Ordnance will store and issue on demand during peacetime the types and quantities of matériel required now and in the future by the Armored Cavalry.

The Regular Army has, in peacetime, about a million men, many of whom are overseas in the Pacific and Europe, while others are in training areas in the Zone of Interior. The National Guard and other civilian components must be taken care of. All have to be supplied with Ordnance matériel for training and replacement. Accordingly, they must have large numbers of vehicles and large quantities of ammunition.

Here, then, is Ordnance's biggest current task. Vehicles are bulky and susceptible to deterioration because vital parts are not easily covered with protective materials. Ammunition is comparatively bulky and is extremely dangerous. Both can best be stored under cover, but extensive covered storage is not possible. There aren't enough sheds, much less warehouses and magazines to meet the needs.

That is why one may see, in depots scattered throughout the country, hundreds of vehicles lined up hub to hub in open storage. This is why, also, large acreages are studded with ammunition magazines of several types, and more acres are devoted to outdoor storage of bombs and shells behind barricades and widely dispersed. The general supplies, the tools and spare parts and small-arms ammunition take up much of the space in depot warehouses. Some artillery is in hard standing storage, while some is in warehouses, and an appreciable quantity, together with fire control instruments, has been "canned" for storing indoors or out. In addition, large numbers of combat vehicles have been placed for long-term storage in converted oil tanks, so that the sites of their storage look like the storage fields of oil refineries.

Both vehicles and such heavy ammunition as projectiles and bombs require special preparation for outdoor storage, plus continual surveillance thereafter. The house must be kept in order if the things that are being preserved are to be in condition for issue when needed.

#### OUTDOOR STORAGE PREPARATIONS

Preparation of vehicles for outdoor storage necessitates, first: Inspection for serviceability in accordance with definite standards. Those found serviceable are processed in accordance with prescribed methods. If unserviceable, but economically repairable, they are repaired and made ready for issue complete in every detail, or stored "as is" for future repair work when space and facilities permit.

The processing of vehicles for standby storage includes but is not limited to such details as blocking all wheels free of the hard standing; spraying the inside and outside of all engines and vital parts of transmissions, transfer cases, differentials, front axle bell joints, and machined surfaces such as universal slip joints with

rust preventives and/or corrosion preventives. Sealing of engine compartments to prevent dirt and moisture from accumulating and the blocking of the truck bodies to provide natural drainage. The instrument panel and all electrical connections must also be sprayed with ignition insulating compound to prevent corrosion.

Each individual task must be accomplished in addition to protecting the radiators and engine blocks from freezing or rusting, caring for storage batteries and tires, and removing rust spots—a continuous program. This is a gigantic operation since the number of vehicles to be handled totals over 200,000 for which little, if any, covered storage is available.

Whether stored outdoors in sheds or barricaded open sites, or indoors in standard magazines or igloos, ammunition poses a number of problems. Because the quantities to be preserved to meet current demands and as peacetime operating reserves are far greater than ever before in our history, methods of storing in magazines have had to be revamped. More compact stacking; disassembly and separate storage of fins, grommets, shipping bands and other awkward appendages; and limitations of, or actual discontinuation of, lateral aisles in magazines of all types, are some of the measures that have been resorted to for most efficient utilization of available space.

In magazines, sheds, or barricaded open sites, ammunition must be under constant surveillance. This consists of the observation, inspection, test, study, and classification of ammunition and its components, and of explosives with respect to their serviceability, hazard, and rate of deterioration; the inspection of facilities and methods used in handling, storing, shipping, maintaining, reconditioning, renovating, salvaging, and destroying ammunition; the inspection of containers and buildings; and the preparation and maintenance of all records, reports, and technical data.

If the comprehensive nature of this work that must be carried on constantly by Ordnance's Field Service is not immediately apparent to the layman from the foregoing, here is a further impressive fact: There are now 450 ammunition inspectors in the Ordnance Department and about 70 overseas. Their work is extremely important on a continuing basis, for while our explosives and powders are relatively very stable compounds, they are subject to imperfections that lead to accelerated deterioration. Ammunition that has deteriorated from any cause may become hazardous. If it is found that unsafe conditions are developing, the particular type or quantity of ammunition affected is renovated or destroyed. It is the inspector who makes the determination in such cases, but a sizable army of expert workers is necessary to do the job he orders.

The ammunition inspector is a definite and important link in the chain of operations performed by the Ordnance Department for the using arms. He is but one keyman of the many in Ordnance who keep the house in order.



# AAF Postwar Research Program

*by James A. Niland*

THE Army Air Forces came out of the second World War as the greatest air force in history. The greatness of the AAF was not so much the numerical superiority of men and planes, but was directly attributable to the technical and scientific genius of the men who built and flew the planes.

To maintain that aeronautical acumen, the AAF last September opened the Air Institute of Technology at Wright Field. From this school in the years to come, will issue a steady stream of highly trained AAF officer-experts in aeronautical engineering and logistics.

The Institute, as such, is new, but the idea dates back to 1919 when the Air School of Application was established at McCook Field, the forerunner of Wright Field. Within a year after its opening, the name of the school was changed to the Air Service Engineering School. Under this title and through the years antedating World War II it trained hundreds of Air Corps officers, both Regular and Reserve. During the interim of peace the Air Corps was limited by appropriations, but the training received by these men enabled them to put theory into practice when war came. Cogent proof of their training was demonstrated by the fact that the majority of the combat planes used by the AAF in the European theater prior to V-E day had been planned by the AAF before December 7, 1941.

The 1946 class of the Institute had 190 officers enrolled, most of them in the two-year course and about 50 in a one-year course of higher level. Graduates, for the time being, are awarded certificates of accomplishment. Later, if the Institute is accredited by appropriate academic associations, bona fide degrees will be awarded.

The Institute is composed of two colleges, engineering and logistics. The College of Logistics covers the business end of the AAF program which is responsible for the procurement, production and inspection of all AAF planes and equipment. It isn't an easy matter to buy an airplane, not quite as easy as buying a motor car. Planes are intricate machines composed of thousands of component parts. Few aircraft manufacturers build more than the airframe or the engine. Instruments, wiring systems, radio equipment, etc., are purchased from sub-contractors. Although the AAF contracts with a plane manufacturer for a complete and flyable plane, Air Force procurement officers supervise the manufacture of and inspect every component part made by sub-contractors.

The curriculum of the Engineering College includes the principles of plane construction and the research

and technical developments of air equipment. What the student of this school learns to build and create, the students of the Logistics College manufacture and buy from American industry.

The professors at the Institute are civilians whose salaries are commensurate with those paid to teachers in civilian colleges and universities. The assistant professors and instructors are the main civilians, but there are a small number of military men on the faculty by reason of their exceptional talents.

The faculty members and personnel policies were determined by an Advisory Council. Dr. John R. Markah, Associate Professor of Aeronautical Engineering at the Massachusetts Institute of Technology, heads the council, which includes Dr. W. H. Pickering and Dr. Theodore H. Troller, of the Case School of Applied Science.

Although the precedent for a school of this type has been established, the Commanding General of the Army Air Forces, General Carl Spaatz, directed that the group of civilian scientists survey existing civilian educational facilities to determine whether or not the same courses of study could be taught in American colleges and universities.

The civilian scientists after a comprehensive and careful survey reported, "There are no means available at the present time or in the immediate future for obtaining the desired undergraduate education in any of the existing civilian institutions. The discrepancy between the requirements for the basic technological education of AAF officers and that undertaken by civilian institutions is caused by three points: (1) difference in maturity and previous training of the prospective students; (2) specific combinations in educational subjects which are necessary due to the broad fields which must be converted in general institutional training; and (3) education in the civilian school would involve a longer period in schools to permit covering the specialized need of AAF officers."

Entrance requirements for prospective students are rigid. Only Regular Army officers or those who have agreed to remain with the AAF for four years after graduation are eligible. And of these, only men with "excellent" military efficiency rating are acceptable. Scholastically, an applicant must have completed at least two, preferably three, years of college work towards a B.S. degree. The entrance requirements are rigid because the AAF wants to train its best men, capable of assuming responsible assignments in the peacetime program of research and development. Moreover,



the scholastic level of the Institute is comparable to third and fourth year college work, with some engineering courses of graduate level.

Few educational plants can point to the elaborate laboratories and research facilities available to Institute students at Wright Field. The Army Air Forces is teaching theory in the midst of application.

Supersonic flight is probably the most spectacular part of the program and one that is of inestimable value to commercial aviation as well as military. The AAF's first supersonic plane, the XS-1 was first flown in December of 1946 and since that time has completed 20 powered flights. This marks the end of the primary test program and opens the way for further research by the AAF and the National Advisory Council of Aeronautics with rocket ships.

During 1947, the AAF had added four bombers to its postwar air fleet. One, the Boeing B-50, is a new and improved version of the B-29, the other three are jet bombers.

First of the jet bombers to be delivered was the North American B-45, a four jet bomber. By standards of World War II, the B-45 compares in size to a heavy bomber, it is classified, however, as a medium bomber. It is patterned along conventional lines, although it is highly streamlined, and is as sleek as a modern fighter plane. Because of the extreme high speed performance of the B-45, the heat generated in the cabin by the friction of the plane against the air would make the crew members uncomfortable at low altitudes without a cooling system. For low altitude operations a refrigeration unit has been installed which will produce temperatures 30 degrees below outside temperatures.

The Glenn L. Martin Company produced for the AAF its first six jet bomber the XB-48 in fourteen months, a full year less the normal time required to build a new military airplane. The XB-48 spans 108 feet, 4 inches across the wing, has an over-all length of 85 feet, 9 inches and is 27 feet, 6 inches high.

Jet power, however, is not the exclusive province of the fixed wing aircraft. AAF engineers in cooperation with the engineering staffs of General Electric, McDonnell Aircraft Corporation, Autogiro Corporation of America and others are experimenting with jet power for helicopters. Ram jets, reso jets and turbo jets may one day replace the reciprocating engines now used in helicopters. Helicopter development is an important item on the AAF's research and development program which includes development of liaison type helicopters for the Army Air Forces and Ground Forces and medium and heavy helicopters for cargo and rescue work.

Of the many developments of the research program for comfort and safety of AAF personnel, the Pulsating Seat and Lumbar Pad is one of the most unique. It was designed by the Personnel Equipment Laboratory at Wright Field to prevent discomfort of pilots who are confined to a sitting position during long flights and

will prevent compression fatigue induced when a person sits for a considerable period of time without change of position. The pulsating seat is designed to alleviate this condition by massaging, while in flight, those parts of the body which are susceptible to compression fatigue. The inventor of the pulsating seat is Dr. D. V. Summerville, a bomber and fighter pilot of World War II.

Another safety development of Air Matériel Command is a flying suit with built-in inflation bladders located in such a manner to make it impossible for the wearer to lie on his face in the water. The suit was designed for use by personnel flying over water and has been constructed to incorporate the functions of three garments, the light flying suit, the life vest and emergency sustenance vest or kit. Combining the three suits into one reduces the over-all weight of flying clothing by about two pounds. The suit is made from a closely woven cotton twill. Its life vest action is obtained from a circular neck bladder and a rectangular chest bladder made from lightweight neoprene coated nylon. It can be inflated either orally or by a carbon dioxide cylinder located at the base of the chest bladder. From tests conducted in the Personnel Equipment Laboratory at Wright Field it was found that the suit rights itself in less than three seconds after hitting the water.

An additional safeguard for personnel flying over water is about 104 men rescue raft known as "The Wheel." It was designed especially for the AAF's air-sea rescue program to be used in the event of disaster, such as shipwreck, where temporary means of survival are essential. The raft consists of a main circular tube looking very much like a doughnut, with two cross tubes.

The high speed of jet planes posed a safety problem that would allow the pilots to escape from a disabled plane without being crushed against the tail of the aircraft, by the terrific rush of air. The solution came with the development of the Pilot Ejection Seat. By squeezing a trigger the pilot sets in operation a series of automatic events. First, the Ejection Seat is actuated, shooting him straight up at a speed of approximately 60 feet per second. Three seconds after leaving the plane, an automatic small explosion takes place releasing him from the seat in mid-air. After his release, he is permitted to free fall for another three seconds before the last automatic action takes place which opens his parachute.

Two years after the end of the second World War, the AAF consists of 300,000 men and 25,000 planes, 5,000 planes less than were procured during the last year of the war. During 1946 a total of 1,010 military aircraft were delivered to the AAF, a sharp contrast to the 70,000 delivered during 1944. A vigilant peacetime military establishment-industrial preparedness demands that the AAF be kept continuously provided with sufficient quantities of planes and equipment to permit defense maneuvers on a reasonably large scale.



# Individual Tank-Infantry Communications

*by Captain James J. Butler\**

**T**ACTICAL OPERATIONS during World War II clearly demonstrated that the most effective ground force team was one composed of tanks and infantry operating in close coordination. Certain very special operations may not permit the employment of tanks but, generally speaking, a closely coordinated tank-infantry team, supported by artillery, met with much greater success than either tanks or infantry operating alone. Each component of the team is capable of overcoming certain inherent weaknesses of the other component, thus increasing the effectiveness of the team as a whole.

The term "individual tank-infantry team" as used in this article is not intended to imply that one tank and a squad or platoon of infantry are operating alone. The purpose is to consider the communication problems of the smallest tank-infantry unit which actually forms part of a larger unit.

The key to securing close coordination within the tank-infantry team is an adequate communication system. The dismounted infantry must be able to communicate quickly with the tank in order to secure the support of the tank weapons in reducing enemy machine guns and foot troops which may hold up the advance of the infantry. Likewise, the tank must have good means of communication with the infantry in order to secure their support in reducing antitank guns, bazooka teams and other enemy installations which are a threat to the tank. In other words, the effectiveness of the tank-infantry team is dependent upon adequate and continuous communication between the two components of the team.

The means of communication available to the tank-infantry team are: 1—radio; 2—wire; 3—visual signals; 4—messenger or liaison; 5—sound signals; and 6—external tank interphone. We shall consider each of these means in detail and take into account their advantages and disadvantages. This article will deal mainly with the two primary methods of tank-infantry communication: the external tank interphone and the radio.

Communication between headquarters of units of company or larger size does not present a major problem and is not considered here. It must be borne in mind that the communication problems considered here are primarily those encountered by the individual tank and

the small infantry unit operating directly with this tank.

A basic principle of combat communications is that more than one means must be available in order that a channel will still exist even though the primary method has failed. A good communication system must also be simple and flexible. The need for an elaborate system can be eliminated, to a large extent, by joint training of the units and detailed planning on the part of both commanders. Adequate means of communication must be provided in any event because combat conditions frequently prevent joint training of the units prior to their joint employment.

We shall first consider radio as one of the means available to the team. A tank platoon is authorized the following radios: one SCR-508 in the platoon leader's tank; one SCR-528 in each of the other four tanks; one each AN/VRC-3 in the platoon leader's and platoon sergeant's tanks. Note that three tanks in each platoon are not equipped with an AN/VRC-3 radio. The armored infantry rifle company is authorized one SCR-300 in company headquarters; six SCR-510; six SCR-536; and one SCR-508. The rifle company in an infantry division is authorized one SCR-300 and seven SCR-536 radios. The SCR-300 and the AN/VRC-3 radios are basically the same. They differ only in that the SCR-300 is a portable set and the AN/VRC-3 is designed to be mounted in a tank.

Now let us consider the possibility of netting the radios in the armored infantry company with those in the tank company. The armored infantry will normally be dismounted during operations, and therefore, their SCR-508 and SCR-510 sets will not be available for direct communication between the infantry on foot and the tanks. The SCR-510 can be converted to the SCR-509 which is a portable set. However, the SCR-509 is too cumbersome to serve as a practical portable radio for infantry troops. The SCR-536 sets carried by the infantry will not net with any of the tank radios. This leaves one SCR-300 in the infantry company headquarters to net with the seven AN/VRC-3 radios in the tank company.

## RELAY SYSTEM

One method of securing radio communication is through a system of relays. A message originating in

\*Student, The Armored School.



the infantry platoon may be sent to the infantry company headquarters by means of the SCR-536 sets. At company headquarters the SCR-300 may be used to relay the message to one of the tanks which is equipped with an AN/VRC-3. In the case of an armored infantry company in which a SCR-510 is available at company headquarters, this set may be used to relay the message to any tank in the platoon. Any relay system is slow and cumbersome though, and is likely to result in delay or error in transmission.

Thus it is noted that with the radio sets which are authorized to the tank company and the infantry company—either armored infantry or regular infantry—direct radio communication between the individual tank and the small infantry unit do not exist. During the recent war, many units tried various ways of augmenting the authorized tank and infantry radios in an effort to improve radio communication. One method was to issue SCR-536 sets to the tanks. This gave the individual tank a radio which would permit direct communication with the infantry platoon. However reports from both the European Theater and the Pacific Theater indicated that the SCR-536 did not give completely satisfactory results when operated from a tank. The range of the SCR-536 is very limited and it was found necessary to operate the set either on the outside of the tank or with the antenna projecting through an open tank hatch. A more satisfactory solution was to equip the infantry with a SCR-300 in each platoon and to install an AN/VRC-3 in each tank. It was found that without SCR-300 communication between tanks and infantry, the cooperation of the two units was materially impaired.

Another important means of communication available to the team is an external telephone handset mounted in a steel box attached to the rear of the tank. The handset is connected with the tank interphone system. This system was developed through a series of field expedients. An improvised telephone system was first used which permitted the infantryman to talk with a member of the tank crew. A telephone inside of the tank was connected to a length of field wire which extended fifteen or twenty feet behind the tank. An infantryman carrying a field telephone could connect it to the wire and communicate with the tank crew.

The weakness of this system is apparent. The wire trailing behind the tank would become entangled in the tank track or around some other object and would be ripped loose. The next step in the development was the installation of an interphone box mounted in an improvised metal box on the rear of the tank and connected into the interphone system. With a handset connected to the interphone box, the infantryman could lie alongside or under the tank and talk with the tank crew. This system functioned well in dry weather but in damp weather, moisture would get into the interphone box and ground out the entire interphone system. The final development was the installation of an ex-

ternal interphone in a moistureproof metal box on the rear of the tank. A signal light on the outside of the tank is used to indicate that the tank crew desires to communicate with the infantry.

The chief advantage of this system is that it provides a positive and direct means of communication. Its main disadvantage is that the infantryman may be reluctant to expose himself during an artillery barrage, and at times, the tanker may have difficulty in getting a response to his light signal. This illustrates the necessity for having more than one means of communication available. However, the external tank interphone has proved a reliable system.

Some units in the European Theater were of the opinion that tank-infantry radio communication need not extend below the infantry company. In their opinion, the external tank interphone was satisfactory as the primary means of communication between infantry units smaller than a company and the individual tank. The external interphone is an excellent system of communication between the individual tank and the small infantry unit. However, as mentioned previously, at times when the tank is under artillery fire, it may not be a continuous means. Therefore, radio should be available as a parallel channel.

#### USE OF WIRE

Wire is a means which can be used in some very unusual situations. As the role of the tank in combat requires that it be mobile, wire will be used very infrequently. In certain defensive situations where it is expected that the tank will remain in position for a considerable length of time, telephones may be installed. However, wire must be considered to be only a secondary means of communication as it will be disrupted as soon as the tank is moved. The tank-infantry team is normally moving while it is fighting, thus the use of wire is not practical.

Visual signals and sound signals offer another means of tank-infantry communication. Visual signals consist of the use of arm and hand signals, pyrotechnics, tracer ammunition, and lights. Sound signals can be used to convey certain prearranged messages by tapping on the hull of the tank. Both visual and sound signals are supplemental means of communication and must be augmented by other systems such as the external interphone or the radio. These methods also require prior joint training of the team. They are excellent for conveying short, prearranged messages. However, to be of practical value, the members of the team must be thoroughly familiar with the meaning of all prearranged signals. The principal use of smoke and tracer ammunition is the designation of a target which one member of the team has located and wants the other member to take under fire. The effectiveness of visual and sound signals will depend entirely upon the joint training or previous joint combat experience which the team has had and the coordination and detailed planning by both



commanders.

The use of messengers or command liaison is necessary at times. In teams as small as the individual tank and a small unit of infantry, it is frequently necessary for the commanders to establish personal contact, either by the tank commander dismounting or the infantry commander climbing up on the tank. Messenger and liaison may also be considered as a means of communication available to the team.

To summarize, the primary means of communication available to the individual tank and the small unit of infantry operating with it is the external tank interphone. The supplemental means are: visual signals; sound signals; and liaison. Radio is the primary means of communication between the tank section or larger tank unit operating with an infantry unit. Considering the radio equipment which is authorized to the tank platoon and the infantry platoon—either armored infantry or regular infantry—it is evident that radio communication between the individual tank and a platoon or smaller unit of infantry is not possible unless a relay system is used. Radio sets should be designed which would provide satisfactory communication between the individual tank and an infantry unit of platoon or smaller size.

The preceding considerations bring us to certain conclusions. Even though the infantry is authorized radio equipment down through the platoon, direct radio communication between the infantry platoon and the indi-

vidual tank is not possible because the radios with which the two units are equipped are of different types and will not net. There is need for redesigning the radio equipment used by the various arms. The ground forces need a common type of radio which will combine the best features of the SCR-300, SCR-536, and SCR-508. It is realized that different types of radios are used by different units in order to avoid interference caused by too much radio traffic on a common channel. This objection could be eliminated to a large extent by extending the frequency range of a radio such as the SCR-508.

A frequency modulated radio similar to the SCR-536 in size, weight, and range would be an ideal set for the small infantry unit. Such a radio would require only two or three channels and could net with the primary radio in the tank. In this case only one radio would be needed in the tank. A radio in which the range is limited to approximately one mile would cause very little interference with adjacent units. Since it needs only a limited number of channels and could be made compact and lightweight, it would be especially suitable for use by dismounted infantry. Such a set would provide the small infantry unit direct communication with the tank with which it is operating. A radio of this design would eliminate the difficulties which exist now as the result of the use of a system of relays and, to a large extent, would forego the necessity of establishing physical contact between the commanders.

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# Battlefield Vehicle Recovery

*by Captain Arthur R. Rolph\**

**Battlefield recovery of vehicles enabled the tank elements of the 1st Armored Division to maintain their vehicular strength as close to maximum as possible. Captain Rolph, a former 1st Armored Division officer, discusses in this article the battlefield vehicle recovery methods used.**

**B**ATTLEFIELD RECOVERY is a phrase with which all armored officers are familiar in a general way. Most officers, however, think of it as removal of disabled vehicles from a scene of action after the action has moved forward. As used in this article it means the recovery of any vehicle from an area which is under fire at the time of recovery, or which is in front of our foremost friendly troops. This is what Battlefield Recovery meant to the 1st Armored Division in a large phase of its operations during World War II.

Recovery of vehicles from such areas enabled the tank elements of the 1st Armored Division to maintain their vehicular strength as close to maximum as possible. It was at times of utmost value and it is very possible that again, in a future war, armored units may have the need of recovering vehicles from the field of battle with the maximum speed by taking certain risks, which, under more favorable circumstances, would not be considered.

Only under special conditions is it of value, or necessary, to recover a disabled vehicle in an area forward of friendly troops, or in an area which is under small-arms or artillery fire. One of the biggest factors in making a decision relative to the recovery of vehicles is the supply situation. When the supply of replacement vehicles is extremely scarce, or nonexistent at the time, certainly recovery of lost vehicles will be considered. Another equally important factor to be considered is the rate of advance. A slow rate of advance, or no advance at all, coupled with a dismal supply picture are the most conducive factors leading to a decision to expend great efforts to recover disabled vehicles as rapidly as possible despite adverse conditions.

In order to fully see why vehicular recovery on the battlefield as performed in the 1st Armored Division was different from most other armored units in World

War II, and to appreciate why it was done, as it was, it is necessary to examine some pertinent facts regarding the Division, beginning in July 1940, the birthday of the Division.

From 1940 through the 1941 Louisiana maneuvers the tank regiments' organic maintenance support consisted of a maintenance platoon which was a part of the Regimental Service Company. This platoon had one 10-ton wrecker which was the only recovery vehicle in the regiment. The maintenance platoon had a crew assigned to support each battalion and their vehicles consisted of one half-track and one ¼-ton truck which was the same as the maintenance section of each company. Throughout this long period comparatively little thought was given to battlefield recovery methods as they would be performed in combat. It is true that prior to the Louisiana maneuvers, and during them, reports trickled in from Africa on British and German experiences in their desert combat. Some good was derived from these experiences as they applied to battlefield recovery, but unfortunately probably not the maximum. In comprehending what was to be faced, and how problems were to be solved when they were met in combat, it was almost completely a case of the blind leading the blind.

Lessons were learned, and progress was made, despite groping and fumbling in the dark. Shortly after maneuvers in early 1942 the Division was reorganized, and among the changes were improvements in the maintenance picture. It was quickly discovered, by the problems which arose during maneuvers, that one 10-ton wrecker per tank regiment was inadequate, to say the least. Machine Gun Company plus elements of the Service Company were combined to form a Maintenance Company in each tank regiment. The Maintenance Company now had four 10-ton wreckers.

The two tank regiments had no material changes in their organizations as applied to maintenance from

\*Student, The Armored School.



January 1942 until the spring of 1943. In Ireland when the regiments were forced to bivouac their battalions in separated areas, the maintenance crews, which were dispatched from the regimental maintenance company to support the battalions, physically joined these battalions and lived with them, fortified by one 10-ton wrecker each. It was not until the war in Africa had ended that the first real tank recovery vehicle was received, the T-2, a modified M-3 medium tank.

Along with prior training, equipment, and many obscure factors which would be difficult to enumerate, or evaluate, it is necessary to consider that time honored army phrase, Standard Operating Procedure, as it affected battlefield recovery in the Division. Settling on a completely workable SOP was, like so many other things in all phases of the development of the Division, a question of many trials and many errors. By the time the tank regiments went into combat in Africa in November 1942 they had arrived at an SOP for battlefield recovery which, in its basic principles, worked surprisingly well throughout Africa and required only those adjustments which one must expect on the part of, not only Standard Operating Procedures, but equipment and personnel, when exposed to the supreme test of combat.

This is the SOP used from November 1942 to July 1944. The responsibility for recovering vehicles from the battlefield was from the lower units to the higher. The using company that lost a tank was to initiate steps to recover the tank, and if it failed to make recovery it was to report the location and condition of the vehicle to its supporting battalion maintenance crew. The battalion crew in turn had the same responsibility as the company, and if they failed to make recovery, reported to the regimental maintenance company. The same responsibility fell upon the maintenance company, who, in case of failure, sought the assistance of the supporting maintenance company from the Division Ordnance Battalion. Because it was far better fitted from the standpoint of equipment and personnel than either the companies or battalions, the bulk of the recovery work was performed by the regimental maintenance company. The supporting divisional maintenance company was called on very seldom to perform battlefield recovery. It was used primarily to evacuate vehicles from collecting points to which they had been towed by regimental maintenance or to clear vehicles from the battle area a considerable time after the action had moved forward.

Of all the battlefield recovery which took place no two occasions were exactly alike. As in tactics, broad principles did not change, but the application of principles to a great variety of situations differed with each one. To illustrate this, several examples of typical battlefield recovery operations will be considered.

On one occasion five tanks of a battalion in a tank regiment had been disabled by enemy antitank fire.

The action had taken place in a well defined valley just prior to nightfall. The tanks were in a cluster, no one over 150 yards from another and located approximately 1,500 yards in front of a sector held by an infantry battalion which was on the left flank of the tank battalion from which the five tanks were lost. The enemy line was not known, but it was believed that he had observation posts on the hills on the far side of the valley approximately 1,500 yards from where the tanks were located. At about 2000 hours the night of the action the tank battalion maintenance warrant officer reported to the regimental maintenance company CP three miles behind his battalion. He stated that he had learned from the crews that returned that four tanks had been burning and that the fifth one when last seen had only one track partially thrown, but was otherwise unharmed. It was tentatively decided at once to attempt to recover the one tank, but the final decision was to wait for a consultation with the tank battalion commander.

A party was dispatched by the maintenance company commander to go as quickly as possible to the battalion CP and there make an estimate of the situation and a plan to recover the tank. The party sent out from the maintenance company consisted of one officer, five mechanics, and two drivers with one ¼-ton truck and a half-track. It was planned that any additional vehicles or personnel needed would be secured from the battalion itself. The group arrived at the battalion CP at 2130 hours and conferred with the battalion commander. It was decided that the tank was needed badly since there were no replacement vehicles available and the entire Combat Command had been pushed back slowly but surely for the last nine days. There was an extremely heavy fog that had set in during the night and it was customary that this fog did not lift until about 0800 hours the following morning, especially in the valleys. Based on this fact plus the fact that all troops were exhausted from the day's fighting it was decided that the attempt to recover the tank, in addition to any usable parts from any of the knocked-out tanks, would be made at 0600 hours the following morning. With the assistance of the battalion S-3 the officer from maintenance company made the following arrangements.

1. Two squads of infantry were to screen ahead of the tanks one-half hour prior to the arrival of the recovery crew, to protect them from small-arms fire from any enemy patrols that happened to be in the area.

2. Two noncommissioned officers from the engineer platoon supporting the tank battalion were to join the group to check the vehicles for booby traps in case the enemy had tampered with them during the night.

3. Battalion Headquarters would add a medical half-track to the party to pick up the dead in and around the tanks.

4. The battalion maintenance warrant officer and one member of the tank to be recovered were to go along as guides.



The fog held and the party got off in the morning as scheduled. They arrived at 0600 hours at the tanks and were immediately contacted by the lieutenant in charge of the infantry screen. He reported that his squads were in a fight 15 minutes earlier with an enemy patrol and he had three wounded men. Speed was essential since it was obvious that the patrol, or something larger, might return to the scene at any minute. The group worked fast and effectively and at 0740 hours were ready to depart. The tank was ready to move under its own power. Two dead enlisted men and one officer had been put in the medical half-track and the maintenance half-track was loaded with precious guns, assorted equipment, and parts removed from unburned engines. The mission had been a complete success due to the use of initiative, aggressiveness, speed, coordination, and cooperation on the part of all concerned. These qualities were essential in all recovery operations and varied from one operation to another only insofar as emphasis on a single characteristic was concerned, depending on the situation.

Another recovery mission entailed recovering half-tracks which had had to be abandoned during a retreat by a battalion of armored infantry. The majority of the half-tracks in the battalion had bogged down in mud along the cross-country retreat route. The mission as given to the maintenance company of a tank regiment was to recover as many of the half-tracks as possible beyond our own front line as then constituted. The area that should be covered on the ground, and the methods employed, were left, as they usually were, to the discretion of the officer in charge of the recovery. In this case, cooperation and coordination were particularly essential. The half-tracks were generally on a line extending back from our own present positions to the infantry battalions former position, some four or five miles distance. This area was immediately in front of a sector for which the responsibility was divided between a French Artillery unit and a British Reconnaissance organization. Both organizations had to be informed of the recovery plan in detail, and assistance was needed from both. The French had to open a path through their mine field to allow passage of the recovery party out of our lines and also, of course, back in. The British troop contributed about 14 men to act as infantry protection to the recovery personnel, and also as guides, to a large extent, since they had sent patrols through much of the area and had spotted many of the vehicles.

Engineer personnel was furnished by the organic armored engineers and consisted of one officer and three enlisted men. The total number of vehicles the recovery party used were three ¼-ton trucks, two half-tracks, and two 10-ton wreckers. This operation was performed during the hours of darkness and the recovery party was able to go to the area on three successive nights until on the third night they were driven off by small-arms and mortar fire. During the time spent a

total of 11 half-tracks were recovered. The enemy recovery parties were not idle during this period, obviously, for it was not until many months later, at the fall of Matur, that the last American half-track, bedecked with German insignia, was rounded up.

There was only one time that an enemy vehicle was recovered from the battlefield with the intention of using it against the enemy. This shortly proved to be tactically unsound, however, from the viewpoint of recovery it was a success. The regimental maintenance company of a tank regiment was ordered to recover an enemy tank in front of our infantry positions and move it back to our own lines into a defensive position from which it could be used to aid the infantry in repelling an enemy attack. An infantry patrol had examined the tank shortly after dark and decided that the only apparent thing wrong with it was that the rear armor plate had been punctured and a shot had hit the engine. They also reported that the tank gun did not appear to be damaged and there were about 30 rounds of ammunition in the tank. The recovery party started from the infantry forward positions at about 2300 hours. The vehicles in the party consisted of two ¼-ton trucks and a 10-ton wrecker.

The personnel were a maintenance officer, in charge, and seven enlisted men from maintenance company. They were three vehicle drivers and four mechanics. In addition to the maintenance company personnel, one engineer officer and two enlisted men were in the group. A squad of infantry preceded the recovery party by one hour and formed a light screen around the tank. The engineer personnel quickly checked the vehicle for booby traps at the same time the tank was being made fast to the wrecker. The entire operation went very smoothly. It was expected that enemy fire would be received as the tank was dragged onto the concrete road which led back to our lines because of the noise which the tank tracks made on the road, however, the wrecker went so slowly that there was very little noise and our lines were reached without incident. The tank was put in position as requested. As was mentioned the idea did not work out tactically as planned. Two days later the enemy took the position held by our infantry and with it their tank.

Another recovery mission worth mentioning occurred the day the break out of the Anzio beachhead took place. One of the tank battalions leading the attack in their zone lost about 35 tanks almost immediately after they crossed the line of departure. The majority of these tanks were lost due to hitting uncharted friendly mines and some due to enemy fire. The large number of tanks lost plus the uncertainty as to the outcome of the engagement required that action be taken rapidly to recover the tanks. The regimental maintenance company was given the task of commencing recovery without delay. An officer from the maintenance company was assigned to coordinate all recovery work and to get it started as quickly as possible.



Actual hauling of tanks from the battlefield was begun not many hours after the battle began and continued all day and all that night. Throughout the day operations were hampered by mortar and artillery fire as well as by mines. The engineers supported the maintenance personnel with tank dozers and by clearing lanes through the mines to each tank. They carried on in excellent fashion throughout the night, and without their aid the majority of vehicles could not have been recovered. In this case all available recovery vehicles were pooled under direct control of the maintenance company and an advance repair unit was set up immediately behind the front in a defiladed area and included among other things a 2½-ton welding truck and a portable welding trailer as well as two 2½-ton parts trucks. Practically all of the initial tanks disabled had to have only repair to their suspension systems so that once the vehicle was removed from the scene of battle it was a fairly fast repair job for an efficient crew.

It was a tribute to the aggressiveness and cooperation on the part of everyone who participated in the recovery and repair of these vehicles that on the following afternoon 30 of the 35 original disabled tanks had re-joined their companies.

From their numerous battlefield recovery experiences the maintenance personnel of the Division built up a wealth of knowledge in methods to be used and measures to be taken in order to carry out successful recovery missions. This knowledge was incorporated into unwritten Standard Operating Procedures over a long period as each new experience contributed its lessons. If it were necessary for an experienced maintenance officer in the 1st Armored Division to consult a guide sheet when he had a recovery mission toward the latter part of the war, it would resemble the following:

A. *Planning*—Every phase of a recovery operation should be planned in minute detail from beginning to end. No matter how rushed the officer is, and he always will be rushed, no details can be left to chance. As in any phase of military operations, planning is quicker and easier with seasoned troops, but regardless of the experience of the personnel, the making of detailed plans and the close supervision of the execution of these plans is the sole responsibility of the officer in charge of the recovery operations.

1. Vehicles and personnel to take part in any operation must be carefully selected. The personnel must be the most skilled technicians available. They must be rapid workers and when possible volunteers. The vehicles must be the right ones to do the job, and the total number employed must be as small as possible without sacrificing unduly the efficiency of the group. The greater the number of vehicles and personnel used the greater the chances of attracting enemy attention.

2. Coordination and cooperation are inseparable essentials. It must always be borne in mind that vehicular recovery immediately after a battle is more often than not of secondary importance to everyone excepting the

maintenance personnel charged with the job, and their commanding officer and his staff. Yet all the activity related to the planning stage of recovery and the recovery itself necessarily rests upon a certain amount of assistance from battle weary personnel to whom the most important and wonderful thing in the world is, at the moment, rest. Cooperation must be secured from all personnel outside the maintenance company who are deemed necessary in the operation, and their efforts must be closely coordinated with those of the maintenance group. The securing of this cooperation and coordination rests with the officer in charge of the recovery practically 100 per cent.

3. Never attempt a recovery mission without reliable guides. Operating at night over strange terrain with the mission of locating a relatively small object or objects will play havoc with the most experienced map reader, compass reader, or astronomer. This is especially true in wide open territory where distinctive landmarks are few.

4. Never neglect security measures. It will save lives and limbs to secure competent personnel to locate booby traps and mines. Use dismounted troops as listening outposts as well as to deliver fire on wandering enemy patrols. This will give the working party a greater sense of security and thereby increase its efficiency immeasurably.

B. *Orientation*—Orient every man who is to take part in the recovery as to what the general picture is, where the vehicle or vehicles are located, and what their reported condition is. Show them the terrain if possible, and explain what the situation is tactically in the area. In addition to giving everyone the general picture tell each one specifically what part he is to play in the operation.

C. *Speed and Aggressiveness*—At best in performing a recovery operation the group is pressed for time. Lacking speed in both the planning phase and the execution a recovery mission is almost certain to be a failure.

All members of the recovery party must be aggressive, particularly the leader. This does not mean the taking of foolhardy, needless chances, but rather a very rapid estimate of the situation must be made and then coupled with positive action. The goal sought must be weighed against the danger involved and a spot decision made and carried out unwaveringly.

Tank and other vehicle recovery was a very small phase of the 1st Armored Division's activity in World War II. The methods used were justified by the equipment available and the conditions under which the Division fought. What contribution was made to the over-all efforts of the Division by vehicle recovery crews cannot be accurately evaluated. It is certain that they helped to keep a Division rolling that started fighting in November 1942 with tanks which were obsolete even then and for which spare parts and replacements were slow in arriving, to say the least.



# The Light Tank, Past, Present and Future

*by Lieutenant Colonel R. M. P. Carver\**

THERE are few problems which cause a General Staff and the tank designer as great a headache as that of obtaining agreement on the specification and design of a light tank. The argument must, in the end, become the obvious one: is a light tank needed, and if so, for what? There are many who deny the need for it, and maintain that production of light tanks is a wasteful diversion of resources and manpower, both in production and the Armed Forces. In this article I propose to consider why light tanks existed in 1939, how they developed and were used during World War II, and what their future may be.

The British developed the light tank between the wars for a variety of reasons. First of all it was cheap; and in the days of peacetime economy and expanding armored forces, it was considered better to have light tanks than no tanks at all. Secondly, it could be used with great effect for policing, and was so used in Palestine and on the North-West Frontier of India. Thirdly, it could be exported; other nations which could not make their own, such as countries of the Middle East, and republics of South America, wanted to have at least a token force of tanks, and did not want to pay too much; the light tank was, therefore, a commercial proposition.

## FIRST IN THE WORLD

Finally the military theorists of the day, led by General Fuller, had great faith in speed alone as a factor of military strength; in peacetime maneuvers the effects of fire power, of administration, of cooperation and co-ordination with other arms and services, and all the other factors, which determine the timing of military operations, are apt to be neglected; and soldiers, particularly highly theoretical ones, are liable to think that the art and business of war is purely a matter of movement, like a game of chess.

In the First British Tank Brigade, which was formed in 1931 as the first armored formation in the world, there were originally three mixed tank battalions, each

consisting of two medium companies and one light company. In 1934 the Brigade was reorganized into four battalions; one light tank battalion of three light companies, and three mixed battalions, each of three mixed companies, the company consisting of headquarters, a medium section of five medium tanks, equipped with 3-pounder guns, a close support section of two close support mediums carrying 3-inch howitzers, and a light section of seven two-man light tanks, carrying one .303-inch machine gun. At about the same time, armored car companies in Egypt, Palestine and India began to be re-equipped with light tanks. From 1935 onwards the two-man light tank began to be replaced by the Mark V and Mark VI, a three-man light tank, weighing about 5 tons, mounting one .5-inch and one .303-inch machine gun, and of an armor thickness of 14mm. The light battalion of the Tank Brigade was hurriedly sent out to Egypt in 1935 at the time of the Abyssinian crisis, recalled to England in 1936, and sent out to Egypt again at the beginning of 1938. It was the only completely equipped armored unit in the British Commonwealth of Nations.

## THREE TYPES

At about this time the German Army, having thrown off the shackles of the Versailles Treaty, was beginning to form, train and equip armored formations. It was faced with the need to produce a large number of tanks in a short time, on which to train the new armored units. They followed the British example and produced the Mark I, a 5½-ton two-man light tank, mounting two machine guns and having 15mm of armor. By 1936 they had turned over to the Mark II, a 9½-ton three-man light tank, mounting one 20mm and one 7.92mm machine gun, and having 30/35mm of armor. These were both tried out in Spain, as a result of which design was started in 1937 on the Mark III, a cruiser tank of 22 tons, and Germany dropped light tanks altogether, although the Mark II was still in action at the end of 1941.

From 1937 onwards the British were developing three types of tank, the heavy "Infantry" tank, which be-

\*British Armored Force Officer.



came the Matilda, the cruiser type, which became the Crusader and the Valentine, and a light tank, which became the Tetrarch, a 7½-ton three-man tank, mounting originally a 15mm machine gun, later on a 2-pounder gun instead, and a 7.92mm machine gun, and carrying 16mm of armor. The Tetrarch did not come into service until 1942 and was only used as an airborne tank: its final development was the Harry Hopkins, weighing 8½ tons, also mounting a 2-pounder and a 7.92mm machine gun, with the armor increased to 38mm. This tank was produced too late to see action.

By 1939 U.S.A. were developing two types of tank only, the medium M3, designed primarily for the support of infantry, and the light M3, combining in one tank the requirement for the cruiser type and the reconnaissance tank. The original light M3, called by the British the General Stuart, weighed 12½ tons, mounted a 37mm gun and two .300-inch machine guns, carried 44mm of armor and had a crew of four. It was, therefore, the equivalent of the British Crusader, which weighed 19 tons, mounted a 2-pounder gun and a 7.92mm machine gun, had an armor thickness of 50mm and also carried a crew of four.

#### IDEA DISCARDED

In the years immediately before the outbreak of World War II, the British were expanding their armored forces as rapidly as they could by the conversion of cavalry to tanks and armored cars. The only tanks available in any quantity were the light tanks Mark VI, and, when war came, these provided the great majority of the equipment of the British armored forces. The short campaign in Belgium and France in 1940 showed how useless they were; but they were still in action in the Middle East up to the end of Wavell's campaign against the Italians in February 1941, in Greece, Crete, and Syria in the summer of 1941, and as the equipment of the Australian and New Zealand divisional cavalry regiments and with the British units inside Tobruk up to the relief of Tobruk in November 1941. They were tolerated as reconnaissance vehicles because there was nothing better, but they could hardly be regarded as tanks.

In the summer of 1941 the first American M3 light tanks reached the British in the Middle East. They were regarded and used as cruiser tanks, the primary equipment of armored regiments (tank battalions), with which to fight the German Mark III and IV tanks. They were no match for them, but were as good as anything the British had and more reliable; their disadvantages in comparison were their short range, need of constant refuelling, and the cramped space for the crew in the fighting chamber. By now the idea of needing two types of tank, a cruiser and a light, had been discarded, and every tank was required to carry a gun and armor which would enable it to fight the German Mark III and IV on equal terms. By May 1942, when Rommel attacked near Tobruk and drove the British back

to Alamein, the British had received a number of American medium M3 tanks, which they called General Grant and General Lee. Their 75mm guns were the only tank guns which could take on the German Mark III and IV. Because there were not enough to equip all formations, armored regiments (tank battalions) were organized into two squadrons (companies) of mediums and one squadron of either M3 lights or British Crusaders. The conception of a mixed unit of medium and light tanks again appeared therefore, not because there was any tactical need for it, but because there were not enough medium tanks to go round.

#### INVASION EXPERIENCE

For the Battle of Alamein in October 1942, the British had received a considerable number of American medium M4 tanks, which they called Shermans. Again, because there were not enough tanks to equip all formations entirely with mediums, armored regiments were equipped with two squadrons of medium M3's or M4's and one squadron of either light M3's or British Crusaders, a few of which now mounted 6-pounder guns. The Australian and New Zealand divisional regiments now had light M3's, other divisional cavalry or reconnaissance regiments, if they existed, had armored cars and bren gun carriers. This remained the British organization up to the end of the campaign in North Africa, except for tank brigades earmarked specifically for infantry support, which were equipped entirely with Valentines in the Eighth Army and Churchills in the First Army. From Alamein onwards the need was felt for a small reconnaissance troop within the armored regiment: in North Africa this was equipped with ten two-man armored wheeled scout cars.

For the invasion of Sicily and Italy in 1943 the British armored forces were equipped entirely with American medium M4 tanks. There were a number of commanding officers who had become so accustomed to having a light squadron that they wanted to keep one squadron of light M3's or Crusaders; but experience in Sicily and Italy soon proved that it was far more important to have three completely interchangeable squadrons, all capable of developing the greatest possible fire power. Experience there also confirmed the need for a reconnaissance troop: in Italy these were equipped half with scout cars and half with bren gun carriers. The troop provided six patrols, each of two vehicles, three patrols in carriers and three in scout cars. The organization proved sound, but the cross-country capacity, speed and reliability of the carrier were inadequate. The carrier was therefore superseded by the American light tank M3A3 or M5A1, in some cases with the turret removed.

For the invasion of Normandy and up to the end of the war, reconnaissance troops were equipped either as described above, or else with light M3A3 or M5A1 tanks throughout, the number of patrols being reduced to five in the latter case. Apart from airborne recon-



naissance regiments, these were the only light tanks in the British forces, divisional reconnaissance regiments being equipped with armored cars and Bren gun carriers. At the very end a few reconnaissance troops of armored regiments were equipped with American M24 light tanks, called Chaffee by the British.

#### CONFLICTING NEEDS

Unlike the American armored forces therefore, the British in the last two years of the war only used light tanks in reconnaissance troops of armored regiments and in the airborne reconnaissance regiments. For the former they relied entirely on American light M3A3, M5A1 and finally M24; for the latter they used the Tetrarch and developed the Harry Hopkins; for the same purpose the U.S. armored forces produced the T9E1, later renumbered M22, called Locust by the British; it was a 7½-ton three-man light tank, mounting a 37mm gun and a .300 Browning machine gun, having an armor thickness of 25mm. The Germans never attempted to produce another light tank after the Mark II, relying on three-quarter track armored vehicles and armored cars for reconnaissance, nor did the Russians as far as I know.

Since the end of the war there has been considerable discussion both in the United States and in Britain about the need for a light tank and its specification, particularly in view of the great problems of movement presented by the weight and size of medium tanks. The difficulties in deciding on the specification arise from the conflicting demands of the various possible users. The uses for which it is needed are: first for airborne forces, secondly for reconnaissance troops of armored regiments, thirdly for divisional reconnaissance regiments; finally it would prove very useful for internal security purposes with armies of occupation and in undeveloped countries such as the Middle East, Indian Ocean, and Pacific areas, where communications might preclude the use of heavier tanks. For the local defense of Dominions and Colonies of the British Commonwealth, it would also be useful to deal with airborne and seaborne landings. The trouble is that all these requirements conflict and a compromise produces a poor tank which suits nobody well.

For airborne forces limitation of size and weight is obviously essential and range is not important. The airborne soldier needs most protection against armored vehicles and fire support, and is probably prepared to sacrifice armor. The reconnaissance troop of the armored regiment needs mobility, range and reliability; its light tank must be able to go where the medium tanks go, and many places to which the mediums cannot go, its main task being ground reconnaissance. It must be able to go about one and a half times the distance of the medium tanks in the same time, and, therefore, needs one and a half times the speed and range of a medium. Armament is of little interest, the main armament of the medium tank producing all the fire

power needed, both armor piercing and high explosive. Mobility, silence and inconspicuousness are more important than armor protection. For this the tank must be of a certain size to negotiate obstacles, and must be light for its size and have the high power-to-weight ratio and a low ground pressure needed to give it a good cross-country performance.

#### RECONNAISSANCE FALLACY

To the commander of the divisional reconnaissance regiment the light tank is the most powerful weapon he has. He wants to be able to take on enemy tanks, if he meets them, and give his reconnaissance troops, whether they are in armored personnel carriers or on their feet, the fire support which he probably cannot get from anywhere else at the time. He always tries to get as big a gun and as much armor as he can within the limits imposed by the divisional bridge. For internal security and local defense against airborne and seaborne landings the requirement is much the same, except that for internal security accurate high explosive is useful and armor piercing capacity is not needed.

A compromise between these demands is likely to produce something very like the British cruiser tank of 1943 with a bigger gun and, therefore, less space and little ammunition, and no more than average mobility, if that. It would not suit anybody well and least of all the airborne forces and the reconnaissance troop of the armored regiment. I believe that to pay too much attention to the armor and armament of a light tank is wrong; in my opinion, based on experience with tanks for over 12 years, including fighting in the desert from the earliest days, in North Africa, Italy and from Normandy to the Baltic, the idea that reconnaissance units operate ahead of other units and formations, and have to brush through enemy forces, is a fallacy. In an advance or a pursuit, the right way is to make up your mind where you want to go and put strength at the head on the essential axes or advance. This strength is provided by the medium tanks of armored regiments in armored brigades. The task of reconnaissance regiments is to watch and cover flanks and gaps between the main axes of advance; they do not need fighting tanks for that. Both American and British Forces these days are organized so that there are enough tank battalions to see that infantry divisions have medium tanks with them when they need them; they should never be called upon to lead an advance or pursuit without.

If this is accepted, a light tank could be designed which was primarily a reconnaissance vehicle; it could then have a really good performance across country, which a more heavily armored tank with a large gun cannot achieve; it would probably be light and small enough to suit airborne forces as well; and as long as divisional reconnaissance regiments were not misused, it would suit them too; but unless it is a really good reconnaissance vehicle, I consider it a waste of resources and manpower to produce it.



# Tank Development and Production 1939-45\*

CARDED

*by Lieutenant Colonel R. M. P. Carver*

**(Editor's Note: Lack of space prohibits the publishing of General Martel's article, however, Colonel Carver's comments are clear enough for the reader to understand both viewpoints. Colonel Carver is a former Brigadier and one of Britain's foremost authorities on Armor.)**

AT the risk of being accused of flogging a dead horse, which General Martel has flogged so tirelessly and in so many places already, I feel that I must call attention to certain statements in his article in the February number of the *Journal* which are misleading and inaccurate.

First, the vexed question of the gun. General Martel admits that the decision to continue production of tanks with two-pounder guns was made at the expense of a quicker conversion to six-pounder, on the ground that to abandon the two-pounder would have delayed production. What he does not explain is why, when according to him a pilot model of the six-pounder had long been available, it only appeared in tanks in the field, and then only as a hasty modification in a Crusader, which was not designed to take it, at the same time as the 75mm in the Sherman, a gun of infinitely better performance, in a tank and turret for which it was designed, having been developed and produced apparently in a far shorter period than the six-pounder. I do not suggest for one moment that blame for this can be attributed in any way to General Martel. He infers that the War Office could have made no other decision and that delay was primarily due to bad organization in the Ministry of Supply. That is not the whole truth; it is time that the truth of this matter was fully investigated and made public to ensure that we do not suffer again from a repetition of such mistakes.

Secondly, his statements about the Cromwell are misleading. He says—"The Cromwell tank began to arrive shortly after Alamein and was in full production in 1943." "Began to arrive" is misleading when it is remembered that it first saw action in Normandy in June, 1944, and that only a very small proportion of British tank units in all theaters were ever equipped with it. Its margin of superiority over the Sherman, which had

been in action since October 1942, was very small; it had the same gun, although originally designed for and equipped with six-pounder, which was originally inaccurately mounted, and carried less ammunition—only 64 rounds compared to the Sherman's 96. It had the same frontal armor on the turret, with a slight increase on the front of the hull and the sides, but not enough to make any difference to the German antitank guns then in use, 75mm and 88mm. It is not true to say that it was more reliable than the Sherman; it was probably on the whole equally reliable, in spite of a few mechanical failures, in clutches and idler wheels, which caused us much anxiety shortly before D-day. It certainly had a longer engine life than the Sherman II, but no longer than the Sherman III. In any case engine replacements for Sherman II were available in plenty. I do not deny that the Cromwell, as issued at the beginning of 1944, was an improvement on the Sherman; but it was only a very slight improvement and by no means obvious, as I know well, having had the task of putting it over to the armored regiment which I commanded at the time and which was being re-equipped in England with Cromwells preparatory to D-day, having had Sherman III's in Italy and North Africa, and having learnt by bitter experience in every action since the beginning of the war in the Western Desert to trust American and distrust British tanks. It is a tribute to the Cromwell to say that they were converted but not without difficulty nor without the presence of the Sherman 17-pounder in every troop. General Martel quietly omits all mention of the scandalous story of the Cavalier and the Centaur, large numbers of which were produced, none of them fit for battle.

Thirdly, the Churchill. General Martel states that during 1942 the Churchill was the best heavy tank in the world. Apart from four which took part in the Battle of Alamein as an experiment and those which took

\*Journal of Royal United Service Institution.



part in the raid on Dieppe, which were not conspicuously successful, they first appeared in battle with the First Army in Tunisia. Some had six-pounders, but a large proportion still had two-pounders. To compare them with Tigers, which appeared on the same battlefield at the same time, in February 1943, and had already appeared in Russia, is ridiculous. He adds that the Churchill performed splendidly in North Africa and Italy, adding that "some of the tanks had six-pounder guns and some had 75mm dual purpose guns." He omits to state that up to the end of the North African campaign, no Churchill had a gun larger than the six-pounder and many had two-pounders; that no Churchills were seen in Italy until 1944, as none could be equipped with 75mm in the Mediterranean theater until then; and that two-thirds of the Churchills in Normandy still had only six-pounders.

General Martel consistently conceals the fact that the Churchill was always grossly under-gunned. Although it did good work in many places, it suffered from being unsatisfactory both as a cruiser tank and as an infantry tank; for the former role it was too clumsy and slow, as well as being under-gunned; for the latter role it was under-gunned again and under-armored, being easily penetrated by both the 88mm of all Marks, and the 75mm KwK 43 of the Panther. Whatever General Martel may say in praise of it, it is doubtful if it would have made the slightest difference to the War had the Churchill never existed and had we had Shermans or Cromwells instead. Considering all the facts and circumstances affecting its design and production, it is probably fair to say that the history of the Churchill is the least unsatisfactory chapter in the story of wartime tank development and production. Originally designed as a purely assault tank with a maximum speed of 10 m.p.h., its final form in the shape of the Crocodile flame-thrower is a tribute to what can be done to make the best of a bad job.

Finally, the vexed question of whether British production should have been concentrated on the Comet or split between the Comet and a "heavier" successor to the Churchill. General Martel states that if it had not been for the decision to concentrate on the Comet "the next model of an infantry tank could easily have been produced in limited numbers for use in the close fighting in Normandy . . . if this had been done, the infantry tank which we would have produced would have blown the Tigers and Panthers clean off the battlefield." In making this statement General Martel appears to disregard both time and numbers. If these tanks were to have been used in Normandy, they would have had to be available for issue to units who were to fight in them at least by the end of February 1944, and considerably before that to the Armored Fighting Vehicle schools and proving establishments. The Comet was in fact first ready for issue to units in the field in January 1945, and first used, owing to delays in re-equipment caused by Rundstedt's Ardennes offensive,

at the end of March, 1945. In any case there were only enough to equip one brigade. It seems unlikely therefore that the new heavy tank would have been available before then, and doubtful if more than 100 would have been available—a mere fleabite.

The tank to which General Martel probably refers was known as the Black Prince. It was to have been an improved version of the Churchill, carrying a 17-pounder gun and 150mm of frontal armor. It would have had therefore no better armament than the Sherman 17-pounder, which was available in Normandy in the proportion of one to every three 75mm, and in double those numbers by the end of 1944, in every armored regiment in Northwest Europe equipped with Sherman or Cromwell. The Sherman 17-pounder was effective against the Tiger and to a limited extent against the Panther. General Martel omits all mention of the existence of the Sherman 17-pounder; and it is a gross exaggeration for him to suggest that the Black Prince "would have blown the Tigers and Panthers clean off the battlefield," when its armament would have been no better than the Sherman 17-pounder, which was equivalent in performance to the 75mm KwK 43 in the Panther and inferior to the 88mm in the Tiger, quite apart from Jagd Panthers and Jagd Tigers; when its armor could have been penetrated, as the heavier Churchill's often was, by 88mm and 75mm KwK 43; and presuming that it would have been available in time, which is highly unlikely. If General Martel is not alluding to the Black Prince, but to a much heavier vehicle which owed its conception to Mr. Duncan Sandys, his argument holds even less water. If by some miracle that vehicle had been produced in a battleworthy state, production could never have been got under way in time for even a limited number to be available in Normandy.

At the end of my previous article,<sup>1</sup> I said that we must not, for reasons of economy, allow ourselves to lag behind again, and that tank design and development must forestall the demands of the user and not wait upon them. There is one further lesson, which now seems to me equally important, and that is that the productive capacity of Great Britain for tanks is so small, both in peace and war, presuming that we shall still need to produce our own ships and aircraft, that we can never hope to produce enough to equip all the armored units that we need, let alone supply the Dominions or any Allies also. The British Empire relied mainly on American tanks during the late war, and will clearly have to do so again in another war. The attempt to be self-sufficient ourselves—we had to be at first of course—led us to sacrifice quality for quantity and to hesitate to make improvements for fear of interfering with production. The result was that a vast amount of man-hours and material was wasted in producing tanks which were not fit for battle when completed.

<sup>1</sup>See "Tank and Anti-Tank" by Brigadier R. M. P. Carver, in the September-October, 1946, issue of the ARMORED CAVALRY JOURNAL.



# The Horse In The Recent War<sup>\*</sup>

INDEXED

by Captain Eric Hardy, F.Z.S.

IN one of his interesting articles in *The Horse* just before the end of the war, Lieutenant Colonel Engel, writing upon balance and the rider, noted that it was a great disappointment to those Army officers who had spent their whole life in the study of the horse to find that the U. S. high command had no use for cavalry in this great war. That in essence is true, but it should not be overlooked that despite the growing habit of calling the recent war a mechanical war, as if it were won by tanks and atom bombs alone, the history of the war from its early stages in 1939 to the culmination in 1945 saw very wide and considerable use of the war horse, and not all this was the work of the Russian cavalry. I came home from the war to find many civilians astonished to hear that even camels pulled the Russian guns during the defense of Sevastopol, that reindeer pulled the ammunition and ambulance sledges for Finnish and Russian armies during the siege of Murmansk, that oxen pulled the heavy infantry transport of the French Army, and an official Allied Elephant Force operated against the Japs (who had such a force of their own) in the Burmese jungles. Horses ended up still the most practical and economic method of scouting, holding, and patrolling mountainous country in the wilder less civilized parts of the theaters of campaign.

On maneuvers it is very easy for military authorities to show the advantages of the fast reconnaissance tank, the jeep and the armored car over the cavalry horse, and of the light or heavy truck over the horse transport for the infantry platoon. But in wild hills whence battle often rages before engineers have time to construct roads or railways unwanted in peacetime—as the German sweep toward the Caucasus before their defeat at Stalingrad saved the Near East—you just have not got mechanical transport *ad lib*, and all you can commandeer from the local population are a few chromium-plated taxicabs which are little use off the hard road. Is every war to be fought in the vicinity of industrial towns with their plants to produce the vehicles? Horses can be gathered quickly in most countries; mechanical vehicles in large amounts in very few. The mechanical

strength that won the British battle of Alamein was the result of a long and anxious “build-up” by the immense sea route around the Cape of Good Hope. The broad, flat desert of North Africa gave the tanks room to maneuver: the high hills of many parts of the world—northwest India, Syria, north Italy, the Balkans, the Rockies—are full of death traps to armored vehicles travelling along narrow, winding ravines, unable to assail the steep precipitous hills in the hands of the enemy.

The highly mechanized German Army was as realistic and thorough as most German things: it conserved its most vital powers. It used a million horses for its Infantry transport—each German Infantry Platoon was equipped with one horse-drawn wagon for supplies, compared with the British infantry platoon’s 15 cwt. Ford or Morris truck. Truly in the retreat after the Ardennes push, those German infantry horses had a gruelling time, and most of their drivers were compelled to turn to the river beds in the snow-covered country left by the blizzard, and flog their horses and wagons knee-deep through icy water, for the rocky stream bed was then the only firm ground in the country. Their mechanical transport was bogged down. Earlier, in their invasion of Poland in 1939, the Germans used 200,000 horses to follow the armored spearheads. In those long supply lines to the German Armies battling with futile effort in Russia, peasant transport horses from all over Central Europe toiled, and died, to be torn ravenously asunder by the starving slave workers and the suppressed nations, for meat. At the fall of Paris the victorious German troops rode in on horseback.

What of the riding horse? British yeomanry mounted cavalry served in Palestine in the early part of the war, for the Palestine Police Force mounted division had long found the horse patrol the most successful method of covering the great, lonely mountain ranges of central Palestine. The Syrian campaign against the Vichy French, who were permitting German planes to use their airfields, was conducted with a large number of mounted cavalry on both sides. French cavalry are very tough, and although they fought against us in Syria, they fought against the Germans in North Africa with

<sup>\*</sup>*The Horse*, March-April, 1947.



their fast riding Spahis. Arab cavalry from Transjordan also took part in the Syrian campaign. Cavalry patrolled the haunts of pro-Nazi tribes along the Afghan frontier of India. Japanese officers appeared in Malaya in the early Japanese push after Pearl Harbor mounted on small, wiry Oriental horses, for the Japanese invading infantry platoon travelled light and had no room for mechanical spares and petrol for mechanical forces. And the horse is the only transport I know that will travel light, feeding off the local land.

It will be remembered that one of the war trophies of the Allies was Rommel's white Arab stallion, which British troops captured at the German remount depot in Schleswig Holstein. It was the horse procured specially for Rommel to ride into Cairo, only the battle of El Alamein changed those plans. It was a fast little white eight-year-old horse.

The main use of mounted horses in the war, by the Russians and the United Nations, was as scouts, on the Eastern European front for infiltration, in the mountains where low gear motor transport was slow or impossible, and in winter when mechanical transport bogged down too quickly in mud or snow. In the mud of the campaign in the mountains of North Italy the mule proved itself over and over again at an advantage over mechanical transport. Mule transport again had its value in the jungles of Burma, where only native tracks existed, and not even a jeep could negotiate many of these in dry weather, let alone in the monsoon. So the Royal Indian Army Service Corps had its special mule training regiment, often with imported Argentine mules, which were trained for the Burma campaign by leading them down a slippery slide, and then water was poured over this to make the foothold more precarious, and when used to that they negotiated it with a pack. They were trained to the ordeals of dive-bombing by merely standing under the typical fair ground swinging model airplane-roundabout, which circled and swooped harmlessly over their heads until they gained confidence.

Here is an actual battle report, in summary, of a task accomplished by General Kirichenko's Kuban Cossack cavalry corps, in a combined operation with General Tanaschishin's tanks against the southern German Army Group, effecting a successful breakthrough. There were three phases to this operation. First, the cavalry were moved up to a position behind the infantry who were making the assault. Immediately following the assault, they were hurled into the breach. Their final phase was the traditional "operation in depth" into the enemy's lines.

Security necessitated utmost precaution against enemy reconnaissance and intelligence guessing their first phase; so the divisions moved up in secret and fanned out in widespread fingers that would not close to their attacking point until contact with the enemy and their presence became known. So all day long the cavalry hid their horses in the fields of tall maize that

stood ripe upon the rolling steppes, while the infantry fought to clear a way for them. German reconnaissance planes actually flew over the fields without detecting the Cossacks standing holding the heads of their horses to avoid the animals taking fright, or neighing, or attracting attention. The blue-capped Cossacks were reported to have thrust their caps into the animals' mouths to prevent their whinnying with alarm as the German planes circled over the steppes and swooped low over the fields. They kept their horses like that until sundown, when the infantry began to break through.

At zero hour German intelligence was still ignorant of the presence of the cavalry, so the first reconnaissance was given to a tank unit under Captain Novikov. Colonel Karapetyan commanded the leading cavalry regiment in advance through a narrow gap specially laid in the Russian artillery fire. Captain Kuznetsov led the first Cossack squadron in light battle order—no cloaks, hoods or tunics. They went right through the gap without detection by the Germans, who were listening for tanks in the night! When the first German-held village was reached, the Russian tank captain merely lined up his tanks, "revved" up their engines, and the roar gave the German troops such an impression of a force of tanks advancing against them that uncontrolled fire broke out. Thereupon in the confusion, the Cossack cavalry dismounted, approached silently and took the village by the first assault.

In that night advance the Cossacks penetrated 22 miles into the enemy lines—because horse transport at night is silent and unseen. The Cavalry corps followed. Ever since the summer campaign of 1943 Soviet cavalry commanders had become past masters in the art of maneuvering for encirclements by flanking drives. That was the plan followed in this instance. "Encircle, divide, destroy"—how old the theory, how modern its usage! The three Cossack cavalry divisions were given the relative tasks to chase, to destroy and to complete the annihilation. So soon as Captain Tutarinov's division, which had the first task, cut this lane through the German force, Russian cavalry and tanks straddled the road, enemy communications were disrupted, and every German unit for sixty miles around was left to do what every German unit is most loath to do—act on its own devices. Having got their fuel, ammunition and dumps, the Russians had the German fighting units by their throats. The Cossacks had the task of attacking the flanks and the rear of the enemy in this battle, and in the first phase they cut off and destroyed the bases of three German infantry divisions and one tank division.

From an animal lover's point of view, however, one hopes that, firstly, there will be no other war, and, secondly, if human nature fails again, then the horse will be exposed to as little danger and suffering as possible. The recent war was at least some improvement upon the wretched position in the first world war when 5,000 horses an hour were being killed in the battle of the Somme.



# The Horse In Early America<sup>\*</sup>

by Colonel Edward N. Wentworth<sup>\*\*</sup>

MAN has always known the horse. Way back in prehistoric days it had acquired most of the qualities for which we now value it, twenty million years before man had learned to stand on his own feet. The horse is probably the oldest existing mammal in time of origin. Man is the youngest. There is something appropriate in the association between them, while both have ascended the evolutionary ladder—the same kind of association that prevails when the older child helps the younger, or the strong assists the weak. The horse carried man to the conquest of the temperate world, and provided the power that led him along the first mile from complete dependence on his home acre to the industrial specialization of today. The horse emancipated man from the hoe, and the unit of work that he did carries over to the engineer's modern machinery, when motors, engines, and power plants alike are rated by their horsepower.

The foregoing thoughts may seem afield in considering early America, but what was early America, and when was it? Some may say during Colonial days, some may say before Columbus. But equally well one can say—millions and millions of years ago! Way back before the age of the glaciers, and the period before that—yes, back four long geological periods before the glaciers, the horse was in America. Way back in the period called the Eocene—the dawn of the modern, if one may interpret the word from its roots. In that period, the great reptiles which had dominated the world for many preceding ages had disappeared—the animals that the advertising department of the Sinclair Oil Company restored in effigy for our entertainment—and tiny little mammals, the size of cats and foxes, were starting down the long path to the present. One of these animals was Eohippus, or dawn horse. Already leading other mammals in the evolutionary program, it had four toes in front and three behind, and was just that much nearer to the speed and fire for which we admire horses today, than the five-toed ancestors of the deer, ox, sheep, goat, wolf, dog, or cat. In fact, the American horse of that era was ahead of the European, for the latter still carried vestiges of the toes which Eohippus had discarded.

Most of the prehistory of the horse took place in the

western hemisphere, but when white men came it had been gone so long that the Indian had no tradition of any animal like it. He looked on it as a god, or at least as a Centaur, for the first Indians who saw a Spanish conquistador dismount thought the animal was coming apart. Perhaps they were anticipating that disintegration that came with the atomic bomb of 1945.

But we should devote a little more time to prehistory before getting too modern. Back in the Ice Age, or Pleistocene, in the intervals between the advancing and receding glaciers, our plains had millions of horses that resembled the western cow pony, and that varied from ten to fifteen hands in height. Why did these horses disappear? Judging by the rapid spread of the wild horse which escaped domestication when the white man brought him back here, the western plains were their natural home, and a catastrophe must have occurred to wipe out the species so completely. Evidently that is what happened; for not only did the horse disappear, but so did the elephant, the camel, and the North American tapir.

The nature of that catastrophe has aroused much speculation. It was not due to the horse's inability to adapt itself to the cold of the glacial period, for the wild horse of the Asiatic steppes survives fully as cold a season, and has developed a remarkably thick coat. During the settlement of the West, early ranchers were quite successful in raising horses on some of the coldest ranges in Oregon, Nevada, and Idaho, where cattle and sheep failed in the face of the severe winters. Furthermore these prehistoric horses were able to move to better winter climates, for they apparently migrated seasonally the same as bison did a century ago.

The cold may have had other effects though! One theory, not too good, is that a series of cold snaps may have occurred, during which the horses lost so much strength that they became easy prey for the wolves and other predators. It is difficult to believe this, however, as horses were so well distributed that a series of cold snaps could not have caught all of them. Nevertheless, unusual cold could have affected the growth of feeds, and the lack of feed could have postponed or repressed the breeding cycle, or enfeebled the mares at foaling time. If, in one season only, there were ice storms, crusted snow, sleet, and prolonged cold, with further chills at foaling time, the stallions and mares might have been too weak to protect the foals, and the pred-

<sup>\*</sup>*Horse and Dog Lover*, April-May, 1947.

<sup>\*\*</sup>Director of Armour's Livestock Bureau.



ators would gradually have gained the upper hand. During the Glacial Period, a great winter snow blanket covered the grass for many months, and even though horses can paw away three or four feet of snow, they might have had to travel so far during such a season, that they could not get enough nourishment to maintain their lives. The historic range winter of 1886-87 was of this type. More than half the cattle in the northwest range states were lost, and deaths among horses were greater than in any other winter.

While this theory has had many sponsors, it does not explain the simultaneous disappearance of tapirs, camels, and elephants, nor why bison, elk, deer, and other herbivorous animals not as hardy as wild horses managed to pull through. Hence some other interesting ideas have been advanced, none of which can be supported by evidence. One of these is that the long winters and intense cold may have diminished the numbers so much that the bands of mares and foals became intensely inbred, lost their fertility, and died out. This theory is not very convincing in the face of survivals of inbred bands of stallions and mares on isolated islands. Others have observed the effect of overgrazing on the western range when poisonous plants gradually took over the range. But horses are so much more adaptable to changes in environment than other grazing animals, and have such strong instinctive and protective reactions, that it is difficult to believe that some of them would not have migrated out of an overgrazed country, and been the ancestors of enough horses to restock the area when conditions changed.

The most plausible theory advanced so far is that horses died out from diseases transmitted by insects. In the intervals between the glacial advances, the seasons were wet and insect life flourished. Many dangerous diseases in modern times are borne by insects, such as the *tsetse* disease in Africa, or *surra* in India, which cause death quickly. An example of the kind of disease that might be involved was the sleeping sickness in horses, carried by flies and other insects, that affected so many states a few years ago. Professor Cockerell of the University of Colorado, a great authority on fossil insects, has discovered remains of two species of *tsetse* flies two periods ahead of the Ice Age, when horses were extremely numerous in the western hemisphere. Under the conditions accompanying the retreating glaciers, flies, mosquitoes, and ticks would have multiplied amazingly. Today cattle in South America are afflicted with many tick-borne diseases, especially anaplasmosis and priplasmosis—the first accompanied by sharp blood reactions, the second by severe fevers.

We now do not have many tick-borne diseases affecting horses, but such have existed in the past. Dr. Eliot made a study of how ticks infest horses, and found that they accumulate in the mane. The horse's falling mane makes it more susceptible to gathering ticks while grazing than the erect mane of the ass or zebra. Eliot discovered that thousands of ticks could gather in

a horse's mane during a single night's grazing. Whatever the cause of the extinction of horses in prehistoric America, it is fortunate that they could return to the Old World, and were available for domestication when man reached the proper stage of development. This return was more lucky than many realize, for horses had become extinct in Europe in the late Eocene or early part of the next period.

During the fourth period, or Pliocene, horse types began to differentiate into two kinds—browsing and grazing types. This demarcation was apparent also in camels, elephants, rhinoceroses, and many other herbivorous animals. The browsing types lived along streams in moist forests, swamps, and valleys, and consumed much coarser plants than the grazing types. Since their food was always more readily available, they did not have to travel the distances of the grazing types, and had heavier bones, coarser hide and hair, and rougher, cruder conformation. In this first separation appeared the beginning of the classification into cold-blooded and hot-blooded horses. One interesting horse of the browsing type, found in the western hemisphere during the early Ice Age, was a tall, heavy animal whose remains have been discovered in Texas, that stood nineteen to twenty hands at the withers. This horse seems to have flourished during a warm interglacial period. An important difference between the two types of horses was found in the teeth. The grazing type had longer, harder, faster growing teeth than the browsing type, which had short, relatively flat teeth, not as well supported by the growth of pillars on the corners.

Strangely enough, the first relations between man and the horse indicate that the latter was an article of food. Some of the drawings of the cavemen in France and Belgium present the horse as an object of the chase; one, interestingly enough, showing a drawing of a horse with its heart outlined at the proper place and pierced by a prehistoric hunter's arrow. Near Solutre in the Saone Valley in France, between the modern cities of Chalons and Lyons, remains have been found of an open-air camp where prehistoric tribesmen apparently met for hundreds of years. Around it are great walls of bones, apparently thrown from the hearths where they were cooked and eaten, until they formed an immense rampart that was later used for defensive purposes. Toussaint estimated that the bones of more than a hundred thousand horses are intermingled there with the bones of other species. Most of these bones were cracked and split, apparently to get at the marrow. Obviously the horses from which the bones came were the object of the chase, and not grown for food. If the latter had been true, remains of many younger horses would have been found, but instead the great majority came from animals five to seven years old, which had to be hunted to convert into food.

As we come into historic times, western Europe, especially in the lowlands of France, Holland, and Belgium, was supporting a heavy-boned browsing type of



horse. This was the ancestor of the great Flemish war horse which bore the knights to the tournaments and the distant Crusades, as well as gave rise to the modern draft breeds. Dr. Ewart of the University of Edinburgh has perhaps made the most careful study of the different strains that have led to the modern breeds, and points out certain interesting characteristics of the great browsing type that became the cart horse. In comparison with other horses he shows that it was relatively large and clumsy, that its face was broad and short, and that it carried straight out from the cranium. The limbs were short, the cannon bones stout, and they were only  $5\frac{1}{2}$  times as long as they were wide. The joints were large, and the feet spread enough to adapt the animal to wet marshy ground. Its coupling was relatively long, containing six vertebrae, and its tail was set low, with a drooping croup. In the pre-Roman period it stood about 13:2 to 14 hands high.

Its direct antithesis was the desert or plateau type ancestor of the hot-blooded breeds. It stood about 12:2 hands, and was small footed, slender limbed, and had cannon bones  $7\frac{1}{2}$  times as long as wide. It was shorter coupled than the browsing type, possessing only five vertebrae in the coupling, and was a better weight carrier, also shiftier on its feet. Most characteristic was its smaller, more beautiful head, with a fine slender face below large prominent eyes, set well apart. The face did not come out quite so straight from the cranium, and occasionally it was dished slightly between the eyes and below the eye orbits. Best known of this type was the Turk, Arab, and Barb, that fringed the eastern and southern Mediterranean, the thick-coated Celtic pony, and the forerunners of the English race horse.

Finally there was a third type intermediate between the foregoing—the steppe horse found wild in modern days in the Gobi Desert. It was unrelated to modern American breeds, and some authorities have assumed that this type was originally a forest horse, that had to readapt itself to drier conditions as its habitat rose in elevation.

When the Crusaders met the Saracens, they could not close with them in combat because their great horses, borne down with armor, could neither maneuver with, nor overtake the fleet-footed desert mounts. Many of the knights admired these horses they could not conquer, so much that they brought them back to Europe, and Arabian types eventually reached all countries of Europe. From the infusion of these bloods came the English Thoroughbred, the English, French, and German coach horses, the cavalry horses of all European armies, and the French postchaise horse that ultimately developed into the Percheron. Most important of all, in its effect on the American West, was the Spanish horse, invigorated and leavened by the gallant steeds introduced by the Moors, and left behind when the Christian forces drove them back to Africa.

The horse returned to the western hemisphere with Columbus on his second voyage. The decks of his

ships carried horses and cattle, the horses side-lined or hobbled, as they could not have been controlled if turned loose. This practice was followed on later Spanish vessels, the horses remaining on deck in all kinds of weather. When the calms appeared along the edge of the trade-wind zone, and supplies of fresh water became short, it was often necessary to throw the horses overside. During the sixteenth and seventeenth centuries, the "horse latitudes" were frequently mentioned—here is how the name originated.

Columbus took his livestock to Hispaniola (modern Santo Domingo), and from there they spread to the rest of the West Indies—Jamaica, Porto Rico, Cuba, Trinidad, etc., and thence to the continent. Jose de Acosta, writing at the close of the sixteenth century, said that horses multiplied exceedingly in the Indies and "became most excellent," in some places "being even as good as the best in Spain." He said that they did fast messenger work, and were good both for war and the parade. They spread all over the plains of South America, covering Patagonia by 1650. They were not introduced to the pampas until 1535, when Pedro Mendoza released five mares and seven stallions on abandoning the first settlement at Buenos Aires. By 1600 Guzman says their progeny was so numerous that they could not be counted, and that they appeared in great droves that even penetrated into the Cordillera mountains. By 1557 even the poorest *Gaucha* owned horses, and they were worth about two dollars apiece.

Horses came to the North American continent with Cortes in 1519. Full description of each of his sixteen animals has been preserved, as well as of the twenty others, which Alvarado brought to Vera Cruz to participate in the conquest. The first expedition to Florida included a hundred horses and mares, while Coronado brought a thousand horses and six hundred pack animals to the southwestern part of the United States in 1540. The horses on which the population of our Southwest was based, however, were brought by Onate in 1598. It was nearly two centuries after that when Spanish horses reached California.

Just what were these Spanish horses? They had been vastly improved during Moorish invasion of the Middle Ages, and were quite largely Barbs in descent. Denhardt describes them as of the same build as the horses in the famous painting of Velasquez, short-backed, close to the ground, and admirably suited to the hard work of a campaign. Their legs were not too long, and were firmly jointed, indicating that they were sure on their feet. Their pasterns were long, which produced a springy gait, and they became a race capable of unbelievable feats of endurance.

These Spanish "thunderbolts," as Jack Thorp calls them, became the foundation of the cow horse in the western cattle industry. Readily they turned on a dime and flashed at top speed at the flick of the spur. Father Kino used them in his numerous explorations along the Arizona-Sonora border and, when he crossed westward



from Yuma to discover whether Lower California was an island or a peninsula, he took with him only a few Indians, but 130 saddle horses and mules. Anyone who has travelled that country knows why he needed so large a *remuda*, but still admires the horses for being able to complete the necessary performance. Father Kino was a horseman! When fifty-one years old he rode from his Dolores mission near the Arizona border to Mexico City, fifteen hundred miles in fifty-one days, with almost daily stops for weddings, baptisms, funerals, masses, and other services. Two centuries later a young lieutenant in the Mexican Army, Don Elfrego Morales, rode two hundred miles in twenty-five hours on one of those "thunderbolts" in a thoroughly authenticated trip from Chihuahua to Juarez. Yet these horses weighed only 750 to 800 pounds and stood 14 to 14:2 hands.

The greatest endurance ride in history is credited to a string of these horses, and Francis X. Aubrey, "one rider in a million." It was approximately eight hundred miles along the Old Santa Fe Trail from Santa Fe to Independence, Missouri, and between December, 1847, and September, 1848, he made three fast trips back to Independence after taking out a wagon train of traders' goods, each of which broke all previous records. First he left Santa Fe with five men on December 22, 1847, but the other five dropped by the wayside, and he arrived alone in Independence, January 5, 1848—fourteen days en route, and ten and a half days faster than any previous record. Taking another wagon train to Santa Fe earlier in the season and more rapidly than ever before, he started back with six men from Santa Fe on May 19. His companions broke down from exhaustion before they had travelled three hundred miles. He was attacked by Indians, and he killed three horses and two mules by hard riding, walked between thirty and forty miles, and went three days without provisions. But he rode into Independence on May 27, eight days and ten hours after leaving Santa Fe. On August 8, 1848, the *Santa Fe Republican* said of him: "That gentleman travels with a rapidity almost supernatural."

Then came the supreme exploit. Disgusted with the frailties of his fellows, he planned this trip alone, and carried as proof of his departure date, a letter from the *Santa Fe Republican* "for the benefit of its exchanges in the states." On September 12, he left Santa Fe before dawn, at a swinging gallop, crossed Glorietta Pass, and raced down the mountain slopes toward the Great Plains. Bieber writes: "Dashing eastward at a terrific pace, he obtained fresh horses from passing wagon trains, and at Fort Mann, Council Grove, and other places where he had stationed them. A yellow mare named 'Dolly,' his favorite mount, carried him two hundred miles in twenty-six hours." Dolly was the ideal Spanish Palomino, not the parade, but the trail type. For nearly six hundred miles the trail was muddy, and for one hundred miles he rode through a driving rain. He broke down six horses, walked twenty miles, slept only a few hours, ate but six meals, and swam many

swollen streams, but on Sunday night, September 17, "his foaming horse half ran, half staggered," into Independence. The trip was completed in five days and sixteen hours, at an average rate over plains and mountains of 140 miles per day. Alexander Majors, the great freighter and teamster of the West in prerrailroad days said of Aubrey: "The man who attempted to ride eight hundred miles in the time he did took his life in his hands. There is perhaps not one man in a million who could have lived to finish such a journey." And the key figure in the ride as far as the record was concerned, was the yellow "thunderbolt" Dolly, who by herself covered twenty-five per cent of the distance in nineteen per cent of the time.

Crowning incident in this record of the horse of Spanish extraction is the battle of San Pasqual, between General Stephen Kearny's dragoons, and the Californians mounted on Spanish horses. On September 25, 1846, General Kearny left Santa Fe for San Diego with a force of a hundred officers and men, his dragoons mounted on mules which were expected to withstand the southwestern deserts better than army horses. By early December they learned that the Californians were revolting against the new government set up by Colonel Fremont and Commodore Stockton, and that eighty (or a hundred fifty according to another report) of them under command of Captain Andres Pico, brother of the Mexican governor of California, were awaiting the dragoons on the San Diego road at San Pasqual *rancho*. Kearny ordered a daybreak attack, and sent twelve dragoons under Captain Johnston, with Kit Carson as guide, as the advance party, followed by himself with certain other officers, and then the main body of fifty dragoons, with two howitzers following them and preceding the wagon train. Kearny's horses and mules alike were worn with their eight-hundred-mile march across the desert, but would have been small match for the *Californios'* horses even when fresh. The ensuing battle was one-sided, just as in the days of the Crusaders and Saracens. According to Sabin, Pico's men were "free Californians to whom the saddle was home, the horse a second self, the stirrups, lance, and *reata*, their manly exercise. At first alarm, and well before the (American) charge struck the village, they had vaulted with their arms into the saddle. They recoiled on rearing horses to take stock; at Pico's sharp command they stood fast—there were only some twenty Americans, tearing in, with shouts and jingles and random pistol shots and flourished sabers, like fools—and holding their ground they received the charge with a volley." Then with cries of "Viva California," they breasted the shock, with their lances poised.

The American forces opened up over a half mile in length, because of the difference in speed of their horses and mules, and the *Californios* were able to outdistance each group individually and defeat them in detail. The nine-foot lances, wielded from horses under perfect command, were too much for sabers and clubbed



muskets or rifles, swung from fagged and stubborn animals. General Kearny was lanced in three spots, while all officers and all but two or three of the enlisted men were wounded. When the howitzers were unlimbered, the mules drawing them were lassoed, the cannoneers lanced, and one howitzer was dragged into the California ranks. For the course of American history it is well that the *Californios* could not discover how to operate it. When the Americans could go no farther, Carson, Midshipman Edward Fitzgerald Beale of the Navy and Beale's Indian servant managed to escape to San Diego and bring relief. Had it not been for Commodore Stockton's naval base, the entire trend of Pacific States development might have been changed by those Spanish "thunderbolts."

The number of wild horses that descended from these Spanish horses, which escaped from their owners, will never be known. Between the Missouri River and the Pacific, they grazed all the plains and valleys, and probably totalled in the millions. At the rate they were multiplying when the cattlemen took over the western range, it would appear that only white intervention prevented them from equalling, or even driving out, the buffalo. When Zebulon M. Pike went into Mexico in 1806, he reported that it was necessary to keep an advance guard of horsemen to frighten them off, for otherwise their own animals would run off and then join the wild bands. A Mexican gentleman told Pike that he saw 700 horses carried off by a wild band at one time, and that none of them were ever recovered. These mustangs were both a nuisance and a menace. They drank precious water in a country that was always in need of it, and they consumed the range grass needed for profitable livestock—few mustangs were worth over ten to fifteen dollars when broken, and their spirit was so high that three out of four died in the breaking. The mustang was not the cowboy's idea of a horse for all of its activity and fire. It was too small, too long bodied, and too unresponsive when broken. The cowboy's bronco came from domestic descendants of the Spanish horse, not the mustang.

But the mustang made the Indian. When they first saw it with Cortes they thought it was supernatural, but when they killed one and cut it up, a few decided it was mortal. Enough conservatives existed, however, to play safe by giving the horse's shoes to their gods, for obviously the horse's shoe seemed immortal even after the horse's death. No one knows when the Indian's first fear of the horse was overcome, but it was probably when he learned that an arrow could kill a horse, or its rider, or both. After the missions were established, with their accompanying *ranchos*, the Indian herdsmen became thoroughly familiar with them, and it was probably the backsliders from the missions who taught others in their tribe how the horse should be handled. Strange to say it was not the tribe who used the horse under guidance from the missionaries that became most adept in its use, but instead the more northern tribes,

who were largely regarded as renegades. From the Spanish settlements, the horses were stolen in big raids, and then passed on to the tribes beyond. The great distributors were the Comanches, who finally came to believe that the Great Spirit made the horse for them, and that they gave it to the white man, though the Spanish brands on their stolen horses refuted their claim. However, horses moved northward in Indian bands faster up the west side of the Rockies than on the east side, and many of the northern Indian tribes got their animals from the Shoshonis west of, or on, the Continental Divide, rather than from the south. The great cavalry tribes were the Comanches, Arapahoes, Pawnees, Cheyennes, and Sioux, although many others were quite expert.

The coming of the horse to the Indian was as important as the coming of steam to the white man. The Plains Indians had never been agricultural, but the horse intensified their nomadic and warlike traits so that they became the "greatest raiders and most splendid thieves on earth." The ability of the Indian to throw himself from an upright position on the back of his horse to its side, and from there throw spears, or discharge arrows, under the horse's neck, has never been equalled by any other race. The Indian always mounted his horse from the off side, claiming that it was more natural that way. Since they usually vaulted from the ground to mount, there is some justice to the claim. The arrival of the horse led the Plains Indian to abandon most forms of agriculture, and turn to living on the buffalo more than ever before. With the horse they roamed for miles, trespassed on each other's hunting grounds, went to war, and otherwise became the marauders of the Plains. When a whole camp could be moved quickly with the pony to transport the tribe, to serve as a packhorse, and to draw the uncomfortable travois, there was little time left at a camp site to wait for crops to grow.

The horse became the measure of wealth in the Indian economy. The man with the best horses got the most buffalo and was the best equipped warrior. With them he could buy his wives and pay his debts. His wealth and social position was determined by the number of ponies he owned, and a chief had to own more than any other member of his tribe. Buffalo hunting, horse stealing, and raids on other tribes became the chief sports when the horse culture was at its peak. One old chief told Captain Marcy that his four sons were of the greatest comfort to him because they each could steal more horses than any other member of the tribe. We may not regard the Indians' horse culture as moral, but it was certainly mobile.

In closing I turn to the eastern colonies with a certain degree of embarrassment, for I realize that all of you are more familiar with that phase of our equine history than any other. The first horses to affect our present situation permanently came to Jamestown in 1609, and thereafter appeared with each new colony that was



planted. English and Dutch horses affected our early stock horses most, although some French horses were introduced from Canada via New England, upper New York and, later, the Mississippi Valley. However, the French relied on the canoe and water for transportation, and then left the country much as they found it, just as did the Indian. The English, Dutch, German, and Swedish colonists depended on horses and highways, and their progress could be traced by the advancing turnpikes and the great national trails. While the Cavaliers brought Thoroughbreds to Virginia and promoted racing, the real story of the horse in the east was a story of his services. The earliest settlers along riverbank and salt bayside had easy and comparatively quick transportation, but succeeding generations followed up the river valleys, clearing the hillsides of forest and boulder, opening new farms, and building new homes. Away from the watercourses, transportation became a problem, and the horse had to perform duties for which none of the specialized English types were well adapted. Going to the mill was a day's journey, and going to church often involved several hours over trails where vehicles could not move. The horse had to be part mount, part pack animal, and part draft. The year's trading was done during the winter at the nearest tidewater town, when stone and stump were buried under several feet of snow. The family horse would carry his master, and perhaps his mistress, on his back, and draw a homemade sled loaded with pork, beans, potatoes, and other produce to barter for salt fish, tea, tobacco, and West Indian goods—sugar, molasses, and rum, for those who are inquisitive. The colonists, especially in New England, were a tireless people, with iron wills, rugged constitutions, and muscles like tempered steel—always on edge. It took a horse to match this to serve the native needs, even at courting time. When harvest moon tempted the youthful swain to a quilting party or a husking bee, it required a quick eye, a strong arm, and a steady steed to bear his sweetheart in safety through the forest, past boulder, across torrents—perched high upon a pillion, or less commonly, a side-saddle. The horse of the early colonies, Maryland, Virginia, and Carolina excepted, was kept for service and not for sport.

This did not mean a placid horse. Out of such scenes the Morgan sprung—handsome, courageous, intelligent, sensible, fast, and tough, but nervous and spirited just like the Spanish thunderbolts to which we have just referred. The Morgan was the first American breed, sprung from a colt that drew the name of his master, Justin Morgan, a Vermont schoolteacher. He was sired by a horse called True Briton or Beautiful Bay—captured from an uncompromising Royalist and renamed Beautiful Bay in the revulsion from things British that came after the Revolutionary War. To a patriot anything named True Briton was perforce a traitor. Beautiful Bay was probably a Thoroughbred, although many will argue the question, but when Justin Morgan

went to Randolph, Vermont, his court was composed of mares of good old Dutch blood, mostly introduced from New York. These mares were fifteen hands or under, compact, tight built, on the order of the Barb and Arab, though lacking a little of the fire and spirit.

As the highways spread and improved, the need for harness horses—roadsters—was born. And the cross was much the same, medium sized stallions with medium sized mares. Hambletonian 10, a Thoroughbred, George Wilkes, Abdallah, Electioneer, all were horses not far from fifteen hands in height that could stretch their legs in a trot. And when the pacer was wanted, another version of the Dutch mare in build, if not in blood, appeared, the Narragansett pacer from southern New England. Perhaps back on the mare's side in the pedigrees of the American Saddle Horse, some of this broken gaited strain appeared, although the Thoroughbred again came in on the sire's side. Even in the newly revived Quarter Horse the type has come through, though the bloodlines differ. Copperbottoms, Steeldusts, Peter McCues, all alike hold to the same generalized type that have been basic to American breeds.

A century ago, as farm machinery developed, greater power was needed under the control of a single man on the farm. In the period that followed the Civil War and through World War I this led to an increasing insistence on size in work horses, and a pronounced boom for the imported draft breeds. But during the last quarter century the requirement has been for even greater power, concentrated in the hands of one farm worker, and the draft horse has become gradually displaced by mechanical devices. It looks to be the same story over again that has been told so many times in the course of evolution—the overspecialized animals fall by the wayside when conditions get so strenuous that they can no longer meet the challenge.

Each time we have had to meet a new want in America that the horse could fill, except for heavy draft, we have gone back to this versatile type as a starting point—the western cow horse, the roadster, the Morgan, the gaited saddler, the Palomino of today, and the Quarter Horse. The answer has been found each time in some combination of this generalized type of horse and the Thoroughbred. Now it would appear that all horses, except pleasure types, are to meet the challenge to which the draft horse is succumbing. This is far from a pleasant thought to anyone who has thrilled to the partnership of a good horse working with him and for him, or who has enjoyed the fellowship and companionship that develops between master and mount. We cannot turn back the hands of the time clock, nor would we if we could, but we can urge, with Colonel Mattick on this program two months ago, that no action be taken that will deprive America, and the Army as a constructive market, of the animal that has moved with it into world leadership. We must strive continually, as horse lovers, to preserve that quality and excellence in the horse which we all demand.



# SAVING THE CUSTER MUSTER ROLLS\*

*by Edward G. Campbell\*\**

ON June 25, 1876, Brevet Major General George A. Custer, lieutenant colonel of the 7th Cavalry, led Companies C, E, F, I, and L of that regiment against Sitting Bull's encampment on the Little Big Horn. Under the command of Chief Gall the Indians wiped out the detachment and left the bodies of 201 soldiers and 3 accompanying civilians on the battlefield. Two days later the bodies were covered with six inches of dirt by surviving members of another detachment of the 7th Cavalry under Major Marcus A. Reno that had barely escaped the same fate in a battle of its own and that had been utterly helpless to come to the aid of Custer and his men. More than a year later a detachment under Colonel F. M. Buel, which was sent to build Fort Custer on the site of the battlefield, found the soldiers still lying where they had fallen. Colonel Buel had an excavation made and the bodies buried in the one common grave over which the Custer monument was later erected. By September of 1877 this last chapter in the story of the Battle of the Little Big Horn had been finished.

As commander of the 3d Cavalry Division during the last months of the Civil War, Custer had boasted that his men "never lost a gun—never lost a color—and have never been defeated," but he more than met his match in the wily Chief Gall. Gall concentrated overwhelming numbers against the handful of men under Custer and so deployed his tribesmen as to block completely all avenues of retreat or reinforcement. But the tactical methods by which Gall achieved his victory, however brilliant, and the mistakes on the part of Custer, however disastrous, could never in themselves have achieved for this Indian battle the fame it has had and still has. It was the battle's dramatic denouement—complete and sudden annihilation—that made it a byword among people who had seldom paid much attention to Indian skirmishes once immediate danger had been averted.

The story of Custer's last stand has been told innumerable times during the past seven decades but apparently its hold on the American people has not yet weakened for in 1945 it was discovered that the muster rolls of the 7th Cavalry had nearly been destroyed by the constant use to which they had been put by government officials, students, the merely curious, and those claiming more or less close relationship to the men who

died on the Little Big Horn. These records had been maintained for more than sixty-five years by The Adjutant General's Office of the War Department. Three years ago they were transferred to the custody of the Archivist of the United States, who is now responsible for their physical preservation.

The muster roll of Company F for the period including the Battle of the Little Big Horn, from April 30 through June 30, 1876, is a fair example of the rolls of all the ill-fated companies. The document itself measures 20 by 23 inches and for nearly seventy years it had been filed folded—folded four times—in order to reduce it to approximately 4 by 10 inches. Over the years constant use of the document had worn away those parts of it that had thus been made into hinges; in addition one corner of the roll had been torn off and lost—the corner including the signatures of the reporting officers. Exposure to dust and varying degrees of humidity had made the paper brittle so that fragments crackled into dust whenever the paper was handled, no matter how great the care in touching it. Obviously, unless something were done this particular Custer muster roll would soon disappear entirely, destroyed by use and time.

The information on the document is simple but it was of the utmost importance in the administration of the army. On one side at the top is pertinent information as to the company and period of time covered by the roll. Below this and on most of the obverse side the roll is divided into fifteen columns that show the rank and name of each individual in the company, when and where he enlisted, when and where he was last paid, whether clothing and tobacco allowances had been paid, the individual's signature, and remarks. The names of the twenty-eight individuals present are listed first, according to rank; the first name in this list is that of a second lieutenant newly appointed to command the company by special orders on the day following the Battle of the Little Big Horn. Then are listed "Loss—Killed in Battle," also by rank. The first name in this latter group is that of Captain George N. Yates; the last is that of Private George Warren, the thirty-eighth name in the list. Below these names appears a third group, "Loss—Transferred," under which is the name of one private who, by virtue of special orders dated April 30, 1876, was not with his former comrades on the Little Big Horn. In the place where

\*Military Affairs.

\*\*Director of the War Records Office, National Archives.



normally the thirty-eight killed on the Little Big Horn would have signed their names appears in red ink the notation, "Killed in Battle with Hostile Indians on the Little Big Horn River June 25, 1876."

At the bottom of the obverse side of the report on the left is a statistical analysis of Company F's strength, showing that, as compared to an average strength of 70 men reported in the prior muster roll, there were now 34 men present and absent and that 37 (*sic*) men had been killed during the period of the report and one transferred to another organization. In the middle of the sheet, under the heading "Record of Events," there is the statement of the company's history during the two months under consideration:

"Since last muster performed camp duties near Fort A. Lincoln from 1st to 17th May 1876. On that day marched, under command of Genl. Terry from Ft. A. Lincoln D. T. against Hostile Sioux Indians. Participated in Battle of Little Big Horn River M. T. June 25th and 26th. Lost 2 Officers 36 men and 42 Horses.

"Distance marched 688."

To the right of this statement is the signature of the reporting officer (whose name has been torn off and lost during the intervening years) and the date "In the field, June 30, 1876." Five days after the massacre there seemed no need to make more than this terse factual report.

The muster roll of Company F does not materially differ from those of Companies C, E, I, and L; the names and figures are different but not the essential pattern. And this pattern and the events lying behind it have been of such interest to the American people that in the seventy years since June 25, 1876, these documents were nearly destroyed by use. Rather than see archival materials of such proven interest lost the Archivist of the United States directed that they be repaired and that steps be taken to ensure that they should not again be threatened with total destruction.

The Little Big Horn muster rolls—those covering the period of the battle—were so filed in relation to others that it would have been impossible to repair them and to ensure their future preservation without also providing for the other rolls of the same regiment from 1860 to 1912. The later rolls were not in such bad condition as were those relating to the summer of 1876 and earlier years but the only practical method of ensuring the proper protection of the body of materials was to deal with all these rolls alike.

A total of fifteen cubic feet of paper, consisting of 21,102 sheets of paper, was therefore removed from the fifty-one Woodruff-type file boxes in which the rolls had rested for nearly seventy years, and each individual sheet was flattened, care being taken to prevent separation of fragments of the same sheet. About seventy-eight sheets could be flattened by a repairman in an hour, so that it took about thirty-five working days, working eight hours a day, just to flatten the muster rolls. Next it was necessary to "lamine" each sheet

that was in very poor condition, that is, to enclose it between two sheets of transparent cellulose-acetate foil and apply heat and pressure until the foil melted into the document, while making sure that each fragment was in proper juxtaposition to each other fragment of the same sheet. Only the earlier rolls required lamination but they were in very bad shape; in the past scotch cellulose tape and similar gummed materials had been used to keep fragments from being lost and these materials—useful though they had momentarily been—had over a period of time contributed to weakening the fiber of the paper. All such materials were removed before the cellulose coat was applied to the rolls; as a consequence one man could laminate only four or five sheets in an hour. About 1,600 sheets had to be laminated so it took more than sixty days to complete this part of the job.

Even after the muster rolls had been flattened and those that needed it had been laminated, however, the possibility of deterioration occurring again had not been precluded. If the rolls were again folded and filed as heretofore the creases would probably wear through and the documents would fall into fragments. There was only one sure way to prevent that happening, namely, not to fold the documents again. But documents of this size, if kept flat as loose sheets in drawers, have a way of getting lost, and constant "pawing" through them in search of one that is wanted will cause more deterioration than almost any other conditions of use. There was only one answer: stitching into folios protected by stiff covers. The documents that had been laminated had been provided with binding margins prior to lamination by enclosing in the cellulose-acetate envelope a strip of cloth that extended about an inch beyond the edge of the paper on the binding edge. The rolls thus treated—all the older documents—were first stitched together in folios, including in each folio the muster rolls of a given company or other unit for a specified period of years, and then a stiff cover was affixed by gluing to the stitched binding margins. The muster rolls for the later period, approximately 1885-1912, which had not required lamination, had an adequate binding edge and they were sent to the Government Printing Office for binding into thirty-nine separate volumes.

The repair of the Custer muster rolls was not accomplished in a day nor was it done without a considerable expenditure of money but the rolls were returned to their shelves in the National Archives in excellent condition—probably in better condition to survive the rigors of continued use than they had been on the day they were filed in the War Department. The rolls will now be available so that later generations interested in Custer's Last Stand may examine their official and terse story of June 25, 1876, just as it was written that summer and as it has been seen by countless interested persons in the years that have already intervened.



# Armored Division Associations

## Addresses of Armored Associations

### 1ST ARMD DIV.

Colonel C. C. Benson  
World War I Branch  
Bldg. 21-A, Army War College  
Washington 25, D. C.

### 2ND ARMD DIV.

Captain George M. Warren  
2nd Armored Division Association  
Headquarters 2nd Armored Division  
Camp Hood, Texas

### 3RD ARMD DIV.

Colonel L. L. Doan  
3rd Armored Division Association  
GNDEV Section, Bldg. 134, Rm 201  
Hq. Army Ground Forces  
Fort Monroe, Virginia

### 4TH ARMD DIV.

Lt. Col. Creighton W. Abrams  
4th Armored Division Association  
Fort Knox, Kentucky

### 5TH ARMY DIV.

Lt. Col. F. E. Ressegieu  
5th Armored Division Association  
Room 4C839, The Pentagon  
Washington 25, D. C.

### 6TH ARMD DIV.

Colonel George W. Read, Jr.  
6th Armored Division Association  
Army Ground Forces Board No. 2  
Fort Knox, Kentucky

### 7TH ARMD DIV.

Chaplain James Fahl  
7th Armored Division Association  
2517 Connecticut Avenue, N.W.  
Washington 8, D. C.

### 8TH ARMD DIV.

Colonel E. R. White  
8th Armored Division Association  
c/o Extension Course Department  
TAS—Fort Knox, Kentucky  
and  
Brig. General John M. Devine  
8th Armored Division Association  
Fort Knox, Kentucky

### 9TH ARMD DIV.

Captain Louis Gelling  
9th Armored Division Association  
Fort Knox, Kentucky

### 10TH ARMD DIV.

Major Harry W. Johnson, Temp. Sec.  
10th Armored Division Association  
General Delivery  
Fort Knox, Kentucky

### 11TH ARMD DIV.

Colonel Willard A. Holbrook  
11th Armored Division Association  
1719 "K" Street, N.W.  
Washington 6, D. C.

### 12TH ARMD DIV.

Mr. J. Edward Obey  
12th Armored Division Association  
419th West 38th Street  
New York, N. Y.

### 13TH ARMD DIV.

Major General John B. Wogan, Rtd.  
13th Armored Division Association  
Cherry Lane, Lakeview Park  
Asheville, North Carolina

### 14TH ARMD DIV.

Lt. Colonel J. C. Lambert  
14th Armored Division Association  
Hq. Adjutant Generals School  
Carlisle Barracks, Pa.

### 16TH ARMD DIV.

MacArthur H. Manchester, Sec.  
16th Armored Division Association  
2517 Connecticut Avenue, N.W.  
Washington, D. C.

### 20TH ARMD DIV.

Mr. Kris K. Gilbertson  
20th Armored Division Association  
c/o Rhinelander Daily News  
Rhinelander, Wisconsin

## CAVALRY DIVISIONS

### 1ST CAV. DIV.

Colonel Edmund P. Stone, Registrar  
1st Cavalry Division Association  
P. O. Box 201  
Pomona, California



**5TH U.S. CAVALRY**

A. B. Haid, Vice Commander  
5th U. S. Cavalry Association  
Fountain Hill Hotel  
New Castle, Pa.

**6TH U.S. CAVALRY**

W. R. Wagner, Adjutant  
6th U. S. Cavalry Association  
4476 Beniteau Avenue  
Detroit 13, Michigan

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**1st Armored Division**

The Washington Branch of the 1st Armored Division Historical Association commenced its organization on May 8, 1947. Its object, as stated in the Articles of Association, shall be:

"To perpetuate and preserve the memory and renown of the 1st Armored Division, U. S. Army.

"To promote the welfare and interests of former members of the Division, particularly those disabled in service; and to extend such aid as is practicable to the families of 1st Armored Division personnel who were killed in action.

"To facilitate the preparation and publication of a history of the 1st Armored Division, and to help carry out all other purposes for which the 1st Armored Division Historical Association was created.

"To assist in the formation of other branches of the 1st Armored Division Historical Association."

Membership is open to any person who has served honorably as a member of the armed forces of the United States, and who has been assigned, or attached for duty, in or with the 1st Armored Division at any time from the date of its organization, 15 July 1940, to the date when its last unit was inactivated, or redesignated for Constabulary service in Germany, in 1946. Any interested person not meeting these qualifications is eligible for associate membership.

The Washington Branch desires to affiliate itself with the 1st Armored Regiment Association, the 13th Armored Regiment Association, the 91st Field Artillery Association, the 701st Tank Destroyer Association and all other branches of the 1st Armored Division Historical Association as may have been, or may be, formed, in order to expedite and facilitate the active formation of the national association. To this end, the Washington Branch solicits suggestions and information regarding the other branches and individuals desiring to join in furthering this worthy cause.

At a recent election, the following were named officers of the Washington Branch:

President	Peter C. Hains, 3rd
Vice President	Robert Linvill
Secretary	Frank B. Clay
Treasurer	Jack Gleason

The Washington Branch of the 1st Armored Di-

vision Historical Association has appointed Colonel Chauncy C. Benson as its Chief Historian. Colonel Benson joined the 13th Cavalry as a Second Lieutenant just out of West Point in 1914; and 29 years later, commanded that regiment in the Tunisian Campaign. He is now Chief of World War I Branch, Historical Division, War Department Special Staff.

The 1st Armored Division Historical Association plans to sponsor the preparation and publication of historical works as follows:

Bivouacs and Battlefields, North Africa, American 1st Armored Division, World War II. Pictorial, with sketch maps and a limited amount of written material.

Bivouacs and Battlefields, Italy, American 1st Armored Division, World War II. Pictorial, with sketch maps and a limited amount of written material.

Unit Histories—One for each regiment and separate battalion of the 1st Armored Division, including the 701st Tank Destroyer Battalion; one for each combat command and the 1st Armored Division as a whole; each with appropriate photographs and sketch maps. Each of these unit histories will include data on the unit concerned from the time it was first organized to the end of 1947; but will be strictly limited to concise factual statements, on which unit historians may elaborate as they see fit for particular operations.

The historical work outlined above constitutes an ambitious program which will require strong financial support. The 1st Armored Division Historical Association has sufficient funds on hand to pay for the work involved in the preparation of these publications; must rely on their sale to pay the costs of printing, binding and distribution. The pictorial volumes devoted to battlefields in North Africa and Italy will have wide appeal, not only to former members of the 1st Armored Division, but also to members of all other units that fought on those fields. When the books are ready for publication, orders will be solicited.

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**3rd Armored Division**

The Third Armored Division Association home office is sponsoring a series of get-together dinners for Spearheaders located in large population centers. Detroit, Chicago, and Fort Knox have already had successful meetings. An all-New England dinner and a New York dinner will be held in July.

During July, post cards were sent to all members of the Association, on which the members will vote for the time and place to hold their first national convention. In the meantime, the drive for new members is continuing. Any former Spearheaders who are not yet members of the Association should send in for an application blank. The address is: P.O. Box 66, Fort Monroe, Virginia.



Officers of the Chicago chapter were elected at the mid-April dinner. They are: Arthur J. Rutshaw, president; Charles O'Brien, vice president; E. Brantner Williams, secretary; Art Gillis, treasurer; and Charles Kalnis, director of publicity.

Former members of Service Company of the 32nd AR plan to hold their second annual reunion in Detroit during the second week in August. To date 40 members have indicated their intention of attending the reunion.

General Orders No. 31, Headquarters, European Command, dated April 24, 1947, designate the Hof Kaserne located at Hof, Germany as Maurice Rose Barracks in honor of the late Major General Maurice Rose. General Rose led the Third Armored Division across Europe during the past war. He was killed in action March 30, 1945, while with the forward elements of his division on an attack in Germany.

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### 5th Armored Division

The local chapter in Chicago is making all arrangements for this year's convention in that city on the 28th and 29th of August. The convention will be held at the Congress Hotel and, even at this rather early date, promises to be well attended.

General Oliver has found it necessary to go overseas for an indefinite period but promises to make it back in time for the convention.

Local chapters are being organized at various places in the United States, including Los Angeles, Chicago, St. Louis, Fargo, Topeka, Minneapolis. One has been proposed for Paris by Vicomte Pierre de Douville-Maillefeu (ex-81st Tank Battalion), who points out that there are a number of French who fought with us as well as a few American soldiers and civilians in the vicinity.

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The first annual reunion of the Fifth Armored Division is definitely set for August 28th and 29th at the Congress Hotel in Chicago. A local committee from the Chicago Chapter of the Association is running the convention and promises a big time for all who can attend.

General Oliver is now in Turkey on a special mission for the War Department but states that he will be in Chicago for the convention if it takes a special flight from the Middle East.

The Division Association has secured from various manufacturers samples of lapel pins, license plate markers, gold finger rings, etc., containing the Fifth Armored Division insignia and is offering these for resale to former Division men.

Ferd Nauheim, formerly of the 10th Tank Battalion and now a resident of Washington, D. C., has been announced as one of two Americans among six former servicemen to win \$1,000 in the United Service Book

Contest. Nauheim wrote a novel entitled *Behold the Upright*, which deals with a German family and an American tank battalion. He states that the background and much of the action of the novel are taken from actual experiences of the Fifth Armored Division during its combat in Europe. Publication of the novel has not yet been undertaken.

Local chapters of the Division Association are being established in Los Angeles, St. Louis, Minneapolis, Chicago, Omaha, New York City, Fargo, Toledo, Jersey City, and Wichita.

Major E. F. Hurley, formerly of the 15th Infantry Battalion, will arrive in Washington during July, to be assigned to the Historical Division of the War Department, and will write a new and complete history of the Fifth Armored Division from the time of its activation until its inactivation.

Information concerning the Fifth Armored Division Association and its activities can be secured by writing to the Secretary at 1719 K Street, N.W., Washington 6, D. C.

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### 6th Armored Division

The Sixth Armored Division Association is now in process of formation under the supervision of Colonel George W. Read, Jr., with temporary headquarters located at Fort Knox, Kentucky, where the Division was activated on 15 February 1942.

All those who served honorably in the Division between the activation date and V.E. Day, 8 May 1945 are eligible for membership and may secure application blanks by writing to The Secretary-Treasurer, Sixth Armored Division Association, Fort Knox, Kentucky.

The Sixth Armored Division will long be remembered for its outstanding exploits in World War II. In more than nine months of combat the Division, in whole or in part, was continuously in action in the European Theatre until the end of the war with Germany, except for a period of less than two weeks. From the hedgerows of Brittany through the forest gorges of the Ardennes and the flooded bottoms of Lorraine, to the rolling hills of Saxony, the Division mastered every variety of terrain and every type of combat. In the combat history of the Division there is no account of failure and the record was closed with the report, "Mission Accomplished."

The purpose of the Association is to perpetuate the memory of our fallen comrades; perpetuate the renown of the Sixth Armored Division; preserve the "Esprit de Corps"; assist in the promotion of an everlasting peace; and to serve as a medium of contact among and to promote the welfare and interest of those who served in the Division.

The first annual reunion of the Association is tentatively set for the spring of 1948. At that time the permanent officers will be elected and decisions reached as to the future plans of operation.



Some 10,000 application blanks are now being mailed to former Division members whose addresses have been secured, and an enthusiastic response is expected.

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### 7th Armored Division

A major change has recently taken place in the 7th Armored Division Association with the resignation of Joe Reddy as General Manager. Starting in June of 1946 with a nucleus of men from the 48th Infantry, Joe rendered invaluable service to the Association by organizing the work and by carefully nurturing the enrollment. By the time of his resignation in May of this year, the Association had grown to 500 members, largely by dint of Joe's persistence, in the absence of Division rosters. In his capacity as General Manager, Joe did the combined work of both Secretary and Treasurer.

With Reddy's resignation, the National Headquarters has been moved from Libertyville, Illinois to Washington, D. C. A temporary committee has been formed to take over the operation of the Association until such a time as the Association reaches a state of organization and size sufficient to hold national elections. At present, Jim Fahl, former Chaplain with CCB, is Secretary of the Association; Judge John P. Oliver, former JA, is General Manager and Legal Adviser; and Bill Knowlton, formerly of B Troop of the 87th Reconnaissance, is Treasurer. After a month's delay due to the transmission of records and checking of the charter and former minutes, as well as to the administrative setting up of the machinery for handling new members on a larger scale, the Association is ready to commence operations again, with emphasis on enlarging the membership and establishing a degree of decentralization with local chapters. Communications should be addressed to Seventh Armored Division Association, 2517 Connecticut Avenue, N.W., Washington 8, D. C.

At present, plans are to send out to all members a news sheet telling of the change in address and headquarters, as well as a roster with the names and addresses of all members. It is hoped that in this way, present members will be able better to contact each other in the setting up of local organizations. Rosters with names and addresses of former members of the Division are badly needed in this activity, and should be forwarded to the Association at the address above.

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### 11th Armored Division

We want all of you to know the response to our "third and last notice" post card sent out to all unpaid members the first week of June has brought us amazing and most gratifying results. Close to 1,000 members sent in their dues with the post card and we have also received about 28 history payments of \$5.00 each which have been acknowledged and credited to the

individuals.

Some of you members received the "third notice" without hearing anything from the Association before that—and the reason for this is that so many "lists" and individual names were coming in to us daily, we could not stop to check each and every one of them to see if it was already on file. We took the easiest and quickest way out—that of mailing the card to you for your immediate reply, so you would receive information on the history, convention, etc., before it was too late for you to make arrangements to attend the convention. Many of you received more than one card because as we explained, we had many duplications of names—many with a slight difference in spelling, a different address, or the same name but a different "unit." Your prompt reply and return of the card helped us "clean house" on many of these duplications in our files. Some of you were a little "peevish" about getting more than one card, but on the whole, you were very good sports about it and gave us credit for trying anyway.

Another point we wish to clarify, is that many of the members returned our card, stating that "dues were paid in Austria." We should have told you that all payments received in Austria had been duly credited to the individuals but that this is another appeal for funds for the current year, with which to run the Headquarters in Washington, help with the mailings of the local chapters, mailings to members, printing of Newsletters and membership cards and other expenses incidental to maintaining a headquarters for the Association.

Any of you who received the "third" notice with the June 20th deadline, who have not as yet paid your membership dues and DO WANT TO JOIN THE ASSOCIATION, send the card back to us with your \$1.00 and we will be glad to have you and will see that you receive full information on the convention and Association. The reason for the June 20th deadline was, as we said before, so that those of you who were interested in attending the convention, would receive the information in time to make the necessary arrangements to attend.

In a letter from Bill Lipp of Chicago, who is in charge of handling the hotel reservations and registration fees, he states that well over 200 members had registered by June 1st, with about 60 of that number bringing their wives. The number planning to attend is undoubtedly higher by this time, especially if all of you who wrote us of your interest—followed through in sending your coupons in to Lipp. We hope to have a grand turnout for the convention and that all states will be well represented. We will give you a full report on the convention and the business of the meetings, election of officers, etc., in the next issue of the ARMORED CAVALRY JOURNAL for the benefit of those who cannot attend.

The Los Angeles Chapter is having its first meeting at Patriotic Hall, 1816 South Figueroa Street, in L.A. at 8 P.M. on July 24th and notice of this meeting has



been sent to all members in that territory. William Cohen of 1921 Shenandoah Street in L.A. is in charge of the meeting and getting the boys together, and we hope they have a grand meeting. Anyone in the L.A. district who is interested in joining that chapter is asked to get in touch with Cohen. We will have the details of their meeting for you in our next issue.

Philip Mildenerger (Secty of O'Brien's Company in New Jersey) says that he received a number of inquiries from members of the Eleventh regarding their meeting mentioned in the last Newsletter. Their next meeting is scheduled for Sept. 27 at 8 P.M. at the Terrace View Restaurant at Fort Lee, N. J., but there will be representatives from that chapter at the convention in August.

At a meeting of the New York Chapter on June 20th at the Taft Hotel in New York, General Holbrook (the association secretary) was the speaker of the evening and described convention plans in detail, answering many questions that followed a general discussion. Future meetings of the New York Chapter will be held at the Boulevard Tavern, 405 Central Park West at West 100th Street and all members residing in that area are invited to attend. You may either write us for information, or direct to George D. Halprin, 700 Riverside Drive, New York 31, and your name will be put in the file of the New York Chapter.

The Denver Chapter was launched on June 1st, with a meeting at the American Legion Building with nine members attending. James R. Hoffman was voted the temporary chairman with Bob Mentzer temporary secretary, until after the convention in Chicago, when many topics relating to local chapters will be discussed for their mutual benefit. Denver is having a pre-convention meeting the latter part of July at which time the number attending the convention will be decided.

Post card notices for members in the Boston area were sent to Paul Cratty to be mailed out when the date, time and place of their first meeting has been decided and members in that region have undoubtedly heard from him by this time. We will give you a full report on their meeting at a later date.

We have set up the "Twin Cities" chapter (St. Paul and Minneapolis area) and as soon as John W. Healy (who has undertaken the organizing of that chapter) has recovered from this "twofold" good luck—that of a new son weighing almost nine pounds and a promotion in his firm—members in that area will be hearing from him. We have about 80 members on file in that area and any of you interested who do not receive a notice, contact John W. Healy at 1223 Watson Avenue in St. Paul for further information.

We have a letter from George B. Cordoba (21 AIB) of Oakland, Calif. with regard to forming a local chapter for San Francisco and Oakland and we hope to get this started before the convention, so that chapter will be represented as well as the others. Cordoba sent us

quite a nice history of his career as a guitarist with the Eleventh, telling of the joy he brought to many of his buddies in training camp, overseas and in hospitals from coast to coast. We regret that the article is too lengthy to print in whole, but we know those who heard him will remember him for his exceptional musical ability and we wish him a most successful career, now that he can again devote his full time and efforts to his music.

The Washington Chapter held a meeting at the residence of Gen. Holbrook on June 19th with about 16 members present. In the election of officers, Gen. Holbrook was made a lifetime Honorary President—Irving M. Binder (133 AOM), president, Hayden Estey (492 AFA), vice-president, and Morris Stolar, secretary-treasurer of the Washington chapter. Wilmer Sparrow, who just recently returned from the meeting of the Foreign Ministers in Moscow, gave an account of some interesting highlights of Russia and elsewhere in Europe. During the serving of refreshments, the convention was discussed with much enthusiasm and it was decided to have their pre-convention meeting the latter part of July and we hope they will have more members at their next meeting.

We haven't any news of the Cleveland Chapter for you, but we know that Ernest Perlmutter won't let us down and that he will do his best to stimulate interest in both the local chapter idea and the convention.

We want to add a note about the History, which will be priced at \$5.00 per copy. Due to unforeseen delays in getting the material from the west coast to the editorial offices in Washington, the history will undoubtedly not be available until the first part of 1948. All members will be notified by post card a month or so ahead of time so they may order as many copies as they wish. It is not necessary to send in payment for it, until you receive this post card notice—however, you may do so, if you wish. Your payment will be acknowledged and credited to you. We have also received a number of inquiries from families of men killed in action—asking if they may purchase a copy of the book and we hasten to say—they most certainly may do so. We have a number of names already on file, to be notified and we ask you readers to pass the word along to these families, if any of them inquire, regarding this matter.

For the benefit of any of you who were not able to determine until the last minute, or those of you who may possibly have had a change in plans with regard to attending the convention at the Congress Hotel in Chicago, August 14, 15 and 16—IT IS STILL NOT TOO LATE TO SEND IN YOUR \$10.00 REGISTRATION FEE AND THE TYPE HOTEL ACCOMMODATIONS YOU WISH—TO—BILL LIPP, 3017 East 78th Street, CHICAGO, ILL.—BUT DON'T DELAY ANY LONGER. Lipp tells us that they will be able to take care of some you "last minute" fellows, but we ask that you write him as soon as possible, if



you haven't already done so.

COME ON, YOU "THUNDERBOLTS"—AND LET'S ALL GET ROLLING TO THE CONVENTION IN CHICAGO—LET'S MAKE THE "ELEVENTH" THE BIGGEST AND BEST ASSOCIATION OF ALL TIME. . . . See you in the Windy City.

✓ ✓ ✓

### 1st Cavalry Division

Major General Verne D. Mudge, 3036 Elliott Street, San Diego 6, Calif., and Colonel Edmund P. Stone, P.O. Box 201, Pomona, Calif., have been announced as chairman of an executive committee, and treasurer, respectively, of the 1st Cavalry Division Association.

Announcement of the association's postwar leadership was made by Major General William C. Chase, present commanding general of the 1st Cavalry Division. General Mudge commanded the division, until he was wounded at Antipolo, Philippines.

Thousands of veterans who served in the 1st Cavalry Division throughout the hardships and perils of the Pacific campaign, and many soldiers of the division who were demobilized and have since returned, are on the rolls of the 1st Cavalry Division Association.

General Chase also announced the members of the executive committee of the Association. They are as follows:

Major General Innis P. Swift, 347 Garrity Road, San Antonio, Texas, past president and member. General Swift at one time commanded the Division.

Lieutenant Colonel Charles G. Young, JAGD, Hq., 6th Army, Presidio of San Francisco.

Colonel Alfred G. Tuckerman, 125 East 74th Street, New York, N. Y.

Colonel John H. Stadler, Jr., Hq. Army Ground Forces, Officers Assignment Group, The Pentagon, Washington 25, D. C.

Declaring that he was transferring the affairs of the

Association to General Mudge and to Colonel Stone, General Chase issued a financial report to the organization, and recommended that the membership take action for use of the Association's fund for the benefit of the members.

General Chase said there were thousands of paid-up members. He said there is \$43,275 in War Bonds in the El Paso National Bank and \$10,347.24 in a treasury check.

"No money has been spent," General Chase reported, "but I believe it is about time something was done by the Association, inasmuch as for all practical purposes, the war is over."

In announcing that General Mudge and Colonel Stone had agreed to act for the Association, General Chase pointed out the two former officers of the division would not receive any remuneration.

General Chase disclosed that a reunion for members of the Association had been proposed by General Swift, to be held somewhere in the United States this year. General Chase said that letters had been written to all members of the Association to determine their views regarding the proposed reunion, where such a reunion might be held, and how the Association's \$50,000 fund will be expended.

General Chase urged all Association members to make sure that Colonel Stone has the correct address of each.

The 1st Cavalry commander announced also that the history of the 1st Cavalry Division is nearing completion, and that plans are being made for distribution of the volume to Association members.

"The famous 1st Cavalry Division is still on duty in the Tokyo-Yokohama area and now has 15,000 fine, alert, young men on its rolls, who are proud and happy to be in this division, and who are very proud of what you fighting men did on the long road from Australia to Tokyo," General Chase concluded.

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Of Special Interest to all horsemen is the publication of the famous book *Riding and Schooling Horses* by the late Brigadier General Harry D. Chamberlin. It is now available through the Armored Cavalry Journal Book Department.

**THE ARMED FORCES AS A CAREER.** By North Callahan. McGraw-Hill Book Company, Inc. \$3.00.

The author, a former Army lieutenant colonel, discusses the opportunities of officers and enlisted men in the Army, Navy, Marine Corps, and Coast Guard. The book traces the history of each service, cites the type of training offered by each, the specialists' schools, the opportunities for enlisted men to become noncommissioned or commissioned officers, and includes complete up-to-date pay tables with monthly rates of pay, retirement provisions, and other benefits.

**WAR YEARS WITH JEB STUART.** By Lieutenant Colonel W. W. Blackford, C.S.A. Foreword by Doctor Douglas S. Freeman. Charles Scribner's Sons. \$3.00.

These lively reminiscences of the War Between the States were set down by the author in the Nineties and are now published for the first time.

Colonel Blackford, who died in 1905, was 30 when the war broke out. He was married, had four children, and was opposed to secession, but nevertheless, in 1861, shortly after Virginia seceded, he enlisted in the First Regiment of Virginia Cavalry under the command of Lieutenant Colonel J. E. B. Stuart. He took part in almost all the great battles of the Army of Northern Virginia.

He was appointed adjutant of the First Regiment of Virginia Cavalry by Stuart on the battlefield of First Manassas on July 21, 1861, and a few months later was made Captain. Later on he held the same rank in the Engineer Corps on Stuart's staff, became a Major of the First Regiment, Engineer Troops, in 1863, and a Lieutenant Colonel of the same regiment three months later.

While the events of 1861 to 1865 were fresh in his mind, Colonel Blackford, urged by his mother, wrote down his wartime experiences. The manuscript, since the author's death, has been in the possession of his descendants, who have now made it available for publication.

**ONE LAST LOOK AROUND.** By Clark Lee. Duell, Sloan & Pearce. \$3.75.

This famous war correspondent, who has contributed to the ARMORED CAVALRY JOURNAL several times in past years, has wound up his news writing career with this book. In it he expresses his opinions on the Japanese occupation, conditions in the various Asiatic countries, and wartime censorship of news copy.

One full chapter is devoted to Colonel Le Grande A. Diller, a former brigadier general and General MacArthur's wartime public relations officer. This chapter is all but complimentary to Colonel Diller, who is now stationed at Fort Benning, Georgia, with the 25th Infantry Combat Team.

Mr. Lee condemns many generals and admirals in his book, but he has nothing but admiration for General Douglas MacArthur. Lee was with General MacArthur, with the exception of about 18 months in Europe, from the time the Japs attacked the Philippines in late 1941 until American troops marched into Tokyo.

It was Clark Lee that located Tojo before the American Counter-intelligence agents. He was also responsible for finding several other badly wanted war criminals.

No man is better qualified to write a book on the Far East than Mr. Lee.

Many readers will disagree with things said in this book, however, it is well worth reading.



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THE SIXTH INFANTRY DIVISION IN WORLD WAR II 1939-1945. By the Division Public Relations Section. The Infantry Journal Press. \$5.00.

Here is another history of text and photograph that covers the activities of an Infantry Division through the entire World War II period. A veteran of three major Pacific campaigns the Division fought all the way from New Guinea to Luzon in the Philippines. At the end of the war it was assigned occupation duty in Korea.



**AMERICAN MILITARY GOVERNMENT IN GERMANY.** By Harold Zink. MacMillan Company. \$4.00.

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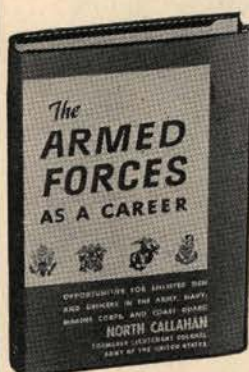
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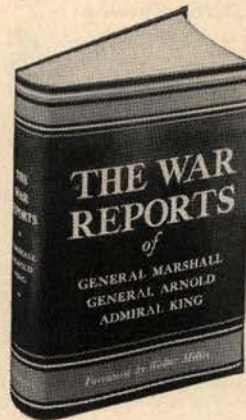
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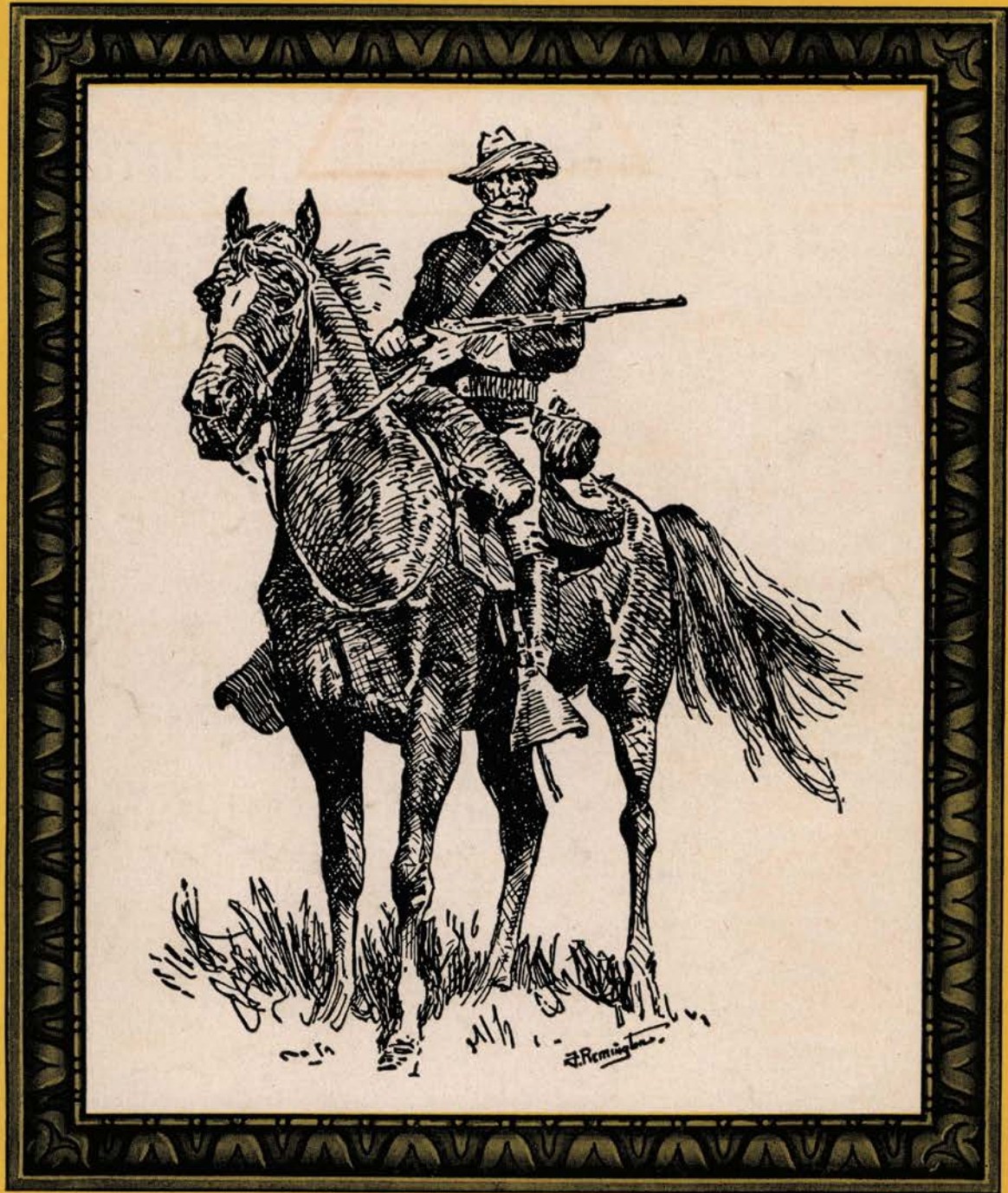
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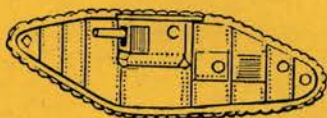
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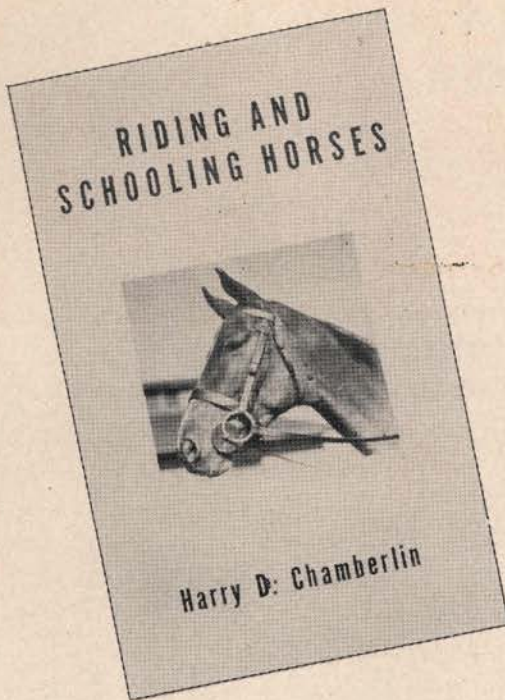
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# Stockpiling: A Nation

*by Major General Sidney P. Spalding, USA\**

**"Stockpiling is not a difficult project to understand. Generally speaking, creation of a stockpile of strategic material is not dissimilar to the ordinary insurance policy a person takes out on life or property. You pay a premium and receive helpful payment in the event of an accident or loss. In stockpiling, the United States invests hundreds of millions of dollars in the future."**

**S**TOCKPILING of strategic and critical materials as a component of the national security program of the United States is good business judgment on the part of this nation's planners. For the public of our Nation, it is a sound investment—sound from the standpoint of defense; sound from the standpoint of economy.

Stockpiling is not a difficult project to understand. Generally speaking, creation of a stockpile of strategic material is not dissimilar to the ordinary insurance policy a person takes out on life or property. You pay a premium and receive helpful payment in the event of an accident or loss. In stockpiling, the United States invests hundreds of millions of dollars, and may invest billions of dollars in the future. This money purchases and retains great quantities of materials necessary to wage a successful war in defense of our country and our principles.

From the "defense" angle, the value of a stockpile is immeasurable. When our nation girds for war, the expansion of our industrial might invariably outdistances the expansion of our production of many strategic materials. Consequently, it is necessary to have on hand a sufficient amount of these materials to cover the gap left by the outdistancing of the industrial expansion over the expansion of the producing element. Another necessity for stockpiling relative to defense is the fact that many of these strategic materials are received from

foreign sources—sources which may be within enemy land in time of war, under enemy control, or at the end of a sealane cut by enemy military forces. Still another and great element is the element of transportation. In times of emergency, our systems of transportation—rail, air, and sea—are often strained to a point where our transportation facilities are devoted in great part to other necessary activities of war. Consequently, it is necessary to have on hand a supply of such materials to cover all such contingencies.

The objective of the stockpiling program for strategic and critical materials against a future emergency is based primarily on determination of need, determination of amount, and availability of sources and amounts. Procurement hinges on availability, costs, and whether such procurement might come into conflict with and hinder our postwar civilian economic restoration.

Generally, the over-all cost of the stockpiling program has been estimated to be between \$2,100,000,000 to two and one-half billion dollars, with the necessary stockpiles achieved, if all goes well, within a five year period. These, of course, are estimates subject to change by many conditions such as those governing appropriations, prices, and availability of materials.

The Army and Navy Munitions Board, charged with the administration of the Stockpiling Act, Public Law 520, 79th Congress, arrives at determination of needs from the military experts in respective fields of munitions, and from experts from all phases of the civilian

\*Deputy Executive Chairman (Army) Army and Navy Munitions Board.



# al Defense Assurance

and industrial elements of the nation and government. Such needs and amounts are determined by the War, Navy and Interior Departments and a number of other related government agencies. Coupled with this is the knowledge derived from certain civilian industry advisory committees, which assist the board in stockpiling, Industrial Mobilization Planning, and other activities with which the Army and Navy Munitions Board is charged.

Amounts are estimated from experience and from thoroughly considered analyses of possible future requirements in a war of indeterminate length.

Upon determination, within the limits of funds appropriated each fiscal year, the Board can then indicate to the Bureau of Federal Supply, Treasury Department, the amount to be purchased.

The purchase will be made (1) if the cost is not excessive and (2) if such a purchase will not interfere with the Nation's economic recovery from the strain of the last war.

The method of procurement is not glamorous as many seem to think. There are no "cloak and dagger" commercial agents spying on the sources of supply of the desired materials. There are no "commercial attaches" following our diplomats about or attached to our Embassies arranging deals in scarce material as has been pictured by some. It is a businesslike arrangement along the lines of normal government procurement.

First, those lists of materials declared strategic and critical are known. Persons or companies the world over capable of providing the United States with these materials are invited to submit their names, and these names are investigated to determine the legality of the person as a producer—not a speculator. Then, when a certain quantity of a specific material is desired for purchases, the Federal Bureau of Supply, which is charged with all the purchase activities for the stockpile, will invite specific individuals or companies to submit bids. The contract is awarded to the lowest bidder who can produce the desired materials in accordance with Munitions Board specifications. A "Buy American" clause provides that material indigenous to the United States will be purchased at home insofar as practicable.

Upon procurement of the desired materials, they are placed in adequate storage—storage which will protect them from deterioration as long as possible. In storage—in the possession of the Government—they are what constitute a "Stockpile."

The amounts of the strategic materials acquired and stockpiled are kept secret for obvious reasons. No publicity is given to the amount desired for stockpiling purposes. One reason is strictly military. A country doesn't

reveal its military secrets to all comers, for one of the greatest assets of a nation is to know the military strength and military potentiality of an enemy or of a prospective enemy. Another reason is to avoid speculation on the stockpiling activities. Such speculation could effect the commercial markets, causing great hardships in that respect.

Relative to this last condition, the Army and Navy Munitions Board cannot "dump" stockpiled material on the market promiscuously and irresponsibly. If future requirements indicate that the stockpiling of a certain material is no longer feasible, due to technological obsolescence, the Board must file notice with Congress of this fact; after approval of that governmental body no disposition may be made until six months after publication of such intention in the Federal Register. A system of rotation is used in the stockpiles. This provides for renewing materials before they deteriorate in any respect, which, of course, guarantees stockpiles of usable materials, and the utilization of older material commercially before it has deteriorated. Rotation of a material before deterioration also guarantees against great financial loss in maintaining the stockpile.

Definitively, strategic and critical materials are those materials required for essential uses in a war emergency, the procurement of which in adequate quantities, quality, and time is sufficiently uncertain for any reason to require prior provision for the supply thereof.

Materials for stockpiling are placed in three categories, groups A, B, and C. Group A comprises those strategic materials for which stockpiling is deemed the only satisfactory means of insuring an adequate supply for a future emergency. Group B comprises additional strategic and critical materials the stockpiling of which is practicable. The Army and Navy Munitions Boards recommends their acquisition only to the extent they may be made available for transfer from surpluses of Government agencies, because adequacy of supply can be insured either by stimulation of existing North American production or by partial or complete use of available substitutes. Group C comprises those strategic and critical materials which are not now recommended for permanent stockpiling because in each case difficulties of storage are sufficient to outweigh the advantages gained by this means of insuring adequate future supply.

The items on the current list of strategic and critical materials and the major United States sources from which they are drawn are as follows:<sup>1</sup>

A cursory glance at this list immediately indicates

<sup>1</sup>The sources are not listed in accordance with their importance as a volume source, i.e. the first country listed for a material does not mean the United States purchases more of the specific material from that country than from the others.



# Principal United States Sources of Supply

## Group "A" and Group "B" and Group "C"

### Group A

Material	Location	Material	Location	Material	Location
Agar	Japan U.S.	Columbite	Nigeria Brazil S. Africa Argentina	Muscovite Splittings	India
Antimony	Bolivia Argentina Chile Peru Mexico China Yugoslavia Czechoslovakia Turkey Algeria Australia U.S. Italy	Copper	U.S. U.S. (Sec.) Chile Mexico Canada Rhodesia USSR Peru	Phlogopite Splittings	Canada Mexico India
Asbestos Rhodesian Chrysotile	Sou. Rhodesia	Cordage fibers Manila	Panama Philippines Neth. E. Indies	Monazite	Brazil Br. Isles Neth. E. Indies India
So. Africa Amosite	Un. of S. Africa	Sisal	Neth. E. Indies Belgian Congo Caribbean Is. Central America	Nickel	U.S. Canada Cuba New Caledonia USSR Burma
Bauxite	U.S. Br. Guiana Surinam Hungary France USSR Greece Italy Yugoslavia Neth. Indies Malaya	Corundum	Un. of S. Africa So. Rhodesia	Opium (Contained Morphine)	Un. Kingdom Netherlands Turkey Yugoslavia Afghanistan India Switzerland
Beryl	U.S. Argentina Brazil Australia India Un. of S. Africa Portugal	Diamonds Industrial	Belgium Belgian Congo Br. Isles Un. of So. Africa Netherlands Gold Coast Canada Brazil	Palm Oil	Canada Belgian Congo Nigeria Neth. E. Indies Br. Malaya
Bismuth	U.S. Canada Mexico Peru	Emetine	Nicaragua Costa Rica Columbia Brazil U.S.	Pepper	Neth. E. Indies India Fr. Indo China
Cadmium	U.S. Mexico Canada Australia Germany France Belgium Belgian Congo Argentina	Graphite Amorphous Lump	Ceylon	Platinum Gr. Metals	
Castor Oil	Brazil India Manchuria Haiti U.S.	Flake	Madagascar U.S.	Iridium	U.S. (inc. sec.) Canada Un. Kingdom Norway Columbia USSR
Celestite	U.S. Mexico British Isles Spain	Hyoscine	Australia	Platinum	U.S. (inc. sec.) Canada Columbia Br. Isles USSR Un. of S. Africa
Chromite Metallurgical	U.S. Fr. Oceana Sou. Rhodesia India Turkey Un. of S. Africa New Caledonia Canada Cuba USSR	Iodine	U.S. Chile USSR Neth. E. Indies Japan France	Pyrethrum (20% extract)	Brazil Belgian Congo Br. E. Africa Yugoslavia Japan
Refractory Rhodesian	Sou. Rhodesia	Jewel Bearings Instrument Rings	U.S. Switzerland	Quartz Crystals	Brazil
Other Origin	Cuba Philippines India Un. of S. Africa Greece	Sapphire Vees	U.S. Switzerland	Quebracho	Argentina Paraguay
Cobalt	U.S. Canada Germany Finland Belgian Congo Fr. Morocco N. Rhodesia Burma	Watch Rings	U.S. Switzerland	Quinidine	Neth. E. Indies Un. Kingdom Germany
Coconut Oil	Philippines Neth. E. Indies Malaya Ceylon Br. Oceana Fr. Oceana India Honduras U.S.	Kyanite, Indian	India	Quinine	Neth. E. Indies Un. Kingdom Ecuador Costa Rica Guatemala Switzerland Germany
		Lead	U.S. U.S. (Sec.) Canada Mexico Peru Australia Germany Belgium Italy	Rapeseed Oil	Argentina Netherlands Un. Kingdom Japan
		Manganese Ore Battery Gr.	U.S. Fr. Morocco Gold Coast India Un. of S. Africa	Rubber Crude Natural	Neth. E. Indies Br. Malaya Ceylon
		Metallurgical Gr.	U.S. Cuba Mexico Brazil USSR Gold Coast India Un. of S. Africa	Natural Latex	Fr. Indo China Siam India Liberia Brazil Mexico Central America South America
		Mercury	U.S. Mexico Canada Chile Italy Spain USSR	Rutile	U.S. Brazil Australia Fr. Camerouns India Nigeria Norway
		Mica Muscovite block & film (good stained & better)	U.S. Canada Argentina Brazil India	Sapphire & Ruby	U.S. Switzerland
				Shellac	India



Material	Location	Material	Location	Material	Location
Sperm Oil	U.S. Canada Netherlands Norway Un. Kingdom Falkland Is.	Tung Oil	U.S. China Brazil	Zinc	Un. of S. Africa N. Rhodesia U.S. Canada Newfoundland Mexico Argentina Chile Peru France Belgium Belgian Congo Great Britain Germany Poland Australia USSR
Talc, Steatite (block or lava)	U.S. India Manchuria Italy	Tungsten	U.S. Mexico Brazil Bolivia Peru Argentina Neth. E. Indies China Burma Chosen Portugal	Zirconium Ores Baddeleyite	Brazil
Tantalite	U.S. Brazil Belgian Congo Br. E. Africa Netherlands Australia Sou. Rhodesia	Vanadium	U.S. Mexico Peru Argentina	Zircon	U.S. Brazil Australia India
Tin	Br. Malaya Neth. E. Indies Bolivia Belgian Congo Nigeria				

## Group B

Material	Location	Material	Location	Material	Location
Aluminum Ingot	U.S. Canada France Italy Germany Norway Switzerland Un. Kingdom USSR Japan	Metallurgical Grade	U.S. Germany U.K. USSR Newfoundland France Spain Mexico S. Africa Chosen Italy	Platinum Group Metals Osmium	Norway Peru Un. of S. Africa USSR Alaska U.K. Columbia U.S. Canada
Calcite (Optical)	U.S. Iceland So. Africa	Graphite (Crystalline flakes)	Madagascar U.S.	Platinum	U.S. U.S. (Sec.) Canada Columbia U.K.
Chalk, English	England	Indium (Metallic)	U.S. Canada Germany	Rhodium	U.S. (Sec.) Canada
Chromite Ore (Chemical Grade)	Sou. Rhodesia Turkey Un. of S. Africa Yugoslavia Greece New Caledonia U.S. USSR	Jewel Bearings Other Instrument Jewels Other Watch Jewels	U.S. Switzerland U.S. Switzerland	Ruthenium	U.S. U.S. (Sec.) Canada U.K.
Cryolite, Natural	Greenland	Magnesium Ingot	U.S. Germany U.K. France Japan	Selenium	U.S. Canada Sweden Germany
Diamond Dies	Netherlands France United Kingdom U.S.	Mica Muscovite block (Stained & lower)	U.S. India Brazil Argentina Peru	Talc, Steatite Ground	U.S. Manchuria France Italy Norway Germany India
Emery	U.S. Turkey Greece	Phlogopite block (Amber)	Madagascar Canada Mexico	Wool	U.S. Australia New Zealand Argentina Br. So. Africa Chile Uruguay
Fluorspar Acid Grade	U.S. Germany Newfoundland Un. of S. Africa France Spain Mexico	Molybdenum	U.S. Mexico Chile		

## Group C

Material	Location	Material	Location	Material	Location
Asbestos Canadian Chrysotile	Canada		Brazil Sweden Norway Australia	Mahogany	Mexico Central America Gold Coast Ivory Coast
Bristles Pig & Hog	U.S. China	Kapok	Netherlands Indies Philippines Ecuador Brazil Dominican Republic	Petroleum & Petroleum Products	U.S. Venezuela Mexico Columbia Canada Trinidad Neth. W. Indies
Burlap, Jute	British India U.K. Czechoslovakia	Leather Cattle Hides	U.S. Argentina Brazil Canada Cuba	Radium	U.S. Canada U.K.
Cordage Fibers Hemp, American Henequen	U.S. Mexico Cuba El Salvador Venezuela	Calf & Kip Skins	U.S. Argentina British India British E. Africa	Scrap, Iron & Steel	U.S. Canada Cuba Curacao
Jute	British India Belgian Congo	Loofa Sponges	Japan Cuba Mexico Central America West Indies	Sesame Oil	China India Manchukuo Nigeria Anglo Egyptian Sudan Tanganyika
Cork	Portugal Spain Algeria Morocco Italy France	Lumber Balsa	Columbia Costa Rica Ecuador Guatemala Mexico Nicaragua	Uranium	U.S. Canada U.K.
Glass, Optical	U.S. Germany				
Iron Ore	U.S. Chile Canada Cuba				



the absolute necessity for stockpiling the materials in peacetime against war emergencies. The increased supply of each material as necessitated by war is effected by the contingencies mentioned earlier. Rapid wartime industrial expansion exceeds expansion in the production of those materials indigenous to the United States or the North and South American continents. A supply is needed to carry U. S. Industry during the period in which the production of the materials is increased to meet the greater demand by industry. Materials from without the United States, subject to increased demand throughout the world, are also subject to possible enemy control. They may even become more unreachable should the activity of war strain or disrupt transportation facilities necessary to carry them to the U. S. So apparent are these factors, it is not difficult to realize what an essential component stockpiling of strategic and critical materials is to our national security.

In time, of course, this list will change. New scientific development, perfection of certain synthetics and substitutes, and the development or expansion of our own continental sources will cause new materials to be added to the list and some of the present items declared obsolescent for stockpiling purposes.

To date, since the reconstitution of the Army and Navy Munitions Board by the President in August of 1946 the passage of the Strategic and Critical Materials Stockpiling Act (Public Law 520—79th Congress), the stockpiling of the desired materials has progressed favorably, despite many unfavorable conditions.

World War II dissipated most of the existing stocks of these materials throughout the world, and in major sections thoroughly disrupted the producing facilities, creating major shortages. Since these materials are of prime industrial requisite, the shortages have hampered the restoration of normal peacetime economy. Consequently, since a strong civilian industry is of major importance to national security, the Army and Navy Munitions Board will not compete with the industry in the procurement of these materials unless conditions make such purchasing mandatory, i.e. specifically if world conditions indicated the U. S. had but little time in which to achieve its stockpiling goals.

This situation, naturally, made it almost impossible to engage in as great a stockpiling activity as is desired. However, fortunately, the residue of war left for the Board one source of supply which enabled it to start its endeavors and progress, although in a restricted sense.

On hand in the United States were materials required for stockpiling. They were in the possession of government agencies and the Armed Forces, charged with their procurement during the war years. When such materials were ascertained surplus to the military needs and to the civil economy of our nation, they were so declared and made available to the Army and Navy Munitions Board for stockpiling. The effect of this situation was threefold. It provided the opportunity for the nation to salvage some of the cost of World War

II, made it possible for the Board to commence stockpiling without competing with the civilian economy, and eliminated "dumping" of materials, with its ruinous effect on the immediate postwar economy.

Now, as reconversion of our wartime economy to peacetime economy is progressing, the demands for strategic and critical materials will begin to level off to normal demand. Production sources throughout the world, made unproductive by the war, are beginning to operate again, offering these materials for world consumption. Consequently, as world wide supply and demand are achieved, the materials will be in less short supply, which, of course, will cause the envisioned stockpiles to become achievable.

So far, there has been indicated the need for stockpiles, what stockpiles are, the difficulties involved, and the progress made in stockpiling. It is only fair, in completing the picture of the stockpiling activities of the United States, to ask: "What about the future relative to stockpiling?"

In answering such a question, one favorable aspect of the problem must be indicated, first. It is definite that the people of the United States, through their representatives in Congress, are aware of the value and necessity of stockpiling strategic and critical materials. It was not always so. However, this was not totally the result of ignorance or indifference. Not too long ago in our history, stockpiling was not the essential component of national defense it is today. Progress in the science of war, and the ever increasing scale of war have brought about an evolutionary change in the scheme of things relative to war. At one time, war activity was superimposed on "business as usual." Present day demands of war have made this process strenuous almost to the point of the impossible. The future indicates that the total industrial, civilian, and military strength will be required to wage war.

Because of this, reserve strength in industry, resources, and personnel must be maintained in peacetime—at least until lasting peace is indicated—and it becomes logical to believe that if the military services need reserves of manpower, then our industry needs reserves of materials not easily acquired in wartime.

All this has made our people and their representatives and servants in government aware of the necessity of stockpiling war-scarce materials, and the Congress has given its full support to the project, as indicated in Public Law 520.

As to the future. . . . The fate of our stockpiling plans rest with the people and the Congress. It will depend on continued authorizations, continued appropriations in the amounts necessary to achieve the size and quality stockpile best able to assist the Nation in an emergency. Consequently, it is mandatory, in behalf of the security of the United States, that the awareness acquired by the people and the Congress, and the excellent support given the program be kept alive, continued until peace is achieved and such things as wars and stockpiles are no longer elements of civilization.



# Under A Cloak Of Water

*by Leonard J. Grassman*

CARDED

**A strange weapon developed by the Japanese to thwart our efforts in invading the Jap homeland is revealed in this article by Leonard J. Grassman, a regular Armored Cavalry Journal contributor. The weapon was intended to reinforce Japanese Naval defenses of Japan.**

MANY of the Allied intelligence reports compiled during the last phase of the war or early in the postwar period lacked much value in the military sense, but were greatly beneficial in providing well needed and well earned smiles and chuckles for the American community, and in satiating the thirst of curiosity of the general populace of the world concerning the confounded "secret weapons" of our erstwhile enemies.

Among the thousands of such mysterious weapons, which were repeatedly, reputed ready to turn the tide of war against the Allies one of the strangest was discovered by our investigators in Japan. Unveiled after occupation of Japan by our forces, it proved to be a combination of equipment designed to thwart our efforts in invading the Jap homeland.

Characteristic of all such secret weapons, in construction, it was hidden by a great veil of secrecy. In operation it was concealed by a greater cover—the veil of soft waters of the Pacific.

Apparently without a name, the device was prepared to carry the Nip tactical theory, "destruction of the enemy on the beaches" even further. It was designed to destroy the enemy—our forces—before they reached the sacred beaches of Japan. It was intended to reinforce Japanese Naval defense of Japan.

Upon investigation, American intelligence personnel discovered the secret coastal defense to be a system of submersible forts. Each tiny fort contained a complement of two men and housing for this crew, when submerged. There was also storage space for approximately 50 rounds of 37-millimeter ammunition for the gun mounted topside. Primarily, the remainder of the small defense element consisted of a ballast tank.

Theoretically, these submersible armed barges, prior to attack, would be towed to their assigned positions, and sunk. Later, when the amphibian craft from the attacking enemy transports started shoreward, on signal, the

gunner and the ammunition passer would pump madly on the handpump, raising the craft. By the time it was surfaced, the crew were completely exhausted, incapable of operating the gun. Consequently buoyancy tanks were installed, relieving the crew from the arduous pump operation.

Surfaced, the craft and its 37-mm would blast the oncoming landing craft from the water.

Two operating models of the little submarine forts were built for experimental purpose. They were designed to withstand pressures up to 100 feet, but normal operation was at 50 feet. They were tested in calm waters, and, it is anyone's conjecture what the result would be in rough water with the gun firing. Probably one seasickness tablet per round fired.

Communication contact with the crew was overlooked in the design and construction of the forts, and, upon discovery, suggestions ran from thumping the sides of the vessel to the far reaches of oriental imagination. No practical test of strung telephonic equipment was attempted.

Later experiments produced a mother ship for the sinking barges. Similar in most respects, the "sinkable Mammy" was equipped with a 15-horsepower oil engine, a 10 horsepower motor and steering equipment. It was also equipped with grapnels with which to free the unpropelled gun platforms should they become entangled in their own moorings.

As a supplement to the coastal defense system, they had suicide swimmers, equipped with underwater suits and small, powerful mines. Trained in group units, the swimmers had the hoped-for effect of a squadron of one-man submarines without the submarines. Apparently, their suits became waterlogged because there is no record of an allied craft being sunk by a man-propelled mine.

At first glance, it is quite evident that such devices



as these are militarily out of bounds. Their effect, at most, would be inconsequential, causing but momentary delay in an attack. With this fact in mind, a natural question arises. Why, then, should the Japanese strategists have wasted time, money and skill playing around with such nonsensical gadgets?

The answer is desperation.

With an over-all strategy based on successful aggression, the Japs ignored defense measures until they were on the defensive. From the beginning, they planned seizure of vast areas, away from the homelands, and, short of complete victory over the enemy, a far-flung fight so costly to the enemy that a negotiated peace would be the only logical conclusion, leaving Japan with much war-won territory after the peace had been negotiated.

When it became apparent that the Japanese forces could not hold out against U.S. military might, and were being forced farther and farther back toward the homeland, the Japs found themselves without a homeland defense and began casting about for such a defense. The last hope was to make the taking of Japan proper so costly, the Allies would negotiate, letting the Nips off lightly. As always, a war-weakened nation cannot improvise last minute defenses against a powerful, victorious force.

Oddly enough, the lesson illustrated in that foolish activity was not new with the Japs. It has been a mistake made time and time again throughout the military history of this world. In France's preparation against possible Germanic aggression, it was made. The French neglected to complete the Maginot Line—to protect a rich industrial area—and justified this weakness with a strategy of placing an offensive force in Belgium to cover the gap. This, along with the strategy of fighting behind the Maginot spelled defeat. Confidence in the Maginot Line and the supporting strategies left no room for planning against miscarriage of that strategy.

The mistake lies in the neglect of planning beyond a planned strategy—in taking into consideration what

measures must be adopted if (1) the strategy is not successful and (2) if it is more successful than anticipated.

At the moment, in a chaotic world, our military planners have much with which to contend. They can hope for peace but must plan for war. In that planning may lie the fate of our nation, and the silly lesson of the Japanese sinkable fortettes, comic as it is, may well be posted as a reminder that when planning an offensive defensive against aggression, one must also count on the possibility of being reversed to the point of a defensive offensive—permitting the enemy to expend its aggressive might against our defenses.

Recently, in conversations with some of our strategists, the talk turned to the "polar concept." As the conversations continued, it was apparent there was some misunderstanding. Moments later, the misunderstanding was diminished somewhat. One of the gentlemen straightened the matter out by noting that there are quite a number of "polar concepts"—an Air Force polar concept, a Navy polar concept, a ground force polar concept, a magazine polar concept and the press associations' polar concepts, along with many others, individual in themselves or a combination of several of the others.

More talk eliminated all but one of the "concepts," and the conversation centered on that one. It was noted that all consideration was centered on the offensive strategy within the sphere of the particular concept range, and consideration given to the possibilities of attack within the same concept. The head was protected but the body exposed.

Questions about this factor brought rather glib assurances that the Navy, the natural hindrances and friendly nations took care of all that, and, logically enough, it seemed quite true that that was the case. However, IF these elements proved incapable of the defense apparent, what then? Would the U.S., in desperation, resort to sinkable tin cans?

## RIDING AND SCHOOLING HORSES

*By The Late Brigadier General Harry D. Chamberlin*

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# 2d Armored División Combat Loading Sicily

## PART TWO

*by Lieutenant Colonel F. M. Muller*

THE Sicilian invasion, better known then as operation Husky, was conducted by the Seventh U. S. Army, under the command of Major General George S. Patton, Jr., in conjunction with military forces of the United Kingdom.

The general over-all American plan called for three American landings against the southern coast of Sicily in conjunction with an airborne operation. The 45th Infantry Division was to land in the vicinity of Victoria, the 1st Infantry Division to land in the vicinity of Gela, and the 3d Infantry Division was to land in the vicinity of Licata. In addition to these three amphibious assault forces of the 82d Airborne Division was to conduct a vertical envelopment on D-day in the vicinity of Gela, and a floating reserve, consisting mainly of the 2d Armored Division was to be committed at the direction of the CG Seventh U.S. Army to exploit or reinforce any of the three landings.

The 2d Armored Division was split three ways for this operation: CC A was attached to the 3d Infantry Division (Task Force Dime); the 2d Armored Division (minus CC A and those units designated to remain in Africa) reinforced mainly by the 18th RCT and the 540th Combat Engineer Battalion, constituted the floating reserve (Tank Force Kool); and those units designated to remain in Africa until ordered to Sicily, consisting primarily of two battalions of the 67th Armored Regiment, the 92d Armored Field Artillery Battalion,

Maintenance, Supply, Medical, and Engineer Battalions minus, and other miscellaneous troops.

### PREPARATION

In the early part of April 1943 the 2d Armored Division was located in an assembly area at Monod, north of Rabat, Morocco. During the period April 22, 1943 to May 22, 1943 in a combination rail and motor movement the entire Division moved to an assembly area in the vicinity of Port-Aux-Poules, approximately 20 miles east of Oran, Algeria.

During the period May 16, to June 19, 1943 intensive physical hardening training was conducted which included strenuous exercises, calisthenics, obstacle courses, forced road marches, etc. All guns were test fired and tactical exercises using ball ammunition were executed.

Amphibious training utilizing the facilities of the Fifth Army Invasion Training Center at Arzew, Algeria, was conducted. This training included instruction and practical work in waterproofing vehicles, loading various types of craft and ships, and landing exercises.

Difficulty was encountered with unloading LST's and LCT's since the draft of these vessels was not suited to the gradient of the beaches in the vicinity of Arzew. Considerable lost time resulted while various unload-



ing expedients for unloading LST's, were tried out under the direction of the Navy and the Fifth Army Invasion Training Center. The final solution of unloading LST's was to use LCT's with the sides cut out and transshipping the vehicles; an unsatisfactory solution at the best, slow and laborious in a calm sea, and a most difficult task in the dark or a running sea. No comments were made by Naval personnel regarding the tonnage limitations with respect to the loading of LST's. This weight limitation proved to be a serious problem and a controversial subject in this operation.

A practice landing was conducted June 17, 1943 to June 19, 1943; this was intended to be a full-scale rehearsal. Elaborate preparations, such as wire, antitank and anti-boat obstacles, controlled troops representing the enemy, flares, blank ammunition, etc., were made along the selected beach. Strict secrecy was adhered to until the ships put out to sea. Approximately 50 per cent of the assault troops and 75 per cent of the armored vehicles participated in this exercise. Due to the lack of shipping, this exercise was executed on a relatively small scale, and although it had considerable training benefit to the participating troops, it was of limited value to the Division as a whole.

#### LOADING

In order to more fully understand the loading of ships and crafts for this operation, enumerated below is the breakdown of the composition of Task Force Kool and those elements of the 2d Armored Division of Task Force Dime:

##### *Task Force Kool:*

- 18th Inf Reg Combat Team (of 1st Inf. Division)
- 32d FA Bn.
- Co. B 1st Eng. Bn.
- Co. B 1st Med. Bn.
- Det. 540th Combat Eng. Bn.
- 2 Plats. Co. "T" 67AR
- Combat Command "B" 2d Armored Division
- 3d Bn. 67AR(-)
- Co. "A" 41 A1B
- 78 AFA Bn.
- Co. "C" 82d Reconnaissance Bn.
- Co. "B" 17d Armored Eng. Bn.
- 82d Reconnaissance Bn. (-3 Recon. Co's)
- 1st Bn. 41 A1B (-Co. A)
- 540th Combat Eng. Bn. (-1 Bn) (Reinforced)
- 107th AA Bn (-)
- 433d AA Bn (-)
- Det. 48th Armored Med. Bn.
- Det. 2d Armored Division Maint. Bn.
- Det. 2d Armored Division Supply Bn.
- 396th QM Port Bn.

##### *Task Force Dime (2d Armored Division Units):*

- Hdqs. Combat Command "A" 2d Armored Div.
- 66 AR
- 14 AFA Bn.
- 41st A1B (-1 Bn)

- 1 Co. 17th Armored Eng. Bn.
- 1 Co. 82d Reconnaissance Bn.
- Det. 2d Armored Division Medical Bn.
- Det. 2d Armored Division Maint. Bn.
- Det. 2d Armored Division Supply Bn.

The general mission assigned Kool force was to sail with the assault convoy prepared to land in support of any of the assault forces. In order to accomplish this, two general plans were prepared: plan A, land on one or two beaches at which beachheads had already been established, and assemble the command prepared to operate in support of other assault forces as ordered by the Commanding General Seventh Army; plan B, force a landing on one or more designated beaches and operate in support of other assault forces as ordered. In order to be prepared to execute these plans stated above, Kool force was grouped in an assault, reserve, beach, and service echelons, and the combat loading of all ships and craft had to be executed so as to positively assure the expeditious execution of either of the two plans.

The mission of the 2d Armored Division elements of force Dime was as directed by the Commanding General of this force, generally, this mission was armored support to effect and exploit a successful landing in the vicinity of Licata.

The 23 LCI's, five LST's, and seven LCT's of Task Force Kool, and approximately 20 LST's (2d Armored Division units) of Task Force Dime were anchored in the bay of Mostaganem off Arzew. The seven liberty ships EC-2 of Task Force Kool were at berth in Oran harbor. Transport Quartermaster were appointed for each ship and craft; all TQM's were under the control of the division TQM who in turn was a staff officer under the A.C. of S. G-4, 2d Armored Division. The loading of the liberty ships was to be the most difficult. TQM's for these ships were carefully selected.

#### LOADING OF LIBERTY SHIPS

All TQM's designated for the liberty ships EC-2 worked in a special room of the Headquarters, Mediterranean Base Section (MBS) in Oran. A blueprint diagram of a liberty ship EC-2 was made available by the Transportation Section, MBS. From this scale drawing the essential ships characteristics such as number of holds and decks, capacity of each boom, length, width and height of each hold, dimensions of the Square of the hatches and the various loading obstacles were obtained. It was realized at this time that these dimensions and marine data were approximate and that no two ships are identical, and that additional installations such as blackout doors, ramps for life rafts, and extra war impedimenta, were not shown on this blueprint. However, considering the time element, and the fact that three of the selected liberty ships were still on the high seas, and those ships in Oran port were still unloading, it was decided not to have each ship measured by its respective TQM, the standard procedure, but to



accept the data of this blueprint for the templet loading plans.

The Engineer Section, MBS reproduced scale drawings of the blueprints and these were distributed to each TQM. These drawings were in three sections: bottom as hold deck, middle or tween deck, and top or superstructure deck. Insofar as could be determined, all obstructions which would interfere with the loading were inserted on these drawings. Templets to scale were constructed for each type of vehicle that was to be loaded aboard these ships and these templets were reproduced to provide an ample amount for each TQM. Each templet was marked as to what type vehicle it represented.

Each TQM was then given the complete list of vehicles, cargo, and personnel that was to be embarked on his ship and the specified combat loading priority. Due to changes in the tactical aspect of the operation this resultantly necessitated changes in the planned loading of the respective ships. If any one element is detrimental to the efficient planned stowage of ships it is the late changes which cause in the majority of cases an almost complete re-planning of the loading of the ship; a change or substitution of one type vehicle or cargo can mean the complete change of positions of all the vehicles or cargo on that ship.

The templet stowage in itself is relatively simple—it merely consists of placing the templet drawing of the designated vehicle in a position in the ship where it can be loaded, considering the capacity of the booms, dimensions of the hold, and the desired tactical priority of unloading.

The liberty ship EC-2 was decidedly not a good ship to combat load elements of an armored division; it was not even satisfactory for convoy loading of armor. The number two and number four holds (numbering forward to aft) are the only holds considering the capacity of the ship's booms which can take vehicles heavier than 10 tons. The number two hold usually has a 30-ton boom, the number four hold a 50-ton boom and the other three holds, numbers one, three and five, each have 10-ton booms. This fact is more vividly realized when one takes into consideration the small amount of vehicles in an armored division which weigh under ten tons. A loaded 2½-ton truck weighs over ten tons; this only leaves ¼-, ¾-, and 1½-ton trucks and other such vehicles that can be loaded in the number one, three, and five holds. Consequently, the bulk of the vehicles must be loaded in the number two and four holds and their capacity is quite limited, considering the capacity of the LST for heavy vehicles and the LST's relative size to the liberty ship EC-2.

The EC-2, however, was of course not constructed to transport armored divisions for amphibious landings on hostile shores; it was a cargo ship—a good cargo ship, built quickly by mass production methods and it served efficiently in this role. The EC-2 was much better suited to the 18th RCT of the 1st Infantry Division as its vehicles were for the most part the light type, re-

quiring only a 10-ton boom. In spite of this detriment or the EC-2 it was necessary to load 2½-ton trucks (fully loaded) in the number one, three, and five holds, even though exceeding the rated capacity of the booms. The reasons for this decision were primarily, military necessity and the fact that the rated capacity of booms is usually lower than the actual lifting capacity. No booms broke as a result of this decision either during the loading or the unloading.

The templet stowage of vehicles was completed without incident, however, the planning of cargo stowage presented new difficulties. This cargo consisted of all types of supplies—gasoline, ammunition, rations and Medical, Quartermaster, Ordnance, Chemical Warfare Service, Engineer and Signal Class II and IV supplies. The EC-2's main shaft runs along the Hold deck from the engine room aft, through the number four and five holds. This creates a causeway-like obstacle which hinders vehicular loading. Due to this shaft, vehicles must be positioned on the hold deck by dexterous and vigorous application of guide lines attached to the vehicle and by driving the vehicles to the selected location. It was decided to level off this shaft with cargo to utilize this space for valuable cargo and at the same time build a platform for vehicular loading.

In all the EC-2's the number three hold tween deck had installed approximately 305 tier-type bunks which was reserved for troop space. No cargo or vehicles were loaded in this space except personal equipment of the troops being transported by that ship and this equipment was placed on the square of the hatch.

The distribution of cargo among the seven liberty ships was approximately the same in regards to type of cargo to insure supply of that type in the event of ship losses. Due to the fact that Task Force Kool was the floating reserve of the Husky operation and it was not known exactly how this force was to be employed, the cargo ships played an important part in this role and it was imperative that they be loaded in such a way that if a particular type of supply were required it could be rushed ashore in minimum time. This in brief meant that in addition to the established priority of vehicles for combat loading supplies must be readily available and not buried under a maze of vehicles. This requirement included all types of supplies, and in the case of ammunition it meant type by caliber, by guns, by shell and by fuze—for example, 105mm Howitzer, M2, HE, M48 fuze.

Since the EC-2 has only five holds and the debarkation priority of vehicles had to remain paramount, this planning requirement involved some difficulty. This problem was solved by first, templet-loading all vehicles off of the square of the hatch in order to be able to reach the Hold deck, if required, where the bulk of all supplies were loaded, and secondly, by positioning the vehicles on the Hold deck so as to not materially interfere with the unloading of supplies. With this in view, no great attempt was made to get maximum loading of supplies; the aim was maximum loading yet permitting



any type of supply to be unloaded if required.

The number two and four holds contained little cargo as these holds were needed for heavy vehicles. The superstructure deck was used, to some extent, to store small amounts of cargo, that it was known, were to be required early in the debarkation stage. Separate fuzes were stored in locked metal containers on the superstructure deck.

In the planning of this loading the distribution of weight with regards to the ship had to be considered, and for the most part gasoline and ammunition were to be loaded in separate holds. The amounts and types of cargo to be taken were decided by higher headquarters and these amounts were modified somewhat to conform to the actual characteristics of ships. The amounts and types to be allocated to each ship were determined by the Division TQM.

Finally on approximately June 21, 1943 the loading of the liberty ships commenced. Each of the appointed TQM's loaded their respective ships; no other army personnel, except loading crews were permitted aboard these ships. A large vehicle pool was established near the port area where all vehicles earmarked for the EC-2's were waterproofed and inspected. These vehicles were then separated by ship, further broken down into the hold they were to be loaded and marked with a debarkation priority. The TQM then called by phone to this pool and requested, for example, vehicles number five to 15, number two hold, for EC ship number eight (code designation). This system worked exceptionally well, the pool acted as a control point to insure the continuous flow of vehicles and prevented "piling-up" at the docks. For the most part the DUKW's and AA vehicles were loaded on the superstructure deck. Loading continued through the hours of darkness. The loading was completed in about seven days and no difficulty of any magnitude was encountered.

In the foregoing treatise considerable was written on the planning stage and little on the actual loading. This was done because by far the most difficult of any amphibious loading is the planning—if the plans are good plans the loading will be a good loading. Three liberty ships and two APA transports left Oran July 5, 1943 and arrived off Gela July 10, 1943, D-day.

#### LOADING OF LST's, LCT's AND LCI's

The loading of these ships and craft took place during the period June 13, to July 5, 1943 in the bay of Mostaganem off Arzew. Most of the loading of vehicles was done during daylight hours, however the majority of personnel embarked at night.

The planning and the actual loading of these ships and craft is comparatively easy—again the templet system of fitting scale drawings of vehicles into a scaled drawing of the ship or craft was used. The LCT's carrying only about six vehicles presented no difficulty whatsoever, and the loading of the LCI's was only personnel embarkation. The loading of the LST's

however, often presented minor problems such as racks on the rear of vehicles which had not been considered, and the use of a portion of the tank deck by the Navy for the storing of naval stores, again a factor not previously considered, nevertheless, small adjustments were executed and the loading was successfully accomplished. In spite of the 10-ton capacity of the ship's elevator, loaded half-tracks were loaded on the top deck. The total weight loaded aboard many of the LST's exceeded 700 tons, yet nothing was said of this fact and the effect it would have on beaching the ship. However, when the LST flotilla arrived off Tunis, the Navy suddenly demanded that the ships be limited to a maximum of 500 tons. This was highly impractical at this time and after considerable controversy the ships were allowed to proceed to Sicily as loaded.

On June 24, 1943 the LST's, LCT's and LCI's sailed from Arzew, made a rendezvous off Tunis June 27, 1943, and sailed from the Bizerte area July 8, 1943.

All plans and orders in connection with this operation were kept in a locked room under guard to which only officers classified for the purpose had access.

#### UNLOADING

On "D" day, July 10, 1943, Task Force Kool was directed to disembark at the beaches near Gela, Sicily. At this same time those elements of the Division of Task Force Dime were unloading on the beaches near Licata, Sicily.

At Gela, on receipt of orders to land, information was received from the Naval Command that LCI's were at that time in cruising formation and not the planned landing formation. It being impractical to weigh anchor, maneuver out to sea, and assume the proper formation, it was decided to disembark the 18th RCT on the LCI's from the cruising formation of the ships and reorganize troops into attack formations on the shore. This situation caused considerable delay.

When orders were received to debark Kool force, the order included a directive that the Naval Commander would designate suitable beaches in the Gela area. Certain 1st Infantry Division beaches were indicated as satisfactory and upon receipt of this information command reconnaissance parties were immediately sent ashore to make arrangements for assembly areas, routes from the beaches, and the necessary guides. Later, information was received from the Navy that the beaches given as satisfactory were suitable only for certain types of craft and that the bulk of the force would land at different beaches. This change was transmitted by radio to the Kool commander ashore who made the necessary readjustments, however, debarkation was delayed some two hours by this change.

Battalion commanders were then assembled on the Kool flagship and issued the debarkation orders. The 1st Bn. 41st AIB and the 18th RCT were unloaded prior to daylight on D 1. A few scattered detachments landed on the wrong beaches.



Several instances occurred which materially delayed the landing: small craft were not manned by sufficiently trained or responsible personnel. Numerous examples were noted where boats failed to come alongside in response to orders, land as directed, or return to the proper ship for reloading. There was a decided lack of central control for these small craft. The plan for debarkation of troops and vehicles contemplated the transfer of vehicle crews from troop ships to the EC-2's at sea, to permit landing vehicles with their complete crew. The EC-2's arrived almost a day behind the troop ships and as a result vehicles and crews landed separately which complicated assembly ashore. Landing operations were difficult due to the high surf that was running and the almost continuous enemy action by long-range artillery fire and enemy air activity.

By dark on July 11, 1943 all tanks of the 3d Bn, 67th AR, eight tanks of the 82d Reconnaissance Bn. and the bulk of the vehicles of the 78th AFA Bn. were ashore. During this day the beachhead was counterattacked by elements of the enemy Hermann Goering Panzer Regiment. Throughout the day several enemy bombing and strafing attacks were directed at the ships lying off Gela beaches. Several ships and craft were damaged and one LST and one liberty ship EC-2 (Robert Rowen) received direct hits and burned. The loss of these ships was a severe blow as only a few DUKWs had been unloaded, all other vehicles and cargo were lost.

One big problem in this operation was the clearing of the beaches. Supplies of all types were unloaded all along the various beaches; it took the combined efforts of all the beach groups to clear these beaches and move these supplies to inland dumps. In this task, over the soft sands of Gela beaches the so-called "DUCK" or truck, 2½-ton (DUKW's), amphibious, made its outstanding debut. This vehicle was one of the major factors for the success of this operation—it was invaluable. The operators of these vehicles were not well trained, however, they did aid materially in the unloading.

The LST's were unloaded by the utilization of Navy pontoons which formed causeways from the ramp of the LST then ran about 300 feet onto the beach. Many LST's used the LCT with the sides cut out in order to expedite the unloading. This latter method however is slow and laborious. One important detriment in the unloading of the LST's was the considerable loss of time consumed by the LST's in jockeying into position at the head of the pontoons.

The unloading of the EC-2's was done by unloading at sea into small boats, LCT's, and "Ducks." The major delay was awaiting the return of these craft and the monotonous time spent in positioning them alongside the ship under the proper boom. This unloading was too slow, the major cause was lack of centralized control of the ferrying craft; the operators of these craft were not dependable, they more or less picked out the ship they wished to unload. By approximately D + 4

all vehicles of the Division and attached troops were ashore; supplies took until about D + 10 to be completely unloaded. As soon as the vehicles were unloaded from the EC-2's, the control of these ships passed to Seventh Army.

The landing at Licata was similar in regards to unloading difficulties as for Gela. Here enemy air activity destroyed one LST of the Division.

One important point that developed in the latter action of the campaign was the lack of cargo trucks. This factor, as in Morocco, proved that in any amphibious action involving an armored division, considerable priority must be given to cargo vehicles, especially the 2½-ton truck.

#### RECOMMENDATIONS

The major recommendations in respect to the loading and unloading aspects of this operation are as follows:

- (1) The liberty ship EC-2 is not suited for combat loading of armor.
- (2) A definite system of centralized control for boats and craft must be established and adhered to.
- (3) Boats and craft must be provided with an adequate system of communication.
- (4) Beaches must be cleared early, control in regards to what type of supplies to be landed at designated beaches must be thoroughly planned.
- (5) Operators of small boats and "DUCKS" must be well trained.
- (6) All transports and liberty ships should have permanent naval or merchant marine personnel to function as TQM's assisted by Army personnel. The usual line officers are not capable TQM's nor can they assimilate the necessary technical knowledge in a short period.
- (7) Definite regulations as to the maximum weight limitations aboard LST's must be specified in the planning stage.
- (8) There is a great need for a rapid and simple method of unloading the LST's if the ship cannot beach herself.
- (9) The LCT is slow and should be improved upon in regards to living conditions for military personnel.
- (10) Vehicle crews and vehicles should never be separated.

#### CONCLUSIONS

In conclusion, the over-all results of the Sicilian campaign were a decided improvement over the African landings, yet many of the mistakes made in Africa were repeated in Sicily. It cannot be overemphasized that control is the keynote of success in amphibious landing and that three-fourths of an amphibious operation can be successfully assured by correct and conscientious planning and thorough and detailed training, especially joint Army-Navy-Air Training.

(To be concluded)



CARDED

# THE ARMY IN THE

## (Task Force Furnace)

**This firsthand report on the AGF Task Force Furnace was written from the personal observations of Major Steward, who in July, 1947, visited the task force in Arizona for the purpose of gathering material for a special Armored Cavalry Journal article.**

IN the sun-baked desert of Southwestern Arizona, Army Ground Force members of Task Force Furnace this month completed their job. Since May they had been testing both men and equipment against the extreme hot weather and desert terrain.

A follow-up of Task Force Frigid, which tested men and equipment in the extreme Arctic cold at Fairbanks, Alaska, and Task Force Williwaw, which tested against cold wet weather on Adak Island in the Aleutian chain, the Army designed Furnace to test the third type of climate that would present major problems to military forces—hot and dry.

Located at Laguna Air Strip, which is 30 miles Northeast of Yuma, Arizona, and near the Colorado River, the task force had a strength of 300 men and officers and was scheduled to close its tent city by September 15.

Selected because of its hot and dry climate, Laguna Air Strip was considered by Army Ground Force experts to be the most suitable site in the United States for these particular tests.

Task Force Furnace officers have high hopes that, when tests are evaluated and final reports turned in, there will emerge improvements on tanks that may be called upon to fight in the desert at some time in the future, that the guns, clothing, and rations for desert use will be improved.

Results of preliminary tests that have not yet been evaluated in their final form, have proven satisfactory in the most part, according to Lieutenant Colonel Walter B. Richardson, Furnace commander.

"Most equipment tested here in the desert of Arizona has stood up remarkably well," says Colonel Richardson. "The tests have been well worth the Army's investment."

As to the purpose of Task Force Furnace, Colonel Richardson said, "We are looking for general serviceability of equipment and physiological effects on the men. A tank is no good if the crews can't stay in it."

Charged with testing the equipment at Furnace were test sections from three of the Army Ground Forces' four boards. AGF Boards No. 1, 2, and 3 were represented with full-time staffs.

AGF Board No. 1 test section, headed by Major Thomas J. Bishop, tested signal equipment common to artillery and airborne equipment. One item of note checked at Furnace by this board was a new and lighter type radio for forward artillery observers. This radio has an average range of about six miles, however, it actually has reached a range of 11 miles on cloudy days and nine miles at night. This Board section also tested an infra-red airborne beacon, which is visible up to about two and one-half miles.

Another Board No. 1 item tested was the Helicopter XL-13 (Bell). It underwent motor heat and weather tests to see how it is affected by high temperature and sand. So far, after tests, it operates about the same in the extreme hot weather area as it does in a temperate zone. However, because of the dust it needs a little more maintenance than normal. The Helicopter was also tested for possible use as an artillery observation plane.

Directed by Major Richard J. Grondona, the test section of AGF Board No. 2, the Armored Board, had 29 projects that it tested at Task Force Furnace. Tests conducted under this board's supervision were concerned with the general serviceability, comfort, and ability of armored vehicle crews to operate in extreme hot weather.

Armored vehicles were operated through the hottest period of the day (11 a.m. to 5 p.m.) without either men or vehicles breaking down. Crew members spent as long as five continuous hours in a tank without becoming physically exhausted.

Special tests on suspension, wheels, tracks, sights, periscopes, telescopes, compasses, and mines were conducted at Furnace by the Board No. 2 section.

Temperatures inside the tanks in the Arizona desert averaged around 125 degrees above zero in tests conducted. At this high temperature lubricants held up well. One of the problems encountered with tanks in



# DESERT

by  
Major Hal D. Steward\*

the tests conducted was the difficulty of working on them after they have been exposed to high temperatures for long periods. Because metal retains heat it is necessary for men to use gloves while working on the tanks. The type of glove now used is not always satisfactory because it restricts the movement of fingers in detailed mechanical work.

AGF Board No. 3 test section under the supervision of Lieutenant Colonel Clifford L. Woodliff was primarily interested in testing individual equipment and infantry weapons against the extreme heat. This Board tested about 50 items which included: food containers, mess trays, new type of Lister bag, rations, T-shirts, new combat boot, new type tropical helmet, new fatigue clothing, bath unit, mobile laundry, ice cream plant, kitchen tentage and truck, modified M-1 rifle, 60mm mortar with trigger, new 81mm mortar (with sectional tube and loose base plate that comes in two sections), new heavy machine-gun tripod with recoil mechanism, and many others.

The soldier's uniform at Task Force Furnace consisted of a T-shirt, nylon or herringbone twill trousers, and a mechanic's cap. This uniform has proven so far to be the most satisfactory for the terrific heat and sand of the desert.

As part of the soldier's "desert uniform" of the future, a new three-ounce nylon fatigue uniform and tropical cleated boots with canvas "breather" tops were tested. Some of the Furnace soldiers also tested an "airflow" tropical helmet. Shaped like a Chinese coolie's headgear, it is made of canvas and protects the back of the neck.

Oddest test items observed at Furnace were two Canadian Snowmobiles that were sent by the Canadian Army for tests in desert sand and heat. Similar in purpose only to the U.S. Army Weasel (the reconnaissance tracked vehicle that performed so well in the Arctic), these Snowmobiles are being tested as the possible solution for an all-purpose, all-weather Army vehicle.

Contrary to what many persons would think, cases of sunstroke or heat exhaustion at Furnace were nonexistent. The general health of the task force was excellent, with only about 10 per cent (normal) of the command reporting on sick call for minor illnesses and injuries. No cases of snakebite were reported in the rattlesnake and gila monster infested desert.

Scientific studies were made to determine how the hot dry climate in Arizona compared with the information already known on the effects of hot weather to men. Doctor Robert W. Clarke, a civilian physiologist, who is assigned to AGF Board No. 2 at Fort Knox, Kentucky, conducted the tests.

"Temperatures would have to go much higher in the Arizona desert climate before large-scale human physi-

cal failures would amount to anything," said Doctor Clarke.

It is also the opinion of Doctor Clarke, that marching soldiers cannot hike in the hot desert without water for more than four continuous hours. After that they would begin to stagger and fall because body fluids exhaust rapidly and dehydration proves fatal unless quickly corrected. It has been estimated by Furnace experts that the average soldier assigned to the task force drank about eight to nine quarts of fluid a day. About 90 per cent of this fluid escaped the body through normal perspiration.

Doctor Clarke also stated that, with the proper amount of fluid, tank crewmen in their vehicles could go all day under the burning sun at temperatures averaging around 115 degrees above zero without losing any great degree of efficiency. Water of a temperature about 60 degrees is considered best for drinking by persons operating in the extreme heat. As a rule, the drinking of ice water in the extreme heat is considered injurious, however, it didn't seem to have any ill effect on the Furnace soldiers. No one became ill enough from the drinking of ice water to be hospitalized.

The M-44 armored personnel carrier with a full load of men (27) might generate in two or three hours enough humidity inside the carrier from body moisture to be dangerous in extreme hot temperatures. This, however, is still just a theory.

Water for Task Force Furnace is carried in pipes above the ground from the Gila Canal, which is located about four and one-half miles from the main camp. During the day the water becomes so hot that it is impossible to use it for bathing. At times it reached a temperature of 130 degrees in the pipes. Since 95 degrees is about the normal temperature for bathing the soldiers had to wait until the water in the pipes cooled in the evening before taking a bath.

The highest air temperatures recorded at Task Force Furnace during its operations was 121 degrees above zero. However, the sand temperature at times reached near 150 degrees.

A somewhat lighter-than-standard diet has been found advisable in the heat. Experts estimate that a diet of about 2,400 calories a day per man would just about fill the bill. And this diet should consist of lots of fruits, fluids, vegetables, etc.

Experiences of Task Force Furnace soldiers will result in better ventilation for the many vehicles of the armored force, cooler tents, cooler drinking water from Lister bags made of porous material that lowers temperature by increasing evaporation, and many other improvements that will make the operations of military units more efficient in the desert wastelands that generate terrific heat.



CARDED

# JUNGLE FIGHTING

*by Major R. L. Templeton\**

**Major Templeton, a former 1st Cavalry Division officer, writes of his experiences in jungle fighting and training. In this article he offers much good advice on fighting in the jungle. "Once you start your attack, try to take all the ground you can the first day or take the complete island, because once you dig in for the night, you will have the enemy behind you as well as in front of you and will delay the attack the following morning," he counsels. Many valuable hints on military technique in the jungles are included here.**

JUNGLE FIGHTING to some people is just another word, but to the millions of American soldiers, who had to spend one to three years in the tropics fighting the Japanese, because of their greed for a larger empire, that name will live with them forever, because of the hardships they had to endure and the mark it left on their bodies from one form of disease or another.

When the 1st Cavalry Division was alerted for overseas shipment in early 1943, we knew the Pacific was our destination, and tried to picture in our minds what we were in for. We could remember the movies of the beautiful islands, with clean sandy beaches and beautiful bronze girls swimming in the surf, but we knew it would only be in vain, to expect to see all of that.

We could also remember the hot summer on the Louisiana maneuvers, all of the swamps, mosquitoes, the heat. We thought then that nothing could be worse. But after reaching Oro Bay, New Guinea in December, 1943, after spending the preceding five months in camp near Brisbane, Australia, we knew we had seen the last of civilization. We saw things that we never dreamed could be so bad. First of all was the climate; we couldn't move 30 yards without being soaking wet

from perspiration. Next was the mosquitoes, which were responsible for us having to stay fully dressed from daylight to bedtime. The thick growth of trees in the swamps that surrounded our area, cut off what little sea breeze that could blow our way, and our only complete rest was to put down our mosquito bars around our cots, strip off and hope a small breeze would come by.

After getting our training camp set up, our real job was just about to begin, that was spreading oil over the swamps, down small ravines to kill as many mosquitoes as possible. We found that mosquitoes could breed in the large Kuni grass field and in some areas the grass grew from nine to 12 feet in height, so that meant cutting and burning large areas. Most of the hard jobs such as that, native details would do, and we were certainly thankful, that they were on our side when jobs like that came up. We still had the job of supervision, but for cigarettes, chewing tobacco or candy, they would do anything; and it was a lot of fun trying to speak to them in their language. Before long, they took over the job of spraying the swamps for us, so we could go ahead with our training. The thing we hated most, was having to stay in uniform all of the time, except when bathing or at athletics, and at night we

\*Former 1st Cavalry Division Officer.



had to sleep under mosquito bars. We had to check the men during the night, to see that all mosquito bars were down, because the mosquito bar cuts off what little wind there is at night, that makes it awfully sultry and everyone knows how hard it is to stay covered up on a hot night.

Our training started with road marches of three to five miles, strip pack, through all types of terrain, and gradually increased to 10 miles with full packs and all weapons. We found that early in the morning or late in the afternoon was the best time to do anything for any length of time.

Firing mortars and machine guns on our makeshift ranges, was hard to observe from the firing positions, and the only way to do it with any accuracy was to put the observer up in a tree, behind the gun positions or up forward where he could observe the bursts. But during our training we placed our observers in trees behind the firing positions for safety precautions.

Two months after arriving in New Guinea, we were alerted to be ready to leave for our first combat by 7 A.M. the following day. We knew that was awful short notice, but by working all night we were ready and waiting. We really didn't know what to expect, but as I look at it now, it was just like playing your hardest opponent in football; you are nervous as the devil waiting for the first whistle to blow; some people wet their pants, others can bite a nail in two, but I think the majority of us did both.

In the early hours of March 4, 1944, we landed in the Admiralty Islands. The beach had already been taken three days previously by elements of our Division. After getting ashore we were certainly glad for our training we had in New Guinea, because we were now in a position only three degrees south of the Equator and plenty hot. By noon of the same day we had relieved a front-line squadron and our unit was to be the lead element of the attack in a day or so.

Our first night of combat was a night of many memories, for darkness in the Tropics comes very early, usually we started digging foxholes for the night as early as 4 P.M., because any time after 5 P.M. it starts getting dark and the Japs come out to play for keeps. The enemy learned early in the war that the American soldiers did not do any moving at night, so they felt free to do as they pleased. During the daylight hours the enemy would try to locate the positions of our machine guns and at night they would come creeping up either to throw a hand grenade or knife the gun crews. They were very tricky at the trade, for they would draw attention in one sector of our lines to make everyone start firing, and during the noise of the shooting they would slip in on our front lines or rear areas.

The Jap soldier as a whole was a good individual fighter. If he ever penetrated our lines at night he would take to the trees like a monkey, and observe what was going on behind our lines, during daylight

hours, learn where the command posts were located and where our telephone lines were set up, and during the night they would cut telephone lines and knife anyone who would sleep out in the open, which it was very seldom that anyone had the nerve to do.

Our first few nights of combat we got very little sleep, because we heard so many tales of what the Japs did to the troops we relieved. It seemed to us, that as soon as darkness came the Japs took over and just walked around at will, but we soon found out that it was not as bad as it sounded, and some of us could get some sleep at night, if we could trust the other fellow to stay awake. After some time we found it better to put four men together at night instead of two, because of all the usual jungle noises, with one man awake he would be awaking the other man to show him something that was moving in the black of night; so we made it two men awake and two men asleep and it worked out much better.

In our few Banzai charges by the Japs, some occurred during the daytime, the Japs would come running and screaming toward our front lines in large groups, and would give away their positions in plenty of time for our men to man their guns, and shoot them down as they came. During the attacks the Jap soldier seemed to be doped up or drunk, because after the attack we would inspect the bodies, and some would only be armed with wooden sticks with bayonets tied on the end. We learned from actual experience, that we were fighting a man who wouldn't surrender and would stop at nothing, no matter what the odds would be against him.

In jungle fighting against the Japanese, there was no natural terrain feature you could use and say they can't penetrate, because many times, we would use an impassable stream or large swamp as flank or rear protection, and that would always be the way the enemy would come. They would float down streams in groups of four with a log as their support, and in the supposedly impassable swamps they always had a trail, even if they had to wade in it up to their armpits.

In the early part of the war in 1942, when the small American forces and Australian forces pushed the enemy back over the Owen-Stanley mountains in Southern New Guinea toward Buna on the eastern shore line, every bit of equipment had to be carried on the man or pack animal. They carried pack artillery, ammunition and some supplies. During the rainy season it made the mountain crossing twice as hard, because the only crossing was by trails which were generally cloud-capped all day long, and the mountain range rose to approximately 10,000 feet in height. Any resupplies the troops expected to get had to be by air drops. We were glad to have been able to read all this information beforehand because we were in the same predicament now, as the only supplies we could depend on now was by air, and that was three times a week with a flying fortress, with weather permitting.



The air drops didn't last long, for within our second week our supply ship with the remainder of our division arrived, and we finally got a rest and something to eat besides "K" ration. Don't get me wrong, that is a good emergency ration for a few days, but a couple of weeks of the same thing, we could hardly eat it after that.

After a couple of days rest and telling all the newcomers all of our tales of woe, we moved out to take the largest island in our group; but before we could do this we had to capture a couple of small islands to the north, so our artillery would have positions to support our landings. In taking small islands, it is much more difficult than taking a large one, because the enemy can see you approaching miles away, and that puts them completely on the alert. Usually all the small islands have coral reefs surrounding them, with only one entrance through the reef, and that is the way the enemy prepares his defense in a very excellent manner. But usually his defenses were in depth the length of the island, and not all of his gun positions could place fire close to the entrance through the coral reef, or on the beach where we had to land. That way we suffered very few casualties and always got a good foothold on the beach, before we launched our main attack. Once you start your attack, try to take all the ground you can the first day or take the complete island, because once you stop and dig in for the night, you will have the enemy behind you as well as in front of you and will delay the attack the following morning. During the nights the Japanese do a lot of movement, they infiltrate, they float logs and swim around your front lines and cause confusion and one or two snipers in your rear area can sure cause an awful lot of delay.

In taking the largest island in the Admiralty group, which was Manus, approximately 50 miles long and 20 miles wide, and having a poor road network, our division established a main supply dump for each Brigade, and we worked the island over by patrolling, from platoons up to troop strength; usually the patrols had to work at such great distances they had to take supplies to last them from one to two weeks duration.

Not knowing the country or how accurate our maps were, it was hard to estimate how long it would take a patrol to travel a known distance, because in the center of the island there was a long mountain range, which all the trails seemed to cross at one place or another. After a few days of mountain climbing we found it was just as strenuous descending the mountain as climbing it, because, it seemed to rain every day, and made the footing bad and slow, especially for the men that were carrying rations and heavy weapons, so traveling across country and on trails you could only go as fast as your slowest man could make it, and taking two to three short halts every hour. Trying to keep on the alert all the time and go up or down a slippery trail is tiresome and strenuous on men, and the only flank security you have is the men behind you in column

looking out into the underbrush which is shoulder high, and that made it easy for the Japs to set up ambushes. You never know you are being ambushed until you are fired on from more than one side, and all you could do, when you could expect help real soon is to dig in and fight, otherwise you would have to withdraw and call for artillery fire to drive the enemy out, and then move on and try to catch him before he could dig in again.

We never worried about prisoners, mostly because the Japanese soldiers were instructed never to be taken alive, and we didn't care about taking them anyway; because that meant taking some of our much needed men to watch them. Along at the last of the campaign prisoners were needed so bad, that our division was offering furloughs to Australia for any prisoner taken alive, and on top of that there were very few prisoners. The prize story of the campaign was as follows: A patrol of squad strength found a starving Jap while they were returning from a patrol, and the Jap was so far gone that he couldn't walk. The men made a stretcher out of their poncho and a couple of rifles and started carrying the prisoner back, and were talking about what they were going to do in Australia on their furlough. After carrying the prisoner about six miles over slippery trails and getting him to camp where he was turned over to the S-2 for interrogation, the S-2 in turn called the medical officer over to inspect the prisoner because he was unconscious. The medical officer, after a couple minutes check, told the very happy patrol that their prisoner had died en route to camp. From that day until the men went home on rotation a year and a half later they never tried to bring in another prisoner.

On some distant patrols, it was necessary to take them by small boat to a location many miles up the shore line, where they in turn would establish a ration and ammunition dump and patrol from it. Within a specified time the boats would come back and pick them up, the patrols that went out on missions of that sort, would always have radio communication back to the Regiment for any emergency.

After the Admiralty campaign was closed and we went back to garrison duties, drilling, inspections, and training our kid replacements that were coming in, we gave two patrols a single mission, of traveling across country parallel to each other to a large hill about a mile inland. They were to establish an outpost and gain contact with each other, the old patrol leaders thought it was going to be quite simple until they started across country. After the first 30 yards, they had to start cutting their way through the underbrush and winding around to get the best footing, and also trying to maintain their direction of march and estimate how far they had traveled. After an hour and a half of cutting and wading through mud up to their knees, the patrols radioed back that they were in position but couldn't establish contact with the opposite patrol, so each patrol location was put on a map by a



team of two officers that followed each patrol, and at the critique we showed the patrols that they had only gone halfway, and were twice the distance away from each other as when they started. So that is why our patrols would follow the coast line as much as possible or well defined trails. If that hadn't been done, we would still be fighting somewhere in New Guinea or the islands thereabouts.

In September 1944, we prepared for the Philippine invasion. New equipment, vehicles and recruits arrived, but what we were wondering most, was where we were to land. En route to the Philippines we started studying the maps of Leyte, Philippine Islands, and the Island of Samoa which was cut from Leyte by a narrow channel. Every day we were briefed by the Navy or Army personnel on their knowledge of the island we were to land on, consisting mostly of the beaches we were to land on, and our objectives the first three or four days and the probable enemy we would run into.

On "D" Day, October 20, 1944, we landed in force South of the beach we were supposed to land on and after advancing inland 300 yards, we started side-slipping to the North to get in our proper position in our area. We couldn't find the main roads that were supposed to run up and down the coast line, and we later found out that the Japanese, months before our landing made the Filipinos cover the roads up, and plant grass and potatoes so the vines and leaves would cover the roads completely, in most cases it did.

"D" plus four or five we stopped advancing and everyone was quite concerned over the navy battle that was going on. We didn't know whether we were to keep fighting or go to the hills like the troops did back in 1941. But the sea battle was soon over and we started moving again and our morale was 100 per cent higher.

Fighting was much faster in the Philippines because of the road network, but they could not stand up long with all of our heavy equipment going over it. The bridges were weak from lack of repair and in most cases the bridges and roads were made for the small carts pulled by the water buffalo, so it was quite a job for the engineers to make a double-lane highway, with rice paddies on each side of the road, and in doing any repair work the dirt and rock had to be hauled a great distance to the location of work.

After progressing halfway across the island we ran into a mountain range which ran the length of the island North and South. By then we knew most of the Japs were on the West side of the mountain in the Ormoc Valley. Our G-2 reports quoted a Japanese captured field order, listing the troops, and direction of attack of their forces to drive the American forces off of the island and into the sea. So to block the probable approaches through the mountains our Division was assigned the task.

Fighting in the mountains that were cloud-capped every day of the week made it hard to get used to. At

least two days out of the week the sun would shine and then it would rain the remainder of the week. We got water by catching it in our helmets or ponchos, but the days it didn't rain which were few, we had to ration our water or do without.

Our supplies and evacuation of dead and wounded was the worst problem. Our rations and ammunition could be carried by amphibious craft, the Buffalo, up to the base of the mountain where we set up a supply dump, but from there on it had to be carried by the men, crossing mountain streams holding onto a rope and then start climbing up 300- to 400-foot slopes. Then the mountain would level off and we would travel down a narrow, slippery razorback ridge, and then start climbing again. Five miles seemed to take us all day, and we were in pretty poor shape to fight after reaching what we thought was our destination.

Evacuation of the wounded was a serious problem, because it took eight men for each wounded man to be carried out on a stretcher. The men had to work in shifts, and be on guard all the time while they were traveling. The wounded would have to be tied down because the men carrying the litters were falling quite often, and they had to slide the litters down the slopes.

The men that would leave with the litters would not be able to return for a couple of days. Our dead, we would bury and evacuate the first chance we had, because the odor would make it untenable around our positions, especially when we had a chance to evacuate them.

After four to six weeks in the mountains our skin looked a very pale white and it seemed as though it was going to peel off any day. The worst part of it, we had to spend Thanksgiving in the mountains, and we knew the troops in the lowlands were eating frozen turkey. They had planned on cooking ours and sending it to us, but it would have spoiled before reaching us if they had, and if they had sent it up frozen we had no means available to cook it, so we settled for some cold "K" rations.

The Japanese tried every way possible to reinforce their troops on Leyte, but our Navy and Air Corps did such a wonderful job, all we had to worry about was the Japs actually on the island.

The Japanese artillery was short ranged but highly accurate and well emplaced. They would usually fire while our guns were firing and it gave the impression to our troops that our artillery was shooting into our own front lines. It was also true with their mortars and small-caliber weapons, and it caused quite a bit of confusion among the front-line troops until the truth was known by all.

After the fall of Leyte in December, 1944, we started reorganizing and getting equipped for what we knew was going to be the largest and toughest battle of the Philippines and that was the battle of Luzon. After being in two major engagements we were just learning how to fight in the tropics.



# "The End Of The German General Staff"

*by Gerd Trenhaft*

IT is too early to place in their proper historical perspective the events which led to the collapse of the German Army. Not for 50 years were historians able to judge the effects of Napoleon's retreat from Russia in 1812, the collapse of the "Grand Armee," Leipzig and Waterloo.

Do not think that by mentioning Napoleon's retreat before Moscow in 1812, I intend to compare this military operation with Hitler's retreat in 1942. To compare Hitler with Napoleon would be a very great psychological mistake in our effort to re-educate the German people. It would mean elevation to the rank of "heroes" of men who were little more than criminal adventurers at the expense of the common people, men who were the most antisocial gangsters of the 20th century. Hitler and his clique took advantage of the world economic chaos which arose after the last war.

Not only did the "Revolution of Destruction," as the former President of the Danzig Senate, Hermann Rauschnigg, called the Nazi epoch, bring a whole generation destruction, but the German Army, which compared with the British or any other European Army, had the shortest but most successful tradition, was brought to moral and political disaster by the actions of criminals in its own ranks. The destruction of the Wehrmacht is certain; but some questions remain; How far did Nazism succeed in infiltrating its ideology into the 200 years old Junker caste? How was it possible that men like Gerd von Rundstedt, Manfred von Brauchitsch, Blaskowitz, von Leeb and many other professional strategists, supported a gang of political adventurers? Why was the revolt of the German generals on the 20th July, 1944, a failure? Did the military leaders of Germany realize too late the danger of the Reich's strategical position. Members of the Junker-class became not only traitors to their own ideas, but even toward their fellow members.

As I said before, it is too early to write about current

events as if they were but history. A short survey of the development of the German army from 1918 to 1945 may give us some indication of the answer to these questions.

The story of the German army, from defeat to defeat, can be divided into three main chapters. First, from Versailles to Hitler. Second, from 1933 to 1939. Third, from 1939 to 1945.

The period from Versailles to Hitler has already been widely discussed in books, pamphlets and leading newspaper articles. I do not want to stress the importance of the military events inside Germany during that period, which were all, more or less, of a political nature. The names of personalities who were at that time unknown to the German and foreign public are, today, of greater interest as they have not only reappeared as commanders on various battle fronts, but some of them played an important part either in the surrender scheme of the German armed forces, or in the unsolved riddle of the Hitler plot on July 20, 1944.

The Allies thought that in view of clause 160 of the Treaty of Versailles, which said . . . "The great German General Staff and all similar organisations shall be dissolved and may not be reconstructed in any form; . . ." German militarism would not reappear again. Soon after the Treaty was signed, the old German General Staff transformed itself into various societies and student leagues like "Verein Hirschmann" or the "Ludendorff Office." Under the cover of sport clubs and civil aviation the foundation of the future "Luftwaffe" was laid. Against the Treaty of Versailles Germany formed secret schools for military science. Their first appearance in public was in connection with the Nazi putsch on November 9, 1923.

Munich became the headquarters of all nationalistic elements of Germany and of the former German division commanders of the first world war. The commander of the 7th Bavarian Division, von Lossows, had formed his own General Staff, to which Major von



Hosslein, Dollmann, Rudel, Halder, and Waver belonged. Waver became later the General Chief of the German "Luftwaffe"; and Captain Ernst Roehm, became later leader of the Storm Troops; Major Ernst, Major Meyer and Captain von Krausner played a special role inside the new General Staff. At the same time General Major Franz Ritter von Epp, with his personal adjutants, Major Hanneken and Major Huehnlein, dealt with political and special affairs inside the General Staff. Later, Major Hanneken became the Military Governor of Denmark. The survivors of the 7th Bavarian Artillery Divisional generals, Hirschauer, Zenetti, Heilingbrunner, Kieffer, Ritter von Pohl, Raithel, von Axthelm and Neuffer became the leading personalities inside the German "Luftwaffe." Only Jodl and Leeb, who served in the same regiment, stayed with the army. The commandant of one of the first infantry schools was Major General Lindemann, and his two assistants were Major General Tieschowitz von Tischowa and Colonel Leupold. Through Colonel Rossbach these three men kept close contact with the newly formed Nazi Movement in Munich. After the failure of the Nazi putsch in November, 1923, these infantry schools were moved from Munich to Dresden. At the beginning of 1926 new teachers lectured at the school. These new teachers were Major Freiherr von Weichs "Ober" Lieutenant Freiherr von Hammerstein-Equard, later chief of the German General Staff; "General-Oberst" Straus and von Kuchler, Major von Cochenhausen, later head of military science in Germany; "General-Lieutenant" Dittmar and Major Thomas. Various commanders of the German army groups, who became well known during the war, as early as 1926 gave lectures in these schools. Three of the most famous lecturers were Colonel List, Major-General von Falkenhausen and Lieutenant Schroth. The latter was one of those who took part in the attempt on Hitler's life on July 20, 1944. General Dietl and Field-marshal Rommel, were the specialists on mountain warfare.

Going back again to the years 1920 to 1923, when the Feme-mord of various "Freicorps" became a well-known weapon inside Germany against political opponents, we find another list of men who appeared later on the German General Staff, and who took a part in these actions. "Ober-Lieutenant" von Aulock, the brother of the defender of St. Male, Colonel Freiherr von Blomberg, Major Buchdrucker, Major Fedor von Bock, Captain Dietl, Captain Fromm, "Ober-Lieutenant" Faupel, Lieutenant Jaschonnek, who later became General Chief of the "Luftwaffe," Captain Ott, who later became German Ambassador in Tokyo, Major Lindemann, Major-General Ribbentrop, the father of the former Nazi Foreign Minister, "Ober-Lieutenant" Wetzell, who became the chief editor of the "Militarisches Wochenblatt." General von Schleicher and Colonel von Stulpnagel had to appear as witnesses before an Investigating Commission dealing with various Feme-mords. The assistants of General

von Schleicher were General von Bredowin, who was killed with him on June 30, 1934, and "General-Lieutenant" Marcks, who died in the Normandie fire, and Generals Manstein and Lindemann. The late "General-Oberst" Rudel, flak specialist, and Count Sponek, specialist of the airborne troops, were two less well-known members of the German War Office. Long before Hitler came to power in Germany, in a certain "Schlieffen League," members of the former General Staff lectured in special courses on science of modern warfare. General Guderian lectured on tanks; Nehring on antitank weapons; and Fellgiebel on the corps of signals service in wartime—later he played a doubtful role in the anti-Hitler plot in 1944.

#### SECOND PERIOD OF DECLINE

Before dealing with the second period of the decline of the German General Staff (from 1933 to 1939), I want to stress another breach of the Treaty of Versailles which received less notice inside and outside Germany—it is the article 179 of the Treaty which clearly stated that no German citizen was to be allowed to serve in any foreign army except in the French Foreign Legion.

Shortly after the end of the first World War a Japanese Military Commission visited Germany to engage military contractors for the Japanese army. In addition, South America, North Africa and China became the training ground for the ex-members of the German General Staff. Not only was North Africa of vital military importance for the German General Staff, but the German officers were interested in the raw materials which they found on the new battle ground. Under two former members of the Ludendorff Office, Colonels Nicolai and Bauer and Captain Damnitz and Lieutenant Ehlermann, the Germans took an active part in guerrilla warfare against French occupation between Tibu and Cameroon. In the well-known Abd-El-Crime revolt against the Spanish Government, "Ober-Lieutenant" von Scheele took an active part. The same German officer was in charge of the first German troop transport to help Franco against the Spanish Government. The German High Command paid special attention to the developments in South America. General Faupel, who later became German Ambassador in Madrid, was before 1914 a Major at the Argentine Military Academy. After the failure of the Kapp-Putsch, Faupel returned to Argentina. During the operation in the Gran-Chaco conflict, Major-General Hans Kundt became an important member of the Bolivian General Staff, together with Captain Ernest Roehm.

Professor Hugo Fernandez Artucio, professor of Philosophy at the University of Montivideo, gave the following list of members of the German High Command who were in Argentina: Commander General Gunther Niederfuhr, Commander Major Otto Kriesche, Chief of the General Staff, Major Victor Schubert, in charge of the Technical Department of the



Army, Major Walter van Stecher, and in charge of sea and air operations was Captain Dietrich von Niebuhr.

The next field of operation for German officers was China. Hitler's personal pilot, Ritter von Greim, was instructor at the Air Academy in China. Here again we find former members of General Ludendorff's staff. Colonel Kriebel was in charge of the illegal distribution of munitions. Colonel Bauer, head of a German Military Commission, tried to reorganize Chiang-Kai-Shek's army. The man who was Governor-General of Belgium and North France during the second World War, Colonel General Alexander Ernst Alfred von Falkenhäusen, played an important part in China's struggle against Japan till 1938. In the German army's process of penetration inside foreign armies, the "Luftwaffe" took an important role. Long before Franco became the Caudillo of Spain, General Faupel and Haushofer, and the former Director of the German "Lufthansa," later Field Marshal Milch, were working for the spread of influence in Spain which was to become a tool in Germany's forthcoming conquest of South America. In 1930, tourist planes were going to Madrid and Barcelona three times a week. A certain Count Beroldingen organized a special exchange between the "Lufthansa" and the Italian Fascist Air Society, "Ala Littoria." Together they prepared the strategical plans for a supply route to Spanish Morocco, which came into action in July 1936, when Franco, with German and Italian help, began his revolt. These events were among the first fruits of Hitler's Chancellorship.

The second period of the destruction of the German General Staff can be summed up into three specified dates.

The first event was on June 30, 1934, the well-known "night of the long knives"; the second February 4, 1938; and third, shortly following the first military occupation of Austria on March 11, 1938.

The exact role of the Reichswehr in the rise of the Nazi party to power is still a controversial question. Unlike General von Seeckt or General von Schleicher, none of the Reichswehr leaders had political aspirations, not even General von Fritsch, who in February, 1934, took over the Heeresleitung from the despondent Hammerstein. Fritsch was known in the army as a particularly close disciple of General von Seeckt. The Generals were only too satisfied to leave the work of political reconstruction to the Nazis, assuming that they would always have the power to interfere whenever necessary. It was a most dangerous delusion, and it left them with nothing to fall back upon if the abuses of the new regime outweighed its usefulness.

The first victory of the German General Staff over the S.A. (Storm Troop) ended in the blood purge on June 30, 1934. Captain Roehm's ambition to use the S.A. as the foundation on which to extend the armed forces presented an obstacle. Had Roehm been willing to work under von Beck, who was at that time chief of the German General Staff, Beck would have taken him on at once. What disturbed Beck and the rest of the

General Staff was that this gifted militarist wanted to organize a gang of assassins and that he preferred such an organized gang to the army.

The pyrrhic victory of the General Staff over the S.A. was only a temporary one. Ten years later, on October 1, 1944, Himmler abolished paragraph 26 of the German Army Law, which stated—"That no member of the Wehrmacht is allowed to belong to any political organization."

#### HITLER ALLIANCE WITH ARMY

In 1934, Hitler decided to sacrifice the radicals and make an alliance with the army. It sounds like historical irony that the men who supported the purge in 1934 became, 10 years later, the victims of an idea which they thought to have stamped out during the blood purge in 1934.

Political and military events inside and outside Germany might have taken quite a different course if the plans of General Schleicher, who had supported Captain Roehm's idea of creating a peoples army by incorporating the S.A. into the Reichswehr, had succeeded. During this June crisis of 1934, two mysterious foreign powers, also supported Roehm's plan. As I was in close contact with the Austrian Embassy, which, at that time, was situated next to the German War Office, I learned that Italy and Hungary had given the S.A. their moral support. After the complete failure of their plans, the Italian Ambassador, Cerruti, was transferred from Berlin to Paris.

With the death of the German Reichspresident, General-Field Marshal von Hindenburg, four weeks after the June purge, the German General Staff lost their first advantage by accepting Hitler as the supreme leader of the armed forces and by swearing a personal oath of allegiance to him. The General Staff surrendered the political control to the Nazis in return for autonomy in their own sphere; and during the next three years, from 1934 to 1937, von Fritsch methodically organized the ground he had won by exchanging the political control for autonomy in the development of the Reichswehr. He arranged that the Nazis should be excluded, as far as possible, from the command in the new army. Instead, he called upon the officers of the old imperial army, who under the republic, had swelled the ranks of the Steel Helmets and other organizations.

Hitler was not long in sensing danger to his regime in the maneuvers of von Fritsch and other reactionary Generals. He did not intend to fall into the same error as the Republicans, who could not free themselves in time for the bondage of the Reichswehr. Since the army had driven out Captain Roehm, it had become too strong, and had to be weakened.

The marriage of the German Minister for War, Field Marshal von Blomberg, to Fraulein Eva Grun, a typist in the War Office, and his resignation from his post for health reasons, gave Hitler a splendid opportunity of discrediting the Marshal in the eyes of the



reactionary elements of the High Command. Himmler had already collected a secret dossier about the past of Eva Grun. The Division R.W. (Reiswehr) of the Gestapo, which since February, 1934, had been engaged in close investigations of the private lives of all German generals and other high officers, had known that Field Marshal von Blomberg was associated with a young woman. As soon as General von Fritsch saw the dossier, which had been secretly sent to him, he called for an important conference at the War Office of all commanders of military districts in the Reich. The following list of these commanders is of great interest, as the names of some of the men concerned appeared in connection with the Hitler plot on July 20, 1944, or some of them played an important part in the second World War. The meeting opened in the conference room of the German War Office. Herr von Fritsch presided. In addition to him and to Chief of Staff Beck, the following Generals were present: Generals von Rundstedt, Ritter von Leeb, von Beck, von Brauchitsch, von Kuechler, Blaskowitz, List, Geyer, von Kluge, von Reichenau, von Kleist, Dollmann, Knochenhauer, Ylex, Kress von Kressenstein, Weichs, Lutz, and Major Alfred Jodl, who acted as receptionist—however he must have found way to get in on the last part of the meeting.

Fritsch accused Blomberg, at the conference, of having become too soft. As I said before, Fritsch wanted to eliminate the influence of the Party and the Party members in the army. Therefore, Blomberg, who had been given the nickname, "Hitler-Junge Quex," must go. Further, the struggle for the Luftwaffe between Goering and Fritsch, had been raging behind the scenes since 1935. Hitler and Goering wanted to retain control of the Air Force, and General Fritsch saw no reason why the Luftwaffe should be commanded as a separate unit from the Army.

After various interviews between Hitler and Fritsch, and the exchange of various memoranda between the General Staff and Hitler, the real dividing line between the army and Hitler was marked on February 4, 1938, with the dismissal of Fritsch. Six months later General Beck, Chief of the General Staff and next to Fritsch, leader of the opposition, left after the Munich crisis because he had not been able to have an order enforced forbidding officers on active service to be members of the Nazi party. General Brauchitsch replaced von Blomberg, and General Halder replaced Beck as Chief of Staff.

The General Staff protested vigorously, four weeks later, over Hitler's decision to go into Austria. But once again Hitler said, as in the case of the reoccupation of the Rhineland, 1936, to the German General Staff—"Gentlemen, it is your business to take the action I direct. It is my business to direct only action which will be successful. I can assure you now, as I assured you on the reoccupation of the Rhineland, that this time France will not move, the British will not move; we can do as we like. . . ." Hitler was right again, and with

two major victories to his credit, he could face his generals with an even more momentous and critical order—to occupy Czechoslovakia.

This above paragraph gives us an answer to the question recently asked by the American newspaper reporter, H. R. Knickerbocker—"How is it that this man (Hitler), who was only a corporal in the last war, could suddenly obtain such an ascendancy over the German Army and in particular the General Staff?"

After the first purge of the Wehrmacht in February, 1938, German propaganda gave out that this was done to purify the German army from political partisanship and make it an instrument of the State. But in spite of the differences between the General Staff and the Nazi party, the amalgamation of the army into the Third Reich was completed by September 3, 1939.

#### OUSTED GENERALS RETURN

The ousted generals returned to their posts at the outbreak of the second World War and after the successful campaigns in France and in the Balkans, even such skeptics as von Bock and von Leeb began to share in the general belief in Hitler's star. For a short period from 1939 until 1941, a certain collaboration between the army and party became visible. Then, after the complete failure of the German offensive against Russia, old doubts were revived. Hitler removed von Brauchitsch from the army, made himself commander on the Russian Front, and started a new summer offensive against Russia in 1942. The offensive ended as disastrously as that in 1941.

Now, the generals did not hesitate to stress at every opportunity that the whole responsibility for the conduct of the war was Hitler's, as Supreme Commander of the army in the field. The result was that more and more generals were deprived of their commands. To the name of Brauchitsch were added the names of von Bock, von Leeb, von Kleist, von Witzleben, von Kuechler, von Manstein, Halder and many others. The successful opening of a second front in Normandy cost von Rundstedt his command, and the allied victories in Italy put an end to Kesselring's career.

W. E. Hart mentioned in his article on "The Revolt of the Generals" two possibilities on which the German General Staff were relying before the opening of the second front. They were: 1. A split between Britain and America on the one hand and Russia on the other over postwar planning, and more important—the immediate coordination of strategy during the second World War. 2. That the Russian communication and Army Service Corps would fail to carry on over twice scorched earth, and thus be unable to supply properly the advancing field units.

The answer to the first possibility was given in the perfectly synchronized operation in the East and West. The answer to the second was written on the wall by the advance of the Red Army.

The first signs of a complete break between a certain circle inside the General Staff and the Nazi Party now



became visible. As early as 1943 a group of generals headed by Halder, Bock and Manstein and supported by Goering and Ribbentrop attempted to put pressure on Hitler to conclude peace with Russia. They were met, however, with a flat refusal from Hitler, who regarded the war in the East a matter of personal prestige and it was another year before the question cropped up again. Now, the General Staff could no longer maintain their years-long attitude of "wait and see." The war on three fronts and the heavy defeats on the Russian front proved that the generals, who Hitler dismissed after their failure to take Moscow, were right and Hitler was wrong.

On July 10, 1944, the commander of "Heeresgruppe" north, recommended a retreat of about 30 divisions who were encircled in the Crimea. On July 13, 1944, Hitler ordered General Lindemann, who was in charge of the German Northern armies to counterattack. Lindemann refused. At the same time Adam von Trott, one of the leading figures in the army plot in July, 1944, returned from a secret mission from Sweden. At the end of June, 1944, von Trott went to Stockholm to get in touch with the allies, to ask them whether the Allies would maintain their demand for unconditional surrender by a government succeeding Hitler after a revolt in Germany; second, whether the allies would be willing to allow such a provisional government a certain freedom of action to enable it to stabilize itself before the allied occupation.

According to the "Dagens Nyheter" newspaper, the Allies were suspicious of these approaches and told von Trott that the German opposition must first achieve something before subsequent action could be discussed.

Three weeks after von Trott's return from Stockholm, the German General Staff tried to play its last card for its own survival, in the attempt on Hitler's life. With the failure of the generals to kill Hitler and his gang, the greatest army purge in German history swept over the whole of Germany. Here are the names of the high officers of the Wehrmacht who took an active part in preparing the attempt against Hitler. Field Marshal Erwin von Witzleben, former German commander in France and Italy; General of the Signal Corps Fellgiebel; General Friedrich Olbricht, second in command of the Home Army, who held all the threads of the conspiracy in his hands; Colonel-General Erich Hoepfner, who was expelled from the Wehrmacht at the end of 1941 for his retreat on the Eastern front; Colonel-General Ludwig Beck, Chief of Staff until 1938; Lieutenant-General von Hase; Major General Stieff; Major General von Treschkow; Colonel G. Hansen; Lieutenant-Colonel G. Bernardis; Major G. Hayessen; Captain Klausning; Lieutenant Count von der Schulenburg; Lieutenant D. R. von Hagen; and Count York von Warthenburg. The following who were shot under sentence of court-martial on July 20, were also expelled from the army, together with the above-mentioned officers: General of the Infantry Olbricht; Colonel Count Stauffenberg; Colonel Mertz von Quirn-

heim, and Lieutenant Haeften. More than 2,300 officers were murdered between July 20, and August 1, 1944.

The names given above are among those which appeared in the first part of my article, in connection with the various Freicorps, and the secret rebuilding of the German General Staff between the years of 1918 and 1933.

July 20, 1944, brought an end to the old military aristocracy, the generals of the traditional Prussian order. The best brains of the Germany army leadership; Generals Rundstedt, Beck, Brauchitsch, Halder, List, Leeb, and many others knew that the war was lost, nine months before the unconditional surrender terms were signed. Nevertheless, a new selection of officers appeared on the military horizon in Germany. The new Chief of the General Staff was Colonel-General Kurt Guderian. Guderian represented the fusion of the Army and Party of the Wehrmacht and S.S. Black Guards. Shortly after July 20, 1944, Goebbels gave Guderian as much publicity as he had allowed Rommel. As far back as 1940, he called the tank expert "Father of the Panzer Division."

The next figure in the aristocracy of Nazi selection was the 53-year-old Field Marshal Walter Model. He was the first of the few high German officers to assure Hitler of his allegiance after the July plot. The Nazi leaders clearly considered him, the natural successor to Rommel, as the most reliable Nazi among the commanders after the army purge. These two army commanders were given great publicity during the last six months of the war.

The following two generals are less known to the public, and therefore their steps should be closely watched, after their release from prisoner of war camp. General Hermann Balck is comparatively unknown. He was one of the commanders at the break-through army at Sedan in 1940, but from then on was entirely concerned with the war in the East. More well known to the commanders of the 21st army group was General Gustav von Zangen. Von Zangen commanded the defense of Antwerp. Another Nazi-minded general was von Kuechler, who took over from Leeb the command of the Leningrad front.

Thus, the twilight of the old Prussian General Staff was followed by the dawn of a new aristocracy of Nazi generals. If these Nazi generals can successfully disappear from the limelight until things have blown over, we can be sure, that in ten, fifteen, or perhaps 20 years' time, their names will reappear on some world battlefield. It is for this reason that I have paid special attention to the names of various Nazi generals in this article. Between 1918 and 1939 we neglected the advice of unknown army commanders of the first World War. If we are going to neglect the movements of former Nazi commanders, it may be the embryo Nazi general staff of the second World War that draws us into the third World War, which will bring the end of civilization.



# German Assault Artillery

CARDED

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Manfred Knayer, a graduate engineer and a World War II German soldier spent the terrible winter of 1941-42 with the German Army near Moscow. After the collapse of the Nazi Army, Knayer discharged himself and walked 400 miles to reach his home. Currently he is employed in Germany as an interpreter. Since 1939 he has been writing magazine articles on motor, flying and military subjects.

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*by Manfred Knayer\**

**A**MONG the several dozens of armored fighting vehicles brought into fight by Germany, there was an outstanding type which kept its value almost unchanged from the beginning to the end of this war. It was the Sturmgeschuetz, the assault gun.

Being a relative to the tank—they even could replace one another—it is not easy to explain clearly the difference between them. Generally, the tanks were to break through the enemy lines, pushing far behind the front, and to fight independently, in great actions.

The assault artillery was to break *into* the enemy defense system and to help the infantry directly by close support. They took part also in smaller actions. Unlike the armored artillery, they advanced with the first infantry lines.

The first model was a three-inch gun behind a steel shield on a caterpillar chassis. They soon were replaced by an all-armored construction of such excellent qualities that not many changes had to be made.

The principal distinguishing mark was: No turret. The vehicle was a successful conversion of the German medium tank Mark III. The short 75mm cannon (three inches), 24 calibers long, was placed in the middle of the front like a bowsprit. Compared with the tanks of 1939, armed with thin one and one-half and two inch semi-automatics, these shells of 12 pounds were a respectable caliber. The initial speed was relatively small, and in 1942, it was insufficient against Russia's heavy tanks. So the short cannon was replaced

by a long barrelled one of double the length, which was able to destroy other tanks in distances of over a mile, not seldom by shooting off their turrets. The overweight of the barrel was compensated by springs, the increased recoil partially was diminished by a muzzle brake.

The missing of a turret resulted in a limited ability to turn the cannon. This disadvantage was not too great. A clever driver turned his whole vehicle almost as quickly as a tank his turret. On the other hand, the construction could be made more compact and more resistible against fire. The weight of the non-existing turret was used to strengthen the armor. It was at the front about two inches, later the double, all welded, sometimes still fortified by a bow tie of suspended spare track links. The flanks later were additionally hooded by so-called armor aprons, about one-half inch thick, against the new high explosive shells piercing the armor not by speed but by detonation. Thus the main armor was protected against this effect. It also was said that these pending plates helped to stop other projectiles by a sort of relaxing resistance. Sometimes they got lost; for repairs of the tracks, they were in the way, but under fire, they were quite useful.

The undercarriage, about 10 feet broad, 24 ft long, rested through torsion springs on six bogies of each side. The first and last crank was connected with an oil filled shock absorber. This gave a smooth running, and wounded often preferred a returning assault gun to an ambulance.

\*German Graduate Engineer.



A 12-cylinder motor of 300 HP permitted a speed up to 25 m.p.h. driving a gear of six forwards and one backwards speeds, followed by a planetoid steering gear. The skeleton tracks, one foot four inches broad, often ran 1000 miles without any casualty.

The crew, four men, called cannoneers, mostly came from other artillery outfits and thus already had been trained to an exact work with guns and where they had got an artilleristic view of the problems. There was the driver, sitting at the left, behind him the aiming (training) cannoneer, then the gun commander, ranking from a corporal up to a captain, and at the right, the loading cannoneer, also operating the 20 watt short-wave station. All members were connected by the interphone.

The observation means were good. The driver observed through a glass armored slit with a variable shutter, besides he could use a binocular, of small enlargement, but of a good field of view, with very small entrance lenses. The gunner aimed through a panoramic telescope. There was the possibility to non-direct shooting, but this mostly was restricted to the other armored artillery units. The commander observed through a 12-power scissor-shaped telescope, looking out of the armor roof like a stalk-eyed snail, besides his normal field glass, which both brought objects very near to him. The want of a small all-round observation turret was in evidence already in 1940, but it lasted almost three years until the improved type got such an eight cornered mirror equipped observation stand.

It was similar with the additional light machine gun. Its necessity for an assault gun had already been mentioned in Heigl's manual of tanks, printed in Munich, issue 1930, but it appeared only in 1943. As in all other tank, the heat sometimes climbed up to over 140° F. Despite these smaller faults, the German assault gun is to be called a successful construction, and it was continuously improved, especially during the terrible winter 1941-1942.

The units of the assault artillery were batteries, consisting each of three platoons, each of six guns. To each gun belonged a half-track ammo carrier, with a trailer, and equipped with a short-wave receiver. The batteries were united in sections and generally assigned to an army or to a division. There were also some special outfits, as the divisions "Hermann Goering", or "Greater Germany" possessing even assault artillery brigades.

The tactical use of the assault artillery gave many chances to faults and mistakes. Many guns were lost on account of insufficient experience or wrong use. When fighting according to their abilities, with deliberate boldness, they were of a high value.

They were a weapon for attack, and sent to the focus of the battle, to the center of gravity in the fight. They were able to break strongest resistance. They had to help the attacking infantry outfits and were assigned or subordinated to them, sometimes for a longer time, mostly from battle to battle.

During the battle, they used to choose their targets themselves and there was no lack of them. First they used to fight their worst adversaries, antitank guns, and tanks. Then they took under fire objects stopping the infantry, which had or could not be destroyed by the artillery: Machine guns, pillboxes, infantry howitzers, trench-mortars, blockhouses, also counterattacking infantry, but that was better left to the accompanying riflemen. In case there was too strong a fire barrage, they sometimes independently drove to the enemy artillery positions if there were no tanks to do so. Even gunboats and ferries were sunk by such assault guns.

As a rule, the gun stopped for firing, going into "firing position" behind a ridge or some trees, bushes or other kinds of cover, even in a barn. Mostly, the driver switched in an advance or reverse speed, with idling clutch ready to advance or retire at once. Sometimes, the commander got out to lead and observe the fire from the gun's flank.

In close fight, the gun could knock down houses and trees including the snipers sitting on them, and roll down barbed wire, guns, and kill men in dugouts by waltzing on them.

Very often, the infantry asked for help against certain targets giving them trouble or which had not been discovered by the cannoneers behind their armor slits. The riflemen could call it to the gun or send a message runner or fire some flares or tracers in direction of that object. The use of wireless for connection had been the best, but it was seldom used. The infantry wavelength did not match their sets, and as many Armies, also the German Army had a certain rate of mental clumsiness.

A clever infantry used to assist such a friend. They used to clear its way from mines and took discovered antitank guns under fire. With spade and pickaxe they lent him a hand to get over tank traps and obstacles and warned him of unpassable mud puddles. They had to protect the gun against getting attacked from the rear by tank crackers.

This joint fighting of infantry and assault artillery demanded thorough preparations. The infantry had to be trained for it. At least before going into an action, it had to be talked over: Ground, enemy, important targets, supply. Very often the infantry commander had no idea how to use these machines, and it could happen that the gun commander refused to do a certain task—if he was of a similar rank. A petty corporal had to try the impossible and to die for Greater Germany.

Such mistakes happened often enough. The infantry captains thought such an elephant could do all kinds of work. But he was not able to pass through swamps—the Russians had a lot of them—nor were they qualified to mop out brushwood territory. To send them into a village without skirmishers, in most cases was equal to a loss of them, by mines or armor crackers. They could hold a position but for short time and soon they were to be relieved by other units.

In defense, the only thing they could do was to



counterattack. To retreat under fire was a dangerous affair. The gun was not able to shoot backwards, and the rear armor was thin. Retreat had to be done using the reverse speed and artificial fog. To dig in a tank up to his chin, as often done by the Russians, is proper only for tanks with a turret. In any case, at least two guns had to cooperate, better more.

The moral effect of these guns, their encouraging impression can be judged only by participants in such a fight. The infantry always was glad to see them and trusted much in them. Always taking care of the doughboys, they were appreciated by them much more than the tanks. It happened that guns, having spent their last round, used to cross near the first lines, to keep up the morale of the infantry. Such a sacrifice is to be acknowledged, but in case such a gun gets hit and breaks down, and burns, the following depression will be worse than the encouragement it caused before.

Towards the end of World War II, on the German side, all was mingled up in a great confusion. Tanks and tank destroyers had to do assault artillery tasks and vice versa, which diminished the value of them at a high rate and is to be considered as a stop gap remedy of limited use.

The idea of the assault artillery is of French origin, apart from some sketchlike proposals of older dates. England developed the tank from the side of the navy, and after the great success at Cambrai, was pleading for the independent use of armored vehicles in great masses. In France, Colonel Estienne had suggested armored motor guns able to go cross country, for close support to the infantry. The tanks even were called "artillerie d'assault" for some time. But in all armies, the use of tanks in smaller numbers and for smaller actions was considered to be not commendable.

The stout German assault gun opened a new period for the armored forces. It carried a gun and an armor as strong as the often discussed French heavy char de rupture 3-C at one third of its weight. Many copies and imitations appeared, all of them conversions of a medium or heavy tank.

Italy built a three inch gun in the medium Ansaldo tank. Hungary changed the Skoda tank of Czech origin into a four inch (105mm) armored howitzer. Similar things went on Allied side. The chassis of the Grant-Lee-Sherman series was used to carry a 105mm and even a 155mm gun. Soviet Russia did not stay back in the evolution. Their famous swift T-34, originally armed with a 76.2mm cannon 30.5 caliber long also was built as an all-armored *samochadnaja ustanovka*—a self propelled carriage armed with an 85mm cannon, 51.5 caliber long, or with a 122mm howitzer, 22.7 caliber long. The KW-II, 52 tons, abandoned its clumsy square tower with a 152mm short gun and became the SU-152 with a 152mm cannon L-29 in its slanted front plate, almost three inches thick. The ship was only three yards high instead of the four yards of her predecessor. An assault gun with an eight inch howitzer is said to have appeared. These guns really could give hell to the Germans.

The Germans themselves constructed several similar war machines. Part of them were called and used as tank hunters or destroyers. The original vehicle could be armed with the regular 105mm field howitzer. Then came the six inch storm howitzer on the chassis of the medium Panzer IV, the six inch infantry gun on skoda chassis, eight and one-half inch mortar and even a 15 inch mortar on Mark VI (Geiger) body firing a rocket propelled projectile of terrible effect. Professor Porsche, the creator of the volkswagen, constructed an almost invulnerable tank destroyer of 70 tons with an 88 piece 71 caliber long in a rear fixed tower. It was easy to govern on account of the electric power transmission.

There were perhaps too great a number of types, and improved and converted and altered types and subtypes. However, the total number was not great enough to make Germany win the war.

The evolution of tanks and antitank weapons will go on, though not so fast as in war times. The armored fighting vehicles will have to get armed and armored stronger and stronger and thus the tank perhaps may be displaced by the robust assault gun.

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# Logistical Coordination In Burma

(October 1944-May 1945)

by Lieutenant Colonel Robert A. O'Brien, Jr.

**The success of the Burma Campaign was the result of sweat and blood on the part of the front-line soldier, but even so, it could not have been brought about without the wholehearted support, untiring superhuman efforts and unparalleled co-operation of the men all along the line of supply. Colonel O'Brien tells the supply story here.**

GENERAL JOSEPH W. STILWELL'S troops had knifed, hacked and punched their way through the Hukawng and Mogaung Valleys in Northern Burma, had retaken Myitkyina<sup>1</sup> on the Irrawaddy in hand to hand combat. They were now in the process of building up, preparatory to debouching into Central Burma, with the mission of recapturing Central Burma as far South as Lashio, and of clearing the trace of the Burma Road<sup>2</sup> thereby re-establishing Allied control thereon. It was a campaign against the battle-ried and jungle-wise Japs, many of whom had seen action in the conquest of Singapore and the Malay Peninsula in February 1942. "Marching over the most difficult terrain under intolerable weather conditions, the Chinese and American forces virtually destroyed the Japanese

18th Division, which had captured Singapore in the Japanese advance."<sup>3</sup> Myriads of insects of numberless species, tropical diseases hitherto known to only a few white men ("The jungles that cover the barrier of the Himalayan foothills are malari-ridden, infested with acute dysenteries and endemic typhus"<sup>4</sup>) and adverse weather conditions were not the only obstacles that confronted General Stilwell (later Lt. Gen. Dan I. Sultan) and their forces.

They faced the most difficult logistical battle of our time and possibly of history. In the words of our then Chief of Staff, General of the Army George C. Marshall, "The mission that the joint Chiefs of Staff had given General Stilwell in Asia was one of the most difficult of the War. He was out at the end of the thinnest supply line of all; the demands of the war in Europe and the Pacific campaign, which were clearly the most vital victory, exceeded our resources in many items of material and equipment and all but absorbed everything else we had. General Stilwell could have only what was

<sup>1</sup>Myitkyina, on the Northernmost tip of the Burma Railway, was the key to the whole Burma campaign. Here was the first available site South of Ledo, Assam, capable of being developed into a base that could support a major offensive. It later became a sub-depot for Advance Section, whose Headquarters were at Ledo, was the site of four major airfields (subsequently developed for B-29 operations and A.T.C. bases for air supply of China), the terminal for a four-inch and a six-inch pipeline, the site of the largest bridge over the Irrawaddy North of Mandalay and the head of the Burma Railway. Naturally American and Chinese Headquarters were located here at the beginning of the campaign.

<sup>2</sup>A great tribute to Chinese resourcefulness, constructed largely by hand labor a few years previous, after the Japanese had effected the blockade of all the major East China ports.

<sup>3</sup>General Marshall's Report, *The Winning of the War in Europe and the Pacific*, p. 58.

<sup>4</sup>*Ibid.*, p. 57.



left and that was extremely thin. He had a most difficult physical problem of great distances, almost impassable terrain, widespread disease and unfavorable climate; he faced an extremely difficult political problem and his purely military problem of opposing large numbers of enemy with few resources was unmatched in any theater."<sup>5</sup>

The battle could be won only if superhuman efforts were made by all concerned, and by exploiting to the utmost all the ingenuity and resourcefulness the theater could muster. These were the "dog days" when the only answer to the question "Will we win the war?" was, "we'll dig, dig, dig and do our best." So far none of us had any conception of the new shortcuts to rapid ending of the hostilities, such as the Atomic Bomb. Neither had we any idea of Russian participation in the war against Japan, for frankly the Germans were giving us fits on the European front. We had to dig, and dig deep; the outcome still hung in the balance. The situation at this time was roughly this: the theater (both C.B.I.<sup>6</sup> and S.E.A.C.<sup>7</sup>) was very low on the priority list established by the Joint Chiefs of Staff; supplies had to come some 11,000 miles by ship through enemy infested waters to reach ports in India;<sup>8</sup> and the fighting forces were an additional 1500 miles distant over narrow gauge railroad, twisting rivers, high mountains and jungle trails. The allied shipping shortage at the time, together with the shortage of major items, especially transportation equipment and transport airplanes, were the source of great anxiety to the theater commanders and their staffs, not to mention the down front soldier who had to hold his equipment together with all the improvisations and prayers available.<sup>9</sup> A partial sense of security was obtained, however, from the great contribution to the Allied cause made by the Government of India. The procurement of supplies locally, materially enhanced allied chances for success. Principal items furnished through local purchasing and contracting and by the Government of India were: gas, oil, and other petroleum products, including containers, food for rear area troops and Chinese forces, clothing for Chinese troops, parachutes for supply dropping missions, packing and crating materials, tentage, blankets and office supplies. Major services performed were labor for construction, and rail and water transportation (although the U.S. Army assisted these latter services to increase their capacities tremendously). The services can, with minor exceptions, be lumped together under engineer and transportation services.

The over-all plan for recapture of Burma (Plan Capital) involved a three pronged attack on the Jap concentrations there (in the main the 18th, 15th, 31st and 33d Divisions): one force, composed mainly of

the British 11th Army Group, 14th Army and 15th Corps was to move down Western Burma and the coastal area toward Mandalay, Rangoon and eventually to Singapore. The Chinese-American force (Stilwell's force) known as Northern Combat Area Command and the Chinese Army in India was to move through Central Burma, from Myitkyina, in the direction of Lashio and Mandalay. The third force, commonly known in the theater as the "Y" Force, composed entirely of Chinese under command of Marshal Wei Li Haung, with American advisors attached, was to move southwest over the old Burma Road to the China-Burma border to join Stilwell there at the border town of Wanting. This then was the grand strategy. I will limit my discussion to the problems of the Chinese-American force (N.C.A.C.)<sup>10</sup> inasmuch as this force was of more vital concern to the United States Army Forces, China-Burma-India. Once the mission of Stilwell's Army was accomplished, the completion of the road to China could be undertaken and the overland supply route to China would become a reality.

#### TERRAIN ESTIMATE.

To appreciate the problem confronting the supply "wallahs"<sup>11</sup> a general knowledge of the terrain is essential. The best and quickest way to obtain an estimate is to accompany me on a ride in a war weary C-47 of the Tenth Air Force from Dinjan Airfield (or Moran or Ledo) in Assam (Northeast India) to deliver a load of rations, horseshoes, bitumen or other precious cargo to the needy combat troops deep in Central Burma. If you look out here where the door to the cargo compartment has been removed, you get a better and more complete view of the formation of the earth. You will no doubt be overawed by the primeval forests, beautifully wooded, snow-capped, rugged mountains, gorgeous cloud formations and indescribable sunsets and sunrises. You might even imagine you see ancient predatory beasts (actually you will see tigers and elephants when we fly low). Yes, those giant trees below are mahogany (imagine using mahogany for every day construction of bridges and camps). But remember we are up here to get an eagle's eye picture of the terrain as it affects the more realistic though less glamorous subject of logistics. I will point out the geological feature with the greatest effect on our mission. The G-4, A-4, and S-4 mission is to obtain and provide ample supplies of food, ammunition, gasoline, replacement equipment, airplanes,

<sup>10</sup>N.C.A.C. abbreviation for Northern Combat Area Command, the official name of the combined force operating under command of Gen. Stilwell and later Lt. Gen. Daniel I. Sultan. Composition of N.C.A.C. at this time was as follows: five Chinese Divisions (two American trained and all American equipped), an Engineer Regt., a Truck Regt. and misc. troops, all being units of the Chinese Army in India; one British-Indian Division; Northern Combat Area Command Hqs., Mars Task Force (124th Cav. Regt., dismounted, 475th Inf. Regt., two Bns. Arty. 75mm pack and six animal Q.M. pack Troops); the tenth U.S. Air Force; and approximately 30,000 S.O.S. line of communication troops alternately engaged in construction of roads, pipelines, airfields, transportation, storage and issue of supplies and equipment and intermittently called upon to augment combat troops in the line. "As fast as the combat forces moved ahead, United States Engineers, commanded by Brig. Gen. Lewis A. Pick, shoved the road forward behind them, operating their bulldozers so far forward that they were frequently under fire." Gen. Marshall, *op. cit.*, p. 60.

<sup>11</sup>Indian—, meaning, "any individual engaged in any occupation," example: air wallah—a member of the U.S. Air Force.

<sup>5</sup>Marshall, *op. cit.*, p. 59.

<sup>6</sup>China-Burma-India Theater, commanded by General Joseph W. Stilwell.

<sup>7</sup>Southeast Asia Command, commanded by Admiral, the Lord Louis Mountbatten.

<sup>8</sup>Until V-J day, all supplies from the U.S. and Great Britain destined for either China, Burma or India had to be shipped to Indian ports and transhipped to destinations elsewhere in that vast theater of operations. Calcutta, Bombay and Karachi were the chief ports of entry.

<sup>9</sup>"Army and Navy Commanders were well aware of the difficulties and paucity of means" Marshall, *op. cit.*, p. 56.



bombs, and even stationery (for they fight a paper war down here just as much as in the Zone of the Interior). Circling after take-off we gaze out over the area adjacent to the headwaters of the Brahmaputra R., known as Upper Assam (there was a social organization known as the Upper Assam Poker Club which met weekly which was at times of the utmost interest to the writer). Here in Upper Assam are located the great U.S. Army supply bases at Chabua and Ledo<sup>12</sup> where ground, service and air force items are stocked for future shipment to Burma and China via the Hump and the Road.

Here too are located numerous transport airfields and the terminus of the truck transport system (later called Motor Transport Service) which moves supplies overland to the combat zone. Earlier this too had been the scene of active combat operations, but fortunately the war has pushed further on. There are also many British and Indian installations of note, particularly the huge oil refinery at Digboi which supplies thousands of tons of petroleum products monthly to the Burma operation. From this point forward the area can generally be described as being thick impenetrable jungle except in the Myitkyina-Mogaung area some 300 miles to the south, and except where military operations necessitated improvement of existing roads and trails. To the southeast, is Pangsau Pass, altitude approximately 7500 feet, about 46 miles from the railhead at Ledo. These mountains form the first major obstacle of both motor transport and air routes. The long climb over the slippery (when wet) road causes its full share of vehicular casualties, while the ever present fogs are a constant hazard to aircraft, particularly since most of the pilots prefer to fly contact along the road trace. I well remember one instance while crossing these comparatively low spines of the Himalayas (Mount Everest farther north is 29,000 feet). We had two chaplains along and a load of assorted troops including American, Chinese, Indians and British; a friend of mine was seated across the aisle engrossed in the *Plague Scene* of "Forever Amber." I felt us begin to circle, looked out of the nearest porthole, and saw one of the most complete fog blankets I have ever seen. Suddenly I was amazed to see through a minute break in the overcast the top of a giant tree; we missed it, but I for one was sure glad we had the chaplains on board. Having once crossed the mountains the remainder of the journey is comparatively safe for aircraft. Travelers over the road are not so fortunate; descending gradually it winds in and out of the hills and crosses the watershed of numerous small rivers which during the monsoon season are swollen to the size of major water obstacles.

Among the most important streams are the Chindwin (of Wingate's Raiders—or Long Range Penetration Battalions fame), Tirap, Tanai, Hukawng and the Mogaung. On this portion of the road there was in the vicinity of Shaduzup a strip of corduroy approximately

12 miles long over which for months all wheeled vehicles had to be towed by "cats" (bulldozers). You can well imagine the maintenance problems incident to negotiating such a barrier with any considerable amount of equipment. After crossing the Mogaung River, we finally emerge onto the great plain of Central Burma and the Valley of the Irrawaddy River. Myitkyina on the west bank of the Irrawaddy and the principal city in the area (once a populous industrious British frontier town, now leveled by incessant bombing artillery barrages and Infantry fighting) is the key to the entire campaign and the hub of activity of the forces concentrated here and to the south. There are two routes, other than air, to the South from Myitkyina to Bhamo the next town of any importance, 90 miles to the South. One is the Irrawaddy River which in peacetime had been negotiable in certain parts of the year. There is however, a deep gorge about halfway between the two towns and after considerable research and exhaustive investigation and study it was decided not to use the river route; the primary reasons for such decision being a lack of suitable floating equipment, lack of sufficient experienced U.S. personnel and the fact that the old native pilots who used to take commercial steamers through were scattered to the four winds. The other surface route is overland on a road which had to undergo extensive improvement to support military traffic. After leaving Bhamo, the rest of the way to Lashio is via a portion of the same road mentioned above (now a victim of the war, weather and the Japs) which also had to be improved to support even light military loads. The area between Bhamo and Lashio is in general hilly, jungle country cut by numerous aimless water courses. Logistically, Lashio is the final objective of the Chinese-American forces in Burma.

#### LOGISTICAL BASES DEVELOPED

At the time of the opening of the offensive in Central Burma the bases in Assam, Chabua and Ledo primarily, had been developed to the point where they were capable of adequate logistical support to such an operation. Consequently, upon the Intermediate General Depot and the Northern Air Service Area Command at Chabua and the Advance General Depot at Ledo fell the full responsibility for stocking sufficient supplies to maintain the combat force. The transportation problem was somewhat different. The Tenth Air Force furnished the planes (approved earlier by the Joint Chiefs of Staff) and pilots for airlift while Advance Section with Headquarters at Ledo constructed and operated pipelines, completed and improved the road and furnished and operated all truck transportation with the exception of that provided by the Chinese Truck Regiment. The principal means available to accomplish the mission were as follows: two 4-inch and one 6-inch pipeline (the latter was not completed to Myitkyina until May 1945), 148 assigned aircraft (C-47s) and a variable number of Q.M. Truck Companies (ranging from 25 to 54). On the other hand there was little in-

<sup>12</sup>Chabua: Intermediate General Depot, Northern Air Service Area Command. (N.A.S.A.C.) Ledo: Advance General Depot (parent organization of sub-depots developed at Myitkyina and Bhamo).



dication that the Jap could or would reinforce or resupply his defending troops in sufficient quantity to prevent the reconquest of this portion of the British Empire; in fact, the writer is of the opinion that no further effort was made to resupply the Jap Army in Burma, and that he was fighting a delaying action using the reserve he had built up earlier and by depending on local requisitioning. Although the picture was dark, there was still hope and confidence that we would meet and defeat the Jap.

Since previous experience had proven the necessity for air-ground cooperation and coordination, even in supply matters, the theater commander called a conference in early October 1944 to work out the various phases involved in supplying N.C.A.A. and supporting units. The force to be supplied has been discussed in detail earlier in the paper. The agencies involved in handling and delivering supplies were Intermediate Section, N.A.S.A.C., Advance Section, Tenth Air Force, British-Indian contingents and N.C.A.C. All interested agencies were to come to the meeting prepared to discuss in detail methods for coordinating and accomplishing procurement, loading, delivery and issue of supplies. The problem involved the building and enlarging of airfields from Assam to Lashio, completion and improvement of the road, completion of the pipelines, construction of sub-depots at strategic locations along the route of advance (Myitkyina and Bhamo became the principal bases), packing and loading of supplies on aircraft and trucks, labor incident thereto, coordination of loading, schedules for aircraft and truck convoys, pilot replacement, truck and aircraft replacement, maintenance, communications and finally distribution and issue to front-line units. To this initial conference the conferees brought estimates, for the ensuing six months, of quantities of supplies and services required monthly by type (to enumerate a few: pipeline materials, rations, ammunition, road construction materials, airfield construction materials, petroleum products, forage (there were about 6,000 animals in the force), air technical supplies, civil affairs, personnel replacements, signal equipment and even local air and truck passenger traffic. In like manner the delivery agencies brought detailed plans for their maximum transport capabilities.

The following system was evolved which with few minor exceptions and modifications remained in effect until the capture of Lashio and the conclusion of the campaign in May 1945. A conference was scheduled to be held at Ledo on or about the 25th of each month.<sup>13</sup> All agencies would prepare estimates of requirements for the succeeding three months and be prepared to present them together with justification therefor. The situation was such that the normal procedure of using safety factors and padding could not be accepted. Par-

ticular emphasis was to be placed, however, on estimates for the month immediately following, which figures were to be firm and the absolute minimum for existence. Figures for the two subsequent months would be a basis for advance planning by theater and subordinate staffs, in particular by transportation agencies. Based on these future estimates, target dates for completion of pipelines and advancement of the road could be adjusted, timely construction of advanced airfields could be undertaken, trucks could be ordered from the U.S., forward depots could be planned and in general target dates for all phases of construction could be planned. The Commanding General, N.C.A.C., through his G-4 was given the responsibility of consolidating requirements for American, Chinese and British-Indian Ground Combat forces; N.A.S.A.C. was to be responsible for consolidation of all Air Force common-user and air technical requirements including Tenth Air Force, Air Service Command and Air Transport Command; Advance Section, S.O.S. would present its own figures for construction, maintenance, transportation, labor, etc.

All agencies could request both air and ground lift, and in reality the ground forces obtained many times more tonnage by air than did the air elements themselves. At the conference all the requirements were set up and compared with predicted capabilities; in almost all cases requirements exceeded capabilities. By agreement on the spot, agencies could and would reduce, adjust or eliminate certain items (this procedure was possible because each agency was represented by personnel authorized to make decisions in the name of the Commander). In return the transport agencies always succeeded in increasing (at least theoretically) their capabilities. Ordinarily original estimates and requests had to be reduced by about 25 to 33 per cent, and estimated delivery capabilities increased accordingly to make the two factors coincide. At the monthly conference the theater representative, normally an officer of the G-4 section (occasionally accompanied by a G-3 officer) acted as chairman and recorder, entering the requirements and capabilities as originally stated and as finally agreed upon by all representatives as sound, reasonable and practical; after the conference he returned to theater headquarters to prepare the allocation for submission to the Chief of Staff for approval and for publication. As the Commanding General was usually at the front his personal approval was obtained only at times of the utmost gravity. On such occasions a staff officer was dispatched with the allocation to secure his signature to the Plan. Almost invariably minor reductions and adjustments had to be made at theater headquarters. Upon approval by the Chief of Staff a radio message was dispatched announcing the monthly allocation. This was then followed up by letter repeating the allocation and showing in detail requirements and capabilities with notes of explanation and comments on items effecting the monthly situation (such as an increase in the number of trucks per truck com-

<sup>13</sup>In December 1944 a modification was attempted; the theater representative was sent to each Headquarters (spread over an area 400 miles long) to obtain estimates and requirements and to consolidate before returning to confirm the allocation. This to be sure saved the subordinate agencies valuable time initially, but results did not justify the change, so the original procedure was reestablished the next month continuing through May 1945.



pany to bring the operational total per company to that listed in the T/E).

The letter was in effect confirmation of the radio dispatch and naturally less garbled. Long radio messages have the unhappy attribute of rarely reaching all agencies without some transmission errors. A letter confirmation was advisable and in my estimation absolutely essential.

#### OPERATIONAL PHASE

From this point in the process we go into the operational phase of the system. The coordinating agency designated by the theater commander after wholehearted agreement by all agencies was the G-4, N.C.A.C.; this office actually supervised and coordinated the operation of the newly agreed procedure. Without going too much into detail I would like to hit a few of the high spots in the mechanics of carrying out the program. Initially, the bulk of supplies were air delivered, being loaded at air bases in Assam, such as Dinjan, Moran and Ledo, and air landed at fields at Myitkyina and Mogaung. A small amount of air dropping was done to units out in the jungle not near accessible land routes or landing strips, such as O.S.S. patrols, combat patrols and air warning system operators. As yet the road was not capable of supporting the tonnage needed to maintain an operation of the magnitude planned, nor were there sufficient amounts of road transport equipment. Certain items such as fragile signal equipment and air technical supplies were landed at intermediate fields, adjacent to the road, north of Myitkyina. It might be well to add here that normal channels of requisitioning were followed, the main difference being in the method of delivery, since delivery was being made by so many different agencies and modes of transportation. There were excellent communication facilities between all the headquarters concerned, among them being telephone (by May 1945 telephone communications existed all the way from Delhi, India to Kunming China—the first such line in history), teletype, radio, messenger and frequently use was made of staff planes of the various air headquarters to establish contact when other means of communication failed.

As the months passed and the combat forces penetrated deeper into Burma it became necessary to deploy transport aircraft to more advanced fields by necessity adjacent to the road. These fields had to be planned and built months and weeks prior to the necessity for their use; target dates could therefore be planned from the forward estimates referred to earlier. As the air moved forward (to reduce turnaround time and radius of operation to a minimum) ground transport had to assume the additional load of hauling supplies from Assam to these advanced fields for transshipment and further lift by air to the front. A combination air and truck operation developed which proved to be highly satisfactory and successful. For example: planes which had been based at Dinjan at the beginning of the offensive leapfrogged forward to Shingbuiyang; truck convoys from

Advance Section at Ledo now brought supplies over the road to this point where they were transshipped to cargo aircraft. Such a system made the maximum use of planes and trucks alike and allowed a shorter radius of operation to the air; by giving the air a few extra hours of daylight they could make two instead of one trip per plane per day. It proved much more economical to press more trucks into short haul service than require aircraft to fly all the way from Assam to fields forward of Myitkyina and Bhamo. Gradually the air, motor transport and pipelines inched forward until they all reached the Myitkyina-Bhamo area. All points South could be reached from either of these two locations by air without difficulty; accordingly, at this point, it was decided to discontinue leapfrogging forward on a large scale. By May 1945 at Myitkyina, there were four major airfields capable of supporting C-54s and B-29s, a huge S.O.S. sub-depot, and Air Service Command sub-depot. Three pipelines flowed through with the 6-inch pipe terminating here. It was also the principal way station on the road.

Bhamo with a large airfield, was the terminal of one 4-inch pipe and was also another key point on the road. The supply sub-depots had been recommended by Headquarters Advance Section and N.C.A.C. some months earlier at the close of the Hukawng Valley Campaign; by advance stock-piling at these sub-depots (15-45 days) the combat forces were able to exist during times of bad weather, breaks in the pipeline and road washouts. They were a veritable lifesaver. As demands on truck transportation increased it became necessary for the theater commander to authorize overloads on the 2½-ton trucks which were the mainstay of the Motor Transport Service. I do not qualify the term 2½-ton truck purposely, for we had G.M.C.s, Studebakers, 6x6s and 4x6s. Because of the road conditions, (some of which have been enumerated above) and inexperienced drivers, vehicular maintenance assumed magnitudinous proportions. 1-ton trailers proved highly unsatisfactory mainly attributable to road conditions. At one time there was an average of only 25 to 30 trucks rolling per Q.M. truck company. To compensate, all available assistance was accorded Advance Section; additional maintenance measures were undertaken including activation of additional ordnance maintenance units from lower priority activities throughout the theater, stepping up production of the engine overhaul and rebuilding plant at Calcutta, improvement of rail schedules for these rebuilt engines and other major assemblies and lastly by the expedient of increasing the T/E of each Q.M. truck company by a sufficient number of trucks to bring their operational total to 48 per company. This latter expedient utilized manpower which otherwise would have been idle waiting for vehicles to come off deadline. By early 1945 however, a flow of 5-ton 4x2 semi-trailer trucks began to arrive in the theater (these trucks had been designed at least two years before for use on the Burma Road, but the first 5,000 off the assembly line had been diverted to



Europe to run the Red Ball Express).

These were immediately shipped to Ledo and pressed into service, under the Motor Transport Service, hauling to Myitkyina. Needless to say the day was saved as far as truck transport was concerned although all the problems had not been entirely eliminated by any means. The air too had its problems. Replacement transport aircraft were regarded as a pipe dream dreamed up by the editors of F.M. 101-10 at Leavenworth, I mean they were hard to get. At one time, if memory serves me right, there were only 90 planes operational of the 148 originally assigned. Pilots flew double the number of hours permitted by Army Air Force flying safety regulations. In his report General Marshall says, "The troop carrier squadrons at the height of the campaign averaged 230 hours of flying time for each serviceable plane per month for three months. The normal average monthly flying time is 120 hours." One interesting example which shows the extent of coordination between all services was the one where S.O.S. organized parties or teams which moved into forward landing fields to unload aircraft. By proper organization enough time was saved to permit many more trips per squadron per day. These parties were usually composed of a non-commissioned officer, a few other enlisted men, possibly a few native bearers for labor, and a truck. At the peak of the operation S.O.S. was delivering by truck approximately 1500 tons per day, including about 600 tons to advance airfields for transshipment and further delivery by air. The air force was delivering 750 tons per day with a maximum of 148 assigned airplanes (about 120 operational) at an average turnaround or radius of operation of 300-350 air miles. You can see that an all out effort was necessary if the campaign was to succeed. Even at the rate of delivery described above, all combat troops did not live on the "fat of the land," and at times had to tighten their belts to continue the drive. In February and March two crack Chinese Divisions were recalled to China to assist in the defense of Western China. The situation did not improve however, because the planes originally assigned to support these two units were likewise transferred to China.

On January 27, 1945, Wanting (on the Burma-China border) was captured, thus opening the road (a few weeks later officially named the "Stilwell Road" by the Generalissimo, in honor of the man who had made its completion possible) to one way traffic to China. Penetration to the south continued until its termination in the fall of Lashio on March 5, 1945. Here ended the Central Burma campaign in so far as the Chinese-American forces were concerned. Soon

afterwards it became necessary to withdraw all but a token force, to the truckheads and airheads at Myitkyina and Bhamo. The mission of the token force was to prevent Jap reoccupation of the road north of Lashio and also to insure uninterrupted traffic over the Stilwell Road. From that time on, the bulk of troops and effort were transferred to the China side of the Hump.<sup>14</sup>

No small degree of credit goes to the British forces operating under N.C.A.C. By agreement on a theater level, the British furnished their own supplies over their own transport system until it reached Ledo or Chabua. They likewise furnished labor at airfields for loading transport planes, and at Ledo for loading trucks, with supplies destined for British-Indian units. Liaison detachments were provided. To these detachments as well as the American supply agencies is due much of the credit and praise for the smooth functioning of the inter-allied supply system.

However, the greatest praise must be given the G-4 of N.C.A.C. who, through his own personality and tireless efforts effected the great degree of cooperation that existed, and who supervised the system to the point where even the most difficult jobs became routine. With few exceptions, the flow of supplies to all units proceeded without interruption until the end of the campaign. Again in the words of General Marshall, "The Asiatic operations had been maintained at the end of the most precarious supply lines in history."

The success of the campaign was naturally the result of sweat and blood and sacrifice on the part of the front-line soldier, but even so, it could not have been brought about without the wholehearted support, untiring superhuman efforts and unparalleled cooperation of the men all along the line of supply. In the minds of many of the personnel engaged in this battle against time, space, and weather, there were three mottos that were ever present. Over General Stilwell's desk hung the slogan: "Consider the turtle, he gets no place unless his neck is out." Colonel R. E. Coughlin expressed his sentiment thusly: "Make this a war, not a career"; and in the minds and hearts of all of us was the motto of the entire American Army, "The difficult we do today, the impossible we do tomorrow."

Many a seemingly impossible task can be solved with the wholehearted cooperation of everyone concerned. Although without it the task is necessarily doomed to failure, with it, the chance of success is almost certainly assured.

<sup>14</sup>That section of the Himalaya Mountains lying between China and India and running generally south along the Burma-China border. Famous as the formidable obstacle over which A.T.C. combating weather and the Japs maintained the lifeline to China.





CARDED

# ? THE RUSSIAN ARMY TODAY ?

*by Major Hal D. Steward, Associate Editor*

IT has been estimated recently by reliable authorities that Russia could probably invade and occupy the whole of Western Europe against resistance from present American, British and French troops in Europe in a matter of 48 hours.

This is possible because of the high state of training and conditioning that has been maintained in the Russian Army since the end of World War II. The recent trend by Russian militarists toward heavy motorized and mechanized units that are rapidly replacing foot soldiers is also a factor that is worthy of more than passing analysis.

The Russian Army, according to the best informed sources, now has 10 mechanized armies in all of Europe. Each mechanized army has an organization of three corps with each corps having one motorized and two rifle divisions. However, the existence of corps with two motorized divisions and one rifle division would seem to indicate that the Soviets are striving for complete motorization in the army as rapidly as possible.

Motorized divisions of the Red Army are organized along the lines of an American division, only smaller in actual strength. Each division has three rifle regiments that are transported in trucks and American half-track vehicles. Also included in each division (which has an estimated total strength of about 5,000 men) is an artillery brigade of three regiments of three battalions each.

No definite conclusions can be drawn from the present Russian organization of its units, because they are in a continual state of evolution.

A full army of three corps as previously mentioned would currently run to an approximate strength of 50,000 to 60,000 men.

Just prior to World War II the Russians had their old Rifle Corps, which normally had three infantry divisions, but during the war were sometimes expanded to seven or eight divisions. At the end of the war several divisions in each of these corps were deactivated. The corps then were reorganized with all the trucks and half-track vehicles in good condition from the deactivated divisions going to the first division designated as a motorized unit in the newly reformed postwar corps. In this way, the motorized divisions of today have the best transportation and equipment available from several deactivated divisions.

Today the Red Army is in a superior state of training. Leadership in all ranks is excellent. The new type

noncommissioned officer is a product of school training.

Practically all the officers in the present Soviet Army were commissioned by way of schools and have a good academic as well as a military education. Most junior officers are in their twenties or early thirties and the senior Russian Army officers are about in the same age bracket as American officers.

Maneuvers in the Russian Army take place in all four seasons regardless of prevailing weather conditions. All units in the Army are required to participate. Each maneuver starts with small unit problems supported by organic heavy weapons. The size of units involved in the maneuver problems are increased until they include large-scale division, corps and finally army maneuvers. Corps and army unit operations are usually supported by one complete division of artillery. This artillery division is in addition to the organic artillery of the regular units. Tank and air units are also used as supporting troops in their tactical problems.

Critiques are held by top-ranking Red officers at the conclusion of each maneuver. At these critiques enlisted men who have distinguished themselves in the maneuvers are selected to attend noncommissioned officer and officer schools in preparation for promotion.

Russian training compares with the best military training of the United States Army. It receives the close supervision of the commanding general and chief of staff of each division. In occupied countries, training is carried on six days a week—Sunday being the only holiday. The Red Army is in no way becoming stagnant or stale from occupational duty.

Strength of the Russian Army today is believed to be between 3,500,000 and 4,000,000 men. A military training program is also carried on that starts at the age of 12 years, when elementary courses in military science are given two hours each week. Compulsory training begins at 16 and continues to 50.

Estimated population of Russia including the Baltic Republics, occupied Poland and lands returned by Rumania to the U.S.S.R. was about 195,000,000 in 1940. Besides Russia Proper, which has a population of approximately 110,000,000 there are 16 Union Republics that go to make up Greater Russia and bring her total population near 200,000,000 persons.

Russia is said to have a potential military strength of some 40,000,000 persons. This means that she would muster into service all physically fit male and female persons between the ages of 14 and 60.



# Editorial Comment



Sergeant Rossow.

MASTER SERGEANT WILLIAM R. ROSSOW, JR., our former Circulation Manager, left the JOURNAL last month to be discharged, and returned to civilian life. He had served with the JOURNAL staff for a year and a half. A hard and conscientious worker, he originated and maintained a highly efficient system in our circulation department, which he ran singlehandedly.

Sergeant Rossow, now that he is a civilian, plans to attend the University of Notre Dame and major in Business Administration.

Just prior to being discharged from the Army he was recommended for a commission as a Second Lieutenant in the Officers' Reserve Corps. He is almost certain to receive the commission.

The Executive Council joins the JOURNAL Staff in extending our thanks to Sergeant Rossow for his untiring efforts in maintaining the standards of the ARMORED CAVALRY JOURNAL and wishes him the greatest of success in civilian life.

## NEW CIRCULATION MANAGER

Technician Fourth Grade Carlton H. Garriss is our new Circulation Manager. He is a veteran of five years' service and saw foreign service in the Middle

East during the war. A commercial artist, Sergeant Garriss will do some art work for the JOURNAL from time to time in addition to handling circulation.

## BRITISH HORSE SHOW\*

In view of the preparations for the 1948 Olympic Equestrian Games the following is published as being of interest to United States horsemen:

The Army came back with a bang at the Royal Windsor Show, when, in the International Trial jumping competition, serving officers filled the first four places. This is an inspiring achievement and, whatever the eventual selection of our international team at the White City may be, it is a reasonably safe bet that two places will be filled by the B.A.O.R. The competition is pretty keen, for among the civilians are Lieutenant Colonel Llewellyn, already experienced at Nice and Rome in international jumping, Mr. "Curly" Beard, riding either "Gay Lady" or "Niblick," the property of Mr. John Woollam, Mr. Neill with "Sparky" or "Spot," Mr. Lane, and so on.

Major D. N. Stewart, of the Royal Scots Greys, won both the King's and the Prince of Wales's Cups at the Royal Tournament, and followed this up by winning the International Trial at Windsor—three major victories in succession. His mount, the smallish, brown and, if truth be told, rather ugly, half-bred Hanoverian "Gnome," is not only a grand jumper but also a lucky one.

The soldiers have been hard at it to acquire international technique from the best German instructors and have profited from their labor. The theory is that, so far as giving "the office" is concerned, this is a matter of schooling behind the scenes. The resulting well-balanced animal is, in the ring, allowed to "date his leaps" himself with a minimum of wrangling from his rider. All the riders use a plain snaffle and dropped noseband, dispense for the most part with martingales, and yet show complete control and an admirable carriage of the head by their mounts. It is hard work to acquire and maintain the "Continental" or "forward" seat in the saddle. The hollowed back, rigid grip of the thighs, the freedom of the leg below the knee to apply the aids, the light but constant contact of hand to mouth—all take learning and imply a physical strain, but the result is magnificent. Englishmen are perhaps heaven-born horsemen, but even they can learn.

This subject invites endless dissertation, but space forbids. Lieutenant Colonel A. B. J. Scott is probably the most finished all-round horseman of the lot, but he and that grand big horse "Turban" have been out of luck. Of the others, Lieutenant Colonel Nicoll, of the

\*The Royal Armored Corps Journal.



Horse Gunners, seems to have the seeds of greatness in this particular sphere.

Let it be added that the performance of the B.A.O.R. riders and their horses has brought us all up with a jolt and caused us to revise our notions. Show jumping may be a separate art, but the essentials of horsemanship remain constant. I do not know who will represent us at the White City nor at the Olympic Games next year, but I am happy to say that, despite universal mechanization, the Army continues to lead the nation in the exposition of "noble horsemanship."

#### DRESSAGE TESTS

There are two schools of thought in matters of equitation which can conveniently be described as the snaffle-and-ashplant school and the how-to-ride-'em boys, both equally respectable in their own way. There is no doubt at all that many of the former will show the way to many of the latter when it comes to getting across a country with hounds running on a breast-high scent, but it is equally true that the best of the latter, provided that they possess the *esprit* of the former, are the best of all. This profound observation is called forth by the revival of *dressage* tests in many of this year's major shows, including the International at the White City. As to this art, there is generally considerable obscurity, for the erroneous belief that it is high school dies hard. The practice of physical training has been proved invaluable to the soldier and indeed to all mankind. Is it unreasonable to suppose that the same system applied to horses can be anything but beneficial? For this, in fact, is all that it is: a series of exercises designed to develop the muscles and to improve balance, flexibility and obedience to orders. We have all of us learned the elementary movements in our early service in the riding school under instructors of varying degrees of ferocity.

To a horse-soldier the ability of his charger to perform these movements was in old days a matter of life and death. Therefore he was taught them. The same in less degree applies to civilian riding. You get, for instance, a more enjoyable hunt on a horse to whom you can explain (and insist on performance) that you require him to stand still, move sideways or rein back. The *dressage* tests go little further, save to demand a rather more exact performance.

Naturally, when it comes to competition, comparisons are inevitable. No horse that is of faulty conformation can carry out the movements exactly, no horse that has not a free, balanced action is likely to score heavily, any more than a man of bad physique is likely to excel at gymnastics. To suggest that *dressage* ties a horse up and makes him "sticky" is fatuous, for it does exactly the reverse, and jumping is part of the test. Few of us nowadays have sufficient leisure to go in for *dressage* competitively, but all of us would benefit from a modest practice of elementary exercises, as would our horses. We shall see the best we can do at present

at the White City, where the test will be that for the *Prix Caprilli*, the most elementary of the three degrees. The competition is only open to British competitors. The improvement already made suggests that within perhaps five years we shall be able to compete on equal terms with the best performers in the world in the highest degree of the *Grand Prix* test.

#### THE REVIVAL OF POLO

It is good to hear that the revival of polo continues all over the country, though the numbers of young recruits to the game still leave something to be desired. The difficulty (as in all things) is mostly the lack of funds. In order to improve the situation the County Polo Association has circularized all old players of the game, suggesting that they should subscribe to a fund designed to help the country clubs to recover. It is to be hoped that this appeal will evoke a ready and generous reply in the interests of the greatest game of all.

Many regiments still have substantial funds lying idle in their polo accounts. Though I understand that it is the intention to revive Army polo once circumstances permit, the contributions from that source might well be made, since for the time being, soldiers who are keen to play will be dependent on the hospitality of the country clubs.

A new club has recently been formed at Henley which seems to have a promising future before it. The club has one absolutely first-class ground in commission with space for two other full-sized grounds available, excellent stabling not far off, and it is admirably situated for easy access from London and elsewhere. Lord Cowdray has begun his season at Cowdray Park, the Rugby Club is busy, and there is regular play at Brockenhurst, Ham and Toulston. An attempt is being made to revive the Manchester Club, and I believe there will be polo again at Taunton this season. The game as we knew it before the war is still far away, but the signs of recovery are healthy. It is possible, even, that we may see a week's polo at Roehampton this year for the Country Cup. At least eight teams should be entered—possibly more.

#### YOUNG HUNTERS

There is still a notable shortage of young hunter produce at this year's show. This is not surprising, since we have been busy on more important affairs for the past seven years, but though good three-year-olds are very few there is a welcome increase, in both quantity and quality, in the two-year-old and yearling classes. In the open events such veterans as "Wavering Bee" and "Darrington" still carry all before them in the show ring, though we may hope for some good youngsters at the White City. This again is not surprising, for success in the ring is not attained without long and careful preparation. The value of hunter classes in England is perhaps questionable, for the "champions" are often hunters only in name, being far too valuable to risk in



the hunting field. They do, however, at least demonstrate the ideal type of hunter, which is perhaps desirable. To find the perfect hunter, as to find the perfect polo pony, it is necessary to hunt or play him. Some of the greatest polo ponies ever known would not have been looked at twice by a show-ring judge. In America the champion pony is judged not only on conformation but also on proved performance during a strenuous season. The introduction of classes for genuine hunters might give an added incentive to breeders.

#### THE EXPORT TRADE

In spite of crippling freightage and duty, the demand for English-bred horses and ponies continues to be strong not only in the Dominions and the Americas but elsewhere. The strongest is for Arabs and Welsh ponies, the most popular of our nine native breeds. At the recent Bath and West Show there were many foreign buyers and, with a little encouragement, our great export trade might soon be revived. There is little doubt, too, that if ever Europe is permitted to return to anything like normal one of the first demands will be for our horses. The position in India is said to be deteriorating rapidly and unless (as seems highly improbable) the new governors of that sub-continent take immediate steps to retard this deterioration, India will no longer be able to produce horses comparable with those bred under the British Raj. This may have the effect of increasing the already substantial Australian import. "It's an ill wind that blows nobody any good," but it is depressing to think of all the good work done by generations of Englishmen in maintaining a high standard of Indian-bred horses (as indeed it is in even more serious matters) being undone almost with a stroke of the pen. No doubt there will still be a strong demand

for high-class animals of all kinds from the Native States. We must be careful not to lose this trade to, for instance, the Argentine.

1 1 1

Washington, D. C.

September 25, 1947.

My dear General Wainwright:

It is with a sincere feeling of regret that we note your retirement from active service with the United States Army. Yours has been one of the proudest and finest careers of military service in our history.

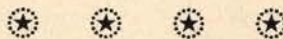
You can be justly proud of the inspiration you have been to all those who have had the good fortune to come under your guidance and leadership during the years of your active service. You must also get a great deal of satisfaction in knowing that the ideals and wisdom you have attempted to impart to those in your various commands have not been in vain.

We do not wish to congratulate you on having completed your army career because we know you leave it with deep regret, but we do want to congratulate you on your enviable record in the army, as well as the inspiring example you have been to every American. Even after the hard and strenuous service you underwent in World War II, I know that you still leave active service reluctantly.

With best wishes for good luck and good health from the Executive Council, the staff and my own personal regards, I am

Very sincerely,

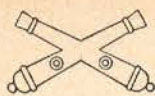
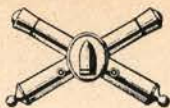
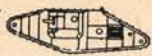
EDWIN M. SUMNER,  
Colonel, Cavalry,  
Editor.



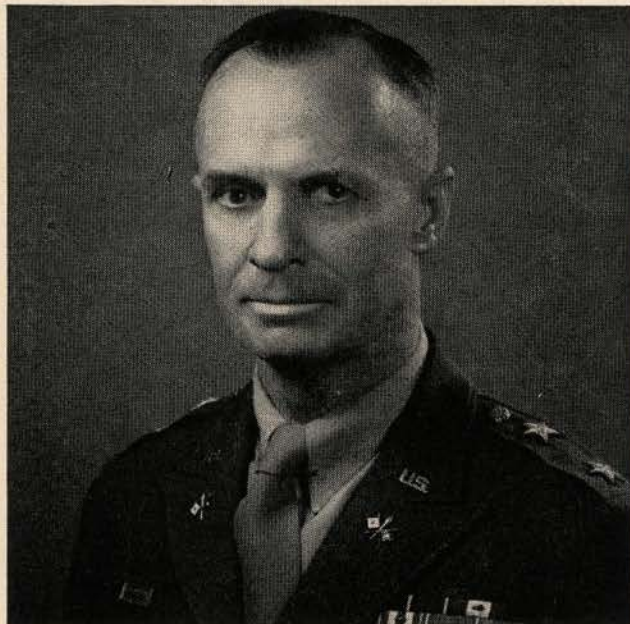
The ARMORED CAVALRY JOURNAL is most anxious to obtain copies of the July-August, 1946, issue of the Journal. All those persons who have this issue and who are willing to part with it are requested to forward it to the Journal. The Journal will pay the regular price of fifty cents (50¢) a copy for each copy returned.







# OTHER BRANCHES



Major General S. B. Akin

"We hear a lot these days about coordination and cooperation. It is well we should. We can use a lot of it. All of us who have the job of making, and keeping strong the defenses of this land of ours know that it will be working together, each with his eye on the final goal as well as his own individual part in its achievement, that will enable us to have the strength we need.

"There are many ways by which we develop this coordination and cooperation. One is for each of us to learn what the rest of us are doing, what our responsibilities, our problems and our hopes are.

"In publishing its series of articles on the functions and activities of each branch of the military establishment, the ARMORED CAVALRY JOURNAL is giving us an important and popular feature that will do much toward this very end. It should be of special value and interest to everyone who wants to acquire firsthand information about the over-all mission of

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*(Editor's Note: All members of "Other Branches" are encouraged to contribute articles to this section of the ARMORED CAVALRY JOURNAL. The "Other Branches" section in the next issue will feature a statement by the Surgeon General and a full-length article on the Medical Department.)*

the Army and the jobs with which each part of the Army is charged.

"The high priority placed on research and development during the present peacetime period emphasizes the determination of our military leadership to maintain the highest standards of superiority in weapons and equipment, and to insure the adoption and production of everything we need for our national defense.

"In its endeavor to publicize the objectives of the Arms and Services of the Army, and the major advances in the field of military science, the ARMORED CAVALRY JOURNAL is giving us a most worthwhile service."

Major General, U. S. Army,  
Chief Signal Officer.





# SIGNIFICANT SIGNAL CORPS DEVELOPMENTS

*by Gerald Egan\**

**This article discusses at length three important developments of the Army Signal Corps; Radar, Weather Forecasting, and Army Pictorial Service. In a recent issue of the Journal, the major activities of the Signal Corps were discussed in general terms. Mr. Egan writes of specific achievements here.**

THE postwar reorganization of the military establishment has not altered the mission of the Signal Corps as the communications agency of the Army.

Briefly, this mission includes four major functions. They are: to train and furnish specialized signal troops and units to all requiring elements of the Army; to operate the Army's communications network; to develop, procure, store, issue and repair communications equipment and supplies, and to perform photographic work for the Army except the Army Air Forces.

In a recent issue of the ARMORED CAVALRY JOURNAL the major activities of the Signal Corps were discussed in general terms. Only a passing mention was made of certain major functions which seem worthy of the fuller description which follows.

## DEVELOPMENT OF RADAR

The story of radar has been told time and again; its tactical achievements have been narrated in detail and its potentialities as an instrument of peace have been enthusiastically extolled. But actually the drama of radar lies not in its battlefield performance or its future possibilities, but in the imaginative and farsighted re-

search and development program that made radar a decisive factor in the winning of the war.

The technique of radar did not just suddenly appear on the eve of World War II; it evolved during the 1920's and '30's—a product of years of research. Even as early as the first World War, Signal Corps scientists tried to improve on the sound locator as a means of detecting enemy aircraft. Military, naval, and civilian scientists continued this effort during the 1920's. In February, 1936, the Army's research in the field of aircraft detection was centralized in the Signal Corps. Both radio and infrared detection techniques were tried, and on December 14, 1936, the Signal Corps completed and tested its first radar.

Once the effectiveness of that first set had been demonstrated, the expansion of the radar development program was given highest priority. Construction was begun in 1937 on a radar designed to provide electronic data for the automatic aiming of antiaircraft searchlights. This first standard Army radar, with its ponderous "bedspring" antenna, had a dramatic opportunity to prove its value and versatility in the course of its service test by the Coast Artillery in 1938. Several airplanes were detailed as test targets for the radar, and

\*Office of the Chief Signal Officer, War Department.



one of these was blown far off its course by a strong wind at an altitude of 20,000 feet.

Cruising over an unbroken expanse of clouds, the pilot calculated his position by dead reckoning and reported by radio that he was flying over the radar position. The radar operators could find no trace of a plane in that sector of the sky, and the observers waited with mounting skepticism. But the Signal Corps technicians, guessing that the plane had been blown off course, obtained permission to extend their search out over the Atlantic Ocean, a few miles distant. Soon they detected an echo from a target eight miles out over the water. The pilot, running low on gasoline, was informed of his true position by radio, and by means of the radar data was guided back to his base.

This first American radar was developed as a defensive weapon. Its initial functions were to provide warning of approaching enemy planes and to supply electronic data on their range, altitude, and azimuth, to aid anti-aircraft searchlights in focussing on the enemy. But radar soon proved so accurate that it was used in conjunction with gun directors to automatically aim and adjust the fuzes for anti-aircraft fire. This combination of radar and electronic gun director computed the lead necessary to detonate a shell at that point in space which the target plane would reach during the interval between the firing of the projectile and its arrival at the range of the plane.

The same radar which has been designed for defensive functions thus became a weapon of offense. And subsequent developments of radar were designed more and more for offensive purposes. Radar was used in conjunction with high-frequency radio communication to direct night-fighter planes to positions where they could intercept and down nocturnal enemy raiders. Airborne radar equipment was designed to present a glowing image of the terrain over which the plane was flying, so that bombers attacking through the dark of night or through clouds or smoke screens could nevertheless pinpoint their targets. Tail-warning radar was developed for aircraft, to automatically warn the pilot when another plane reached an attacking position behind him. Techniques akin to those of radar were used too for navigation.

On the ground, progressively more efficient radars were developed by the Signal Corps scientists. Many important new uses were found for this technique. One Signal Corps radar set originally designed for the automatic laying of anti-aircraft fire was used to fight the buzz-bomb menace in Britain. This set was an important factor in saving England from destruction by the long-range German missiles.

The Signal Corps engineers found that some of their radar models could actually detect artillery and mortar shells in flight, and this discovery led to the technique of mortar location by radar. Mortars were one of the enemy's most dangerous weapons, and a means for the location of enemy mortar positions was urgently needed.

A small Signal Corps radar was converted to perform this function, and its efficiency amazed combat veterans. This radar detected the enemy shells on both the upward and downward paths of their flight, and the data on these two positions could be plotted to compute the entire trajectory of the projectiles. By extension of this trajectory, the location of the enemy mortars or artillery could be pinpointed in a matter of seconds, and counterfire could be immediately directed. The radars, by plotting the bursts of the counterfire, could even help our own gunners improve their accuracy, by telling them how to correct their fire for maximum effect.

A more spectacular use of radar is the detection of moving troops and vehicles on enemy-held roads at night. In this application, radar has the uncanny faculty of being able to screen out all stationary background echoes and present oscilloscope data on only the moving objects within its beam. This function is based upon what physicists call the Doppler effect, which may be compared with the periodic bouncing of rubber balls off a brick wall. When a man throws rubber balls at a stationary wall at one-second intervals, the balls bounce back at him once a second. If the wall is not stationary, however, but moves toward the man, the balls return to him more often than once a second. If the wall moves away from him, the balls return less often. The same phenomenon is illustrated in the change in frequency of a locomotive whistle, which sounds higher in pitch when a train is speeding toward a listener and lower when it is moving away. On the basis of the Doppler effect, the Signal Corps scientists knew that radar echoes would be reflected back at a different frequency from a moving object than from a stationary object. They modified their radars, therefore, to filter out echoes from stationary objects and present only data from moving objects. Combat troops found this use of radar particularly valuable for night harassing fire of enemy supply routes. The accurate location of targets by radar resulted in a substantial saving of ammunition during the Battle of the Bulge, when ammunition supplies were critically short, and German prisoners reported that on several occasions the enemy had to abandon the use of his main supply routes.

The achievement of radar contact with the moon, which has probably attracted more attention than any other Signal Corps development, has already laid a foundation of technical knowledge for the defense of the United States against enemy long-range missiles.

#### THE WEATHERMAN AT WAR

Weather proved a more powerful ally and a more dangerous foe in World War II than in any previous war. Weather forecasters have determined invasion schedules, started and stopped air attacks, and provided essential data for front-line artillerymen. In this last war, as never before, weather observation and long-



range forecasting have been vital military operations. And the research and development program which has harnessed science for these meteorological tasks has been one of the most important technological achievements of the war.

Weather forecasting is an empirical science, and it is dependent entirely upon swift and accurate weather observation. Meteorologists know that their forecasts of future weather can be only as accurate as the observations they are able to make of current weather. They have to know, for instance, the temperature, humidity, barometric pressure, and wind direction and strength at various levels above the earth's surface, over wide areas. The techniques used for the gathering of this information have been improved and refined during the past five years to an extent almost unparalleled.

Even before the war, Signal Corps meteorologists were gathering data on the upper atmosphere at widely scattered observation points by means of small balloons. As the balloons rose through the earth's atmosphere, observers followed their flight visually by means of optical devices which enabled computation of the strength and direction of the winds at successive levels. Automatic observational devices were sometimes attached to the balloons to record temperature, humidity, and atmospheric pressure. The balloons burst when they reached certain altitudes, and parachutes opened automatically to lower the recording instruments to earth. Eventually the records were recovered, but that process took so long that the data had little practical value.

One important improvement on this technique was the development of the aerograph, which was attached to planes to perform approximately the same function as the recording equipment previously suspended from balloons. The aerograph made a continuous record of pressure, temperature, humidity, and the air speed of the plane—and made this record immediately available when the plane returned to its base. This was a big step forward, but it still offered the objection that the record covered only the path of the plane, and when aircraft were grounded by bad weather, aerograph observations were impossible.

An even more important contribution to this field was the development of the radiosonde, which again made use of free balloons. The radiosonde not only measures the temperature, humidity, and atmospheric pressure, but converts this data into radio signals which can be picked up and recorded by observers on the ground. Thus radiosonde observations offer the advantage that their data are instantly available to the meteorologists, and they can operate in any kind of weather. The direction and force of the wind can be measured by the optical device already in use or by means of a directional radio antenna comparable to that used for radar.

Even the highly efficient technique of radiosonde observation left much to be desired by the meteorolo-

gists. To gather radiosonde data, observers had to be transported to the geographical location where the observation was to be made—and there were not enough trained observers to go around. So the Signal Corps turned next to the field of radar, and the meteorologists found that radar could help them detect distant storms. They took a small airborne radar, originally designed as a high-altitude bombing set, and used it on the ground to bounce radio pulses off cloud banks, rainfall, and other storm phenomena. By this means they were able to detect storm centers as much as 200 miles distant. The storms showed up as white blobs on the radar oscilloscope, and their position and movement could be readily plotted.

An even greater extension of the weatherman's observation range has been provided by the new science of sferics, which is a story in itself. *Sferics* is the meteorologist's name for *atmospheric electricity* and for the technique of locating distant storm centers by long-range detection of their atmospheric electricity. Sferic impulses, which emanate from certain types of storm fronts, have long been known to radio listeners as static.

The sferics technique of storm location makes use of a very delicate radio receiver with a directional antenna. When sferics or static are detected by this delicate receiver, the presentation is made visually, on the face of an oscilloscope, rather than audibly. The directional antenna enables determination of the precise direction to the sferic source. Thus it is possible to plot on a map the direction of a sferic source from one or more sferic stations. When two or more lines are plotted, the point of their intersection shows the location of the storm center. Storms can be located by this technique at distances of 2,000 miles, and continuing records can be made of their position and movement.

By means of the sferic technique, meteorologists in snug weather stations can keep track of storms across two thousand miles of ocean. They don't need an observer at mid-ocean to know that a storm is raging there, and that it is moving toward the shipping lanes. If their observations show that the storm center moved 50 miles in a certain direction in the space of one hour, they can thus plot not only the direction of the storm movement but also its velocity.

These wartime Signal Corps achievements in meteorology have peacetime as well as military value. The expansion of air travel has greatly increased the importance of accurate, long-range weather forecasting. And the Signal Corps is continuing its meteorological research and development programs, for this is one field of military endeavor that will benefit all humanity.

#### ARMY PICTORIAL SERVICE

The Signal Corps has long served as official photographer of the Army.

The credit line "Photo by U. S. Army Signal Corps" is now a familiar one to newspaper and magazine readers. It has appeared under many striking photographs



—often taken in the heat of combat—which served to dramatize American military efforts.

Hundreds of films which saved countless days in the training of new troops were produced by the Signal Corps during World War II. These films were used in demonstrating, for instance, how a rifle is assembled, how a communications wire is spliced, how a tank is serviced. Many were given new sound tracks in foreign languages to increase the practical value of arms shipped to non-English-speaking allies.

In addition to the training films, still and motion pictures were produced for historical record, for information to assist commanders in reaching military decisions, for identification to aid in safeguarding military establishments, for photomail and V-Mail letters and for the reproduction of documents, maps and similar matter, both to preserve valuable information and to supply duplicates.

By the end of the war 2,659 motion pictures had been produced and 302,000 prints had been distributed. In addition, 1,458 film strips had been released to the Army for orientation and training use.

From the hundreds of thousands of still pictures taken by Signal Corps cameramen in combat and in rear areas, 423,000 were selected and returned to the Office of the Chief Signal Officer for military purposes and for civilian agencies in furtherance of morale and public information. The Signal Corps also developed a method of transmitting color photographs by means of radio telephoto channels.

Not widely known is the Signal Corps research and development activity in the photographic field which resulted in the adoption of much new or modified equipment and enabled the Army to obtain an invaluable pictorial record of the war.

Early field reports from combat cameramen indicated that standard photographic instruments did not meet all the exceptional requirements of modern war. There was a demand for a light, motor-driven motion picture camera impervious to dust, moisture or fungus and loadable with magazines containing no less than 200 feet of film.

At the instance of the Pictorial Engineering and Research Laboratories, Army Pictorial Service, the Cunningham Combat Camera was designed and met the most exacting tests. It weighs but sixteen pounds fully loaded. Its electric motor is driven by four dry cell batteries which are carried in a canvas case attached to the cartridge belt. Three magazines, furnished with the camera, hold 200 feet of film each. The movements, made to the exact precision of a studio type camera, are contained in the magazines rather than in the camera itself. It takes only six seconds to change magazines, so if an occasional buckle or jam occurs there is practically no loss of time. And the four lenses need never be touched. The focusing mechanism, controlled by a lever in the hand grip, slides the magazine in or out to the focus point, instead of adjusting the lens as in

the old method. This makes possible sealed lenses requested by the men in the field. Diaphragms are also lever-controlled from the same point.

Cast in magnesium, the gun stock base can be swung up to the shoulder, and with the two hand grips giving the steadiness of a tripod, all controls at finger tips, the camera can be focussed, framed and operated as easily as the trigger can be pulled on a Browning automatic rifle.

In the case of the still camera the principal demands of the combat photographers were for an instrument which was proof against high humidity and the fungus growths of the tropics. The new Simmons Combat Camera was designed to meet these demands. It is all metal and practically indestructible. It has no bellows. The front element of the viewfinder folds into position as a lens protector and may be carried in that position to protect the lens from rain and dust. A hinged metal cover protects the film recess. There is a built-in flash synchronizer and an accessory shutter which protects the film from fogging during rewinding of the focal plane shutter. The camera is equipped with two lenses and uses  $2\frac{1}{4}$  by  $3\frac{1}{4}$  film pack. The leather carrying case is eliminated. There is no carrying case since the camera is a completely self-contained unit.

One of the outstanding achievements of the Pictorial Engineering and Research Laboratories was the design of a new clinical recording camera, at the request of the Office of the Surgeon General, which was urgently needed to permit accurate and easy recording of new medical and dental techniques, of surgical operations and of related procedures.

Pictures of small areas and close-up details, requiring critical focusing and absolute steadiness, are often necessary. At the same time medical procedure makes impractical the use of tripod supports or accessory lighting equipment. The photograph must be made at a given movement in a minimum of time, and without interference with medical personnel. Extremely accurate exposure is essential for correct color and tonal rendering. Flat all-over illumination is required for the elimination of shadows. And in addition, since the photographic approach follows from the medical problem, the photographs must be taken by doctors, nurses, or technicians who are not necessarily competent in photographic techniques.

The new clinical camera met all requirements. It proved as simple in operation as a standard box camera and enabled even unskilled persons to take black and white pictures of the fastest action, indoors or outdoors. It uses a high-speed, high-intensity, self-contained light source which was built in to the camera. Every phase of its operation, except focusing and clicking the shutter, is automatic. It weighs  $5\frac{1}{2}$  pounds, is operated from a portable electric power pack and may be plugged into any ordinary current line. Due to its extremely rapid flash discharge the camera can "freeze" the whirring of a moving fan blade.



# Unity In The Pacific

*by Lieutenant Colonel J. W. Rudolph\**

GEARED to prevent a repetition of the Pearl Harbor disaster, the Joint Pacific Command is today operating successfully through the close cooperation of the Army, Navy, and Air Force.

To properly understand the present unified command in the Pacific, it is necessary to consider the situation that followed the Japanese capitulation in 1945. The surrender had come suddenly, shortly before the announcement of sweeping command changes in the Pacific, preparatory to the invasion of the Japanese homeland islands. The existing arrangement had to be regeared; the collapse of the Nippon Empire demanded an immediate improvisation to provide for prompt occupation.

The establishment of General MacArthur's Supreme Allied Command left unsettled, for the moment, the question of eventual unity of command in the Hawaiian area. Temporarily, the wartime command was abandoned, although close cooperation continued between the local Army, Navy, and Air Force commanders. Finally, after close study by the Joint Chiefs of Staff in Washington, the decision was made which covered the exigencies of a world-wide deployment and insured unity of command wherever American forces were stationed.

Late in 1946, the Joint Chiefs submitted a memorandum to the President which offered an over-all plan for command of the U.S. Forces outside the continental limits of the United States.

As the approved plan was finally published, seven distinct commands were set up around the globe. They consisted of the Far East Command, Pacific Command, Alaskan Command, Northeast Command, Caribbean Command, European Command, and the Atlantic Fleet. Each of the commands was to be directly responsible to the Joint Chiefs of Staff in Washington.

Of the Pacific Command it was said, "The Com-

mander in Chief, Pacific, will exercise unified command over all forces allocated to him by the Joint Chiefs of Staff or other authority."

So it was that the Commander in Chief, Pacific, became known to military and civilian personnel in the Hawaiian Islands as CINCPAC, a title formerly reserved exclusively to the Commander in Chief, Pacific Fleet.

On January 1, 1947, Admiral John H. Towers, one of the Navy's pioneer airmen and commander of the Pacific Fleet, was designated as CINCPAC. Given the prerogative of naming his own staff, Admiral Towers promptly designated the commanders of Army Ground Forces, Pacific, the Commanding General of the Seventh Air Force; and his own Deputy as members of his Joint Command Staff. Although several personnel changes have occurred since, the original arrangement is still in effect.

Presently, Admiral Louis E. Denfeld is CINCPAC. Comprising his Joint Command Staff are Vice Admiral H. B. Sallada of the Navy; Lieutenant General J. E. Hull of Army Ground Forces, Pacific; and Major General R. H. Wooten, Commanding the Seventh Air Force. These officers are officially designated as the Joint Pacific Command Chiefs of Staff and meet together once each week.

The Joint Chiefs of Staff are assisted by various joint groups made up of officers representing each of the services. These include the Joint Plans, Logistics, Communications and Intelligence Groups. Each group functions as a body of specialists in their own field, and is an important part of the delicate machine which makes the command function efficiently.

Coordinating the myriad details of the Joint Chiefs of Staff is the Joint Secretariat, made up of officers detailed from each of the three services.

The Pacific Command can be visualized as a precision machine, supported by a very strong tripod. Each leg of the tripod represents one of the services and all

\*Headquarters, AGF, Pacific.



three must function together in order to support the command.

CINCPAC, Admiral Denfeld, exercises operational control over all three services, and policies affecting the Joint Pacific Command Chiefs of Staff are enunciated by him.

Unified Command policies, other than those of a strictly administrative nature, which affect the readiness of the three service components of the Pacific Command are enunciated by CINCPAC or the Service Component Commander concerned.

General Hull, however exercises an operational command which goes beyond that of the local ground forces. By direction of CINCPAC, General Hull would command all fleet, air, and ground forces committed to the defense of the Hawaiian Area in case of an emergency.

In this case, the local ground forces would be under the command of Major General George H. Decker, at present Deputy Commander in Chief of Staff to General Hull; air forces under the command of Major General R. H. Wooten, Commanding, Seventh Air Force; and local naval forces under the command of Vice Admiral J. L. Hall, Jr., Commanding the Hawaiian Sea Frontier; with General Hull in over-all command of the Hawaiian defense.

General Hull would still be subordinate to Admiral Denfeld who, as CINCPAC, would be in command of all operational efforts exerted in the area between the Mainland and the Marianas. Admiral Denfeld would be responsible to the Joint Chiefs of Staff in Washington.

The Joint Pacific Command has passed all tests with flying colors in its first half-year of operation. Each of the services has declared its complete satisfaction, and Admiral Denfeld has stated that he is proud to be on the same team with the Army and Air Force.

Time was when the Hawaiian Division, one of the army's few peacetime concentrations of ground troops, was a fighting organization, trained for the mission of defending the Hawaiian Islands from invasion. Today, however, the Army forces in Hawaii are principally engaged in supporting and supplying the occupation forces in Japan and other forward areas, in classifying and disposing of surplus war materials, in repairing the ravages of wartime deterioration of army installations in the islands, and in rallying from the confusion of rapid demobilization.

During the past year the complicated and arduous job of rolling up and closing out the bases, built in the South Pacific, as the American powerhouse rolled closer to Japan, was completed. The task of disposing of millions of dollars worth of surplus war materials, adjusting claims of foreign nationals and governments, and finally withdrawing all troops from these bases was not greatly publicized, but for thoroughness and rapidity was unmatched elsewhere in the world.

Scores of millions of dollars in surplus properly, scattered from Hawaii to the Marianas, Fiji, New Cale-

donia, Guadalcanal, and Okinawa, were screened and inventoried. Material needed elsewhere was promptly shipped, and that declared surplus to military needs turned over to the War Assets Administration and the Foreign Liquidation Commission. In a very few months this completed mission will take its place with the base roll-up as an outstanding accomplishment of the Army Ground Forces, Pacific.

In the Territory of Hawaii the army, concurrently with the disposal of surplus property and the shipment of great quantities of needed supplies to Japan, the Philippines, and Korea, has been engaged in repairing military installations and in returning to the civilian economy lands leased during the war period. In a small, crowded community, where land is scarce and valuable, this is an important task.

Before the war, posts such as Schofield Barracks, Ft. Ruger, Ft. Shafter, were island show places. During the war thousands of troops passed through these stations, paused briefly, and went on. There was no time for maintenance, with the result that these posts took a physical beating that still shows deep scars. Schofield was particularly hard hit, and it will be a long time before full repairs are completed.

A small group of anti-aircraft artillery constitutes the only combat ground organization present. The Seventh Air Force, stripped to the bone in men and machines, is the backbone of the Army's tactical defense of Oahu. Actually, the picture is not as grim as it sounds, for as long as combat forces remain in Japan and Korea, there is no need for an extensive garrison in Hawaii.

Army strength in Hawaii today is about 1,000 below the authorized troop basis, which is itself but a handful of the hundreds of thousands who crowded the islands during the war. Additional replacements arriving in the fall are expected to make up the difference. Hawaii's Army garrison force, after U. S. occupational duties are over, will probably total about the same as before the war with a much larger proportion of air strength than existed prior to 1941.

General Hull completed his first year of service as Commanding General, Army Ground Forces, Pacific, in July. At a press conference held after his return to Hawaii from a recent 13-day trip to Washington and Alaska, the General outlined future army activity in the Territory.

He said post-occupational plans call for a greater air arm here than the prewar Army air strength. The general describes the defense of the Pacific as resting upon two axes; the Hawaii-Guam axis and the Alaskan axis. He explained Hawaii's part as that of a tree trunk extending from the coast to Guam. The surrounding islands would be branches of the trunk.

Admiral Towers, first Commander in Chief of the Pacific under the Joint Pacific Command, stated when the plan first came into effect: "It formalizes a unified command even more completely than existed during the war in this area. . . . I cannot envisage any repetition of Pearl Harbor under this plan."



# Organization Of The Armored Division For Exploitation

CARDED

*by Major Glen L. Foote*

EVERYONE knows the importance of tank-infantry cooperation in armored operations; everyone knows that tanks must have infantry in the closest of support for any tank maneuver; everyone knows it is most desirable to have tanks in support of the infantry in an infantry show. Every experienced officer who has seen armor in action harps on the fact; each teacher of tactics pounds on the absolute necessity of the closest of cooperation; and every student heartily agrees. This article is prepared with an idea in mind not to add any more arguments in favor of this already accepted conception of the necessity of this coordination, but to show how one armored division in World War II solved the problem with the organization as it existed at that time and with what success. It is also hoped that in the course of the discussion some indication may be found to influence future thought along the lines of what arrangement of armored elements is best suited for exploitation.

No attempt will be made to establish a claim that the unit we are examining was the hardest hitting or fastest moving armored column or that no one else used the same or similar system, or that other units did not have a good and successful system. From the results obtained by the division in the race across France in the summer of 1944 one must be convinced, however, that the organization for exploitation used by the Fifth Armored Division was a successful one and that it, in six short weeks, paid handsomely for the enormous sums of money and time required for its activation, training and equipment.

The actual arrangement of troops used by his division in the exploitation following the St. Lô breakthrough was the idea of Major General Lunsford E. Oliver, the commanding general of the Fifth Armored Division. His plan, conceived during the training period of his division after he had returned from command of Combat Command B of the First Armored Division in its invasion of North Africa, was based on

his observation that there was a great need for closer tank-infantry cooperation. No realization of the plan was possible, however, until the unit had arrived in England and it became increasingly evident that the division was to be used in an exploitation role. Then the idea was presented to the division and hurried and extensive training in implementation of the scheme followed.

Basically this plan called for the formation of a tank-infantry team in which one tank was "married" to one infantry squad. To make such an arrangement possible the division was organized into three permanent combat commands: Combat Command A, Combat Command B, and Combat Command R. Each of these tactical commands had its headquarters (personnel for CCR initially being taken from organic division units and later coming from an attached armored group headquarters, while CCA and CCB used their organic headquarters group), a tank battalion, an armored infantry battalion, an armored engineer company, and a troop of the reconnaissance squadron assigned, with detachments from an ordnance company, a medical company and a field artillery battalion in direct support, all from organic troops of the division. These assignments and attachments or organic troops were permanent: i.e., the 34th Tank Battalion; the 46th Armored Infantry Battalion; A Company, 22d Engineer Battalion; A Company, 75th Medical Battalion; a detachment from A Company, 127th Ordnance Battalion; A Troop, 85th Reconnaissance Squadron; and the 47th Field Artillery Battalion; all these were in Combat Command A if the combat command was operating.

This regular assignment of the same units to the combat command made such intimate appreciation and knowledge of each unit by the other units of the command possible that the closest of cooperation between tanks and infantry was achieved. The breakdown within each combat command was just as regular. Company A of the tanks was married to Company A of the infantry battalion, and the Companies B and



Companies C were similarly wedded. Normally two of these married companies worked under and were habitually assigned to the tank battalion headquarters and one of the married companies to the infantry battalion headquarters. This resulted in two major teams within the combat command, the tank battalion team which was heavier throughout and had a large percentage of tanks and the infantry battalion team which was somewhat lighter and had a relatively high percentage of infantry.

These teams as set up worked, slept and ate together. They lived in the closest rapprochement and surprising loyalties sprang up. Infantrymen grew to speak of "my tank" and tankers spoke proudly of "my infantry." Each came to believe that his little tank-squad team was the greatest fighting unit in the world, that his married platoon and company was unbeatable as a unit, and that all the other soldiers in the army were unfortunate in that they couldn't belong to his particular team. Of course they knew that other units were similarly organized, but each of them was positive that the other teams might be good and all that but no one was quite up to the standards of his team.

Platoons, companies and married battalions developed individual personalities. They each had a set of stock formations which they each would swear by, but with the intimate knowledge they had of other members of their team were able quickly to adopt new formations which had been proved successful by other teams with a minimum of difficulty. Reactions to new situations became faster and faster as the married formations aged. Any delay to the advance of a column one of them was leading would cause immediate steps to be taken to overcome the difficulty seemingly without the least necessity for planning. The attitude became general that "since we can't knock out these opposing tanks except at short ranges, let's hurry up and get within the two hundred yards or so and run over the opposition. They want to run; let's keep them on the move."

So far this has been general sales talk on these married formations: how adaptable they were, how confident they became in their own ability to advance, and how easy they were to handle. Such are impressions in retrospect. But training as married formations had started late. Real teamwork actually developed while the units were advancing through France. Fortunately, the marriage took quickly and while all the kinks were not out when the division first started into action, the honeymoon trip to and across the German border fostered and developed real tank-infantry cooperation. As in most marriages, the usual early misunderstandings and adjustments had to be, and the pairs were not so efficient in meeting early problems as they became later. Mistakes were made and problems proved difficult in the first stages, but things constantly ran more and more smoothly.

To be more specific let's go a little further into detail on the performance as an exploiting force. First of all

the division was fortunate in being able to start an exploitation phase strictly as a pursuit. Other units had broken the back of the defense and had the enemy retreating. The first action, and all the action which will be described here was strictly pursuit. The division had not had the misfortune or disadvantage of engaging in a slugging match and thus developing caution. They were still full of the idea that they could chase the enemy all over the continent and whip anything they could catch. All of which made for the ideal pursuit team. Why should an exploiting unit be allowed to have any respect for the running enemy?

The division reached the continent on July 25, 1944. Looking at that timing now it is all too evident that the whole purpose for the unit was exploitation. And further the actual commitment was held up until August 2, when things were really running.

For a first objective the town of Fougères was assigned. After innumerable traffic snarls and rerouting of columns, things rolled fairly well, the division thought, but just as it was getting close enough to Fougères to realize it was about to capture its first objective, word came that some infantry division (later found to be the 79th) had already occupied the town, and immediate commanders cynically suggested that units get into fifth gear and see if they couldn't catch up to a fight. Lower units were then told that they would swing South as far as Chateau Gontier, turn East to cut off Le Mans to aid an infantry division in capturing this city.

Speed then became the keyword and the married formations began to come into their own. Combat commands usually advanced in single columns—on the road—alternating the lead between the two teams (tank battalion or infantry battalion as married up), but habitually led by a married platoon of medium tanks and infantry followed closely by one or two married companies. Resistance was never sized up, it was just hit; initially by the leading platoon with support from the artillery in column, and in the course of a very few minutes by the rest of the company and possibly another company with what fighter bombers could be scratched up from column cover or visiting planes. A decision to commit just so much of the force was never reached by judging how much opposition there was, but solely by time. If a company could roll itself into the fight before it was all over, in it rolled. Elements in the column which wouldn't normally close directly with the enemy immediately coiled off the road into firing or protected positions when the head of the column stopped and every medium married company sailed blithely down the road to the fight with no traffic snarls or doubling columns at all—theoretically. If the delaying enemy delayed long enough he had a lapful of tanks and infantry to deal with. Occasionally a company back in the column could be grabbed up and directed around to hit from another direction, but not too often was this necessary. Sometimes their noses would get bloodied and the combat commands would



have to come up with a hasty plan for attack, but the excellent tank-infantry-artillery cooperation made possible by knowing every Joe in the unit well enough to predict his reaction to any situation usually got the column rolling again before too much delay.

Granted resistance was spotty. There was even the situation in which a light tank company commander or a screening mission, whose map reading training in OCS apparently hadn't included much practical work following routes, reported himself inside the city the combat command was trying to surround and cut off. When challenged that he didn't even know where he was he countered that if the questioner would wait a minute he would dismount and read the street signs for verification. Slightly chagrined when he was told he was in a bad place inasmuch as the town had not yet been captured, he withdrew and pouted to a point that he made no more radio contacts for over an hour.

Past Le Mans when racing to cut the Paris highway a column was held up and for some reason the combat commander wasn't in his usual position at the head of the column and started the typical heckling, "Move out. What's holding you up?" The lead company commander's reply, "We are moving. You'll see what slowed us as you come by." By actual count the combat commander saw 17 knocked out guns with assorted splattered crews within easy range of the intersection. Here the lead platoon, by quick gunning and with marvelous assistance from its spouse infantry, had shot one of the most profitable skirmishes to date without losing a single vehicle.

But there were times when the ants got into the potato salad. After Le Mans was taken by infantry elements, the division, at 8:00 A.M., August 10, swung north with the combat commands in more or less parallel columns. Resistance was considerably stiffer and it was not until the late afternoon of August 12, that elements of the division reached the outskirts of Argentan, some 60-odd miles to the north. This town was fanatically held and because of a shortage of ammunition and fuel caused by the supply column becoming traffic snarled by a mix-up with combat elements of the Second French Armored Division, the combat command there was not able to clear the town that day. Early the next morning a sadly inadequate attack was made on the town. In the meantime, enemy tanks had idled into position and CCA took a sound trouncing. Ordered to hold South of Argentan, the division blocked (in connection with other divisions who joined it there) while the tactical air force thoroughly worked over the remnants of the German Seventh Army trying to escape through the Falaise Gap.

Relieved in the Argentan-Gace sector by the 90th Division, on the 15th, the division attacked toward Dreux and the Eure River. CCB had a crossing south of Dreux by 11 A.M., August 16. By August 24, when the XV Corps was released from Third Army to First Army by virtue of an adjustment of army boundaries, the pocket between the Eure and Seine Rivers had

been cleared.

On August 30, the division started moving again, through the already liberated Paris and on to the northeast. Continuing northeast toward Conde, on the Belgian border, the division was again halted on September 2, in the vicinity of Cambrai, and on September 4, was turned southeast. Rapid advances were again the order of the day, and by September 10, the division was in Luxembourg, CCA having passed through the capital that day. By September 11, elements were on German soil.

Demonstrations against the Siegfried Line were carried on throughout September 13. On September 14, CCR, reinforced by the First Battalion, 112th Infantry, crossed into Germany at Wallendorf. Because of the limit placed on their advance by corps, CCR was forced to halt when the going was still not too rough. Tied by corps order to terrain not at all suitable for defense, they were forbidden to advance because it was impossible to adequately supply or reinforce them for continued movement. CCR took a good lacing in place. CCB went in to help on September 16; CCR came out on September 19; and CCB finally got out on September 22. This sortie into Germany was disastrous for both combat commands, but when compared to enemy casualties inflicted (2,353 killed, 1,218 captured, and 45 tanks destroyed), the losses do not look out of proportion. What the results of CCR's thrust might have been had it been possible to adequately support them makes interesting speculation. Certainly they had momentum enough and were in no mood to stop.

Thus ended the first exploitation of a green division. In forty-one days from August 2, to September 11, including several days of sitting around during realignment of army boundaries and shifting between corps, this division, committed for the first time, had covered around 800 miles of enemy territory. Total casualties for August and September were: killed, 260; wounded and missing, 1,238; tanks lost to enemy action, 51. To compare with this, the casualties inflicted on the enemy during the same period by the division (no credit being taken for those inflicted by the air working with the units) were: killed, 6,198; captured, 6,047; tanks destroyed, 201.

Such a low ratio of losses to successes is felt by every one in the division to be due to a great extent to the ever-increasing efficiency of the "married formation." The only note of discontent is that there should have been more time for training as teams before the unit was committed to combat, so that the early mistakes caused by unfamiliarity with their teammates might have been avoided. With the slightest bit of encouragement all who went through the action of the division in the summer of 1944 will recommend that an armored division, if it is designed to be an exploiting force, consist basically of composite companies and platoons in which there are organically both tanks and armored infantry "living, sleeping, eating together"—married if you will.



# Tanks With Infantry

*by Major William R. Campbell\**

IN November of 1943 the 1st U.S. Infantry Division returned to England feeling as any other outfit would after completing three campaigns—that only the infantry fought and won wars.

But, on April 21, 1944, the 745th Tank Battalion was attached to the 1st Infantry Division. This was a very short time before the invasion of Europe but a great deal could have been done with the limited time available if attachments had been made to the regiments.

Upon landing in France, one company of medium tanks was attached to each infantry regiment. Company A was attached to the 16th U.S. Infantry Regiment; Company B was attached to the 18th U.S. Infantry Regiment, and Company C was attached to the 26th U.S. Infantry Regiment. Each regimental commander attached a platoon of five tanks to each of his rifle battalions. These attachments continued throughout the entire Continental War with the same tank platoons and infantry battalions being paired up except for temporary interruptions when it was thought advisable to assign two platoons to one rifle battalion for a special operation. For the greater part of the war the light tank company was attached to the 16th Infantry Regiment which attached a platoon to each infantry battalion. The mortar platoon of headquarters company consisting of three 81mm mortars was attached to the 16th Infantry along with the three assault guns of the same company. This attachment continued to V-E Day. The 105mm assault gun of each medium tank company was attached to the assault gun platoon making it a six gun firing battery. The three tanks were taken from headquarters company, and attached, one to each medium company as replacements for the 105mm assault guns.

Tank platoons attached to infantry battalions were in turn attached to infantry companies for specific operations. Each tank platoon leader received his orders from the infantry company commander of the rifle company to which the platoon was attached; he in turn advised the company commander upon the use of the tank platoon. Company commanders of tank com-

panies located their command posts in the vicinity of the respective regimental command posts of the regiments to which they were attached. This facilitated close liaison with the tank company commander advising the regimental commander on the status of supply and maintenance and making recommendations upon the employment of the tank platoons.

The permanent attachment of tank platoons to the battalion made the tanks immediately available for any action and the tanks and infantry formed a strong team, each with the greatest respect for the capabilities of the other. On some occasions three tank platoons were attached to one infantry battalion for a particular operation, but the greatest care was taken to give the platoons time for maintenance and for their return to their own infantry battalions.

Generally the employment of a tank platoon by each battalion commander was the same except for small personal opinions, and it was not long before a standard procedure for the employment of tanks with slight operational variances went into effect.

In the landing on Omaha Beach in Normandy, France, the 745th Tank Battalion did not furnish close-in fire support for the 1st Infantry Division but one medium company landed shortly after noon on D-day and the other two companies landed on D plus One. They moved forward with the leading elements of the 1st Division, clearing out the hedgerows as they advanced. Caumont, Normandy was taken by June 12, 1944. In this operation both flanks were threatened by the enemy since he was able to hold up the advance of friendly units adjacent to the division. The tanks had aided greatly in the rapid advance of the infantry, and they had been immediately available for the ever present enemy armored threat which could be ruinous to any beachhead if it was not quickly repulsed.

All tank units that gave close fire support from landing craft, mechanized, to the leading waves of infantry were either destroyed before they reached the shore or in their attempts to cross the beach. The tanks, when coming ashore in the LCM's were helpless, all maneuverability had been lost, their fire was inaccurate and they were at the mercy of the high velocity antitank

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guns on the shore. The beach was well mined, the anti-tank guns were accurate, and obstacles and deep anti-tank ditches canalized the battlefield.

In my opinion tanks should be loaded on LCM's and held offshore until infantry has cleared the mines and destroyed the antitank gun fire. The tanks are lost if employed before these things have been accomplished. Tank dozers should be gotten ashore early to fill tank traps and clear roads for other mobile equipment.

In the attack it was the mission of the tanks to get the infantry forward by placing point fire on targets that were holding up the advance of the foot troops. The tanks were extremely vulnerable to the panzerfaust and enemy rocket launchers, so they had to be protected by the infantry on all sides. The tank commander usually operated from the ground and controlled his platoon with a prearranged arm and hand signal system, tracer bullets and the SCR 300 radio, but since there were only two of these radios in a platoon it made control by the latter method impractical. The telephone was used seldom since it was usually damaged and in many cases it would have been poor judgment on the part of the foot troops to expose themselves. Each tank working with infantry should have an SCR 300 radio. A telephone with a long heavy duty trailing wire would provide a greater latitude, insure a positive contact, and I think it should be tested to determine its practicability with tank-infantry teams.

The tanks were normally employed as a platoon, and it was only when tanks could not support and cover each other that they were employed in fewer numbers than five. A tank employed alone needed more infantry protection and created a separate maintenance and supply problem. It was found to be most important to have a platoon leader's recommendation prior to an attack since he was much better qualified to determine routes of approach and terrain that might limit his tanks' mobility. The platoon leader must always be given time for a personal reconnaissance before an attack, and each tank commander should accompany the platoon leader if possible.

In the hedgerow country the immediate objective was the next hedgerow. Hedgerow country would be almost fatal to infantry alone, but with tanks supporting and used properly, fair advances could be made with few casualties. The center tanks placed machine gun fire in the next hedgerow and moved forward with flanking infantry while the flanking tanks sprayed the hedgerows running parallel to the axis of advance. A few rounds of white phosphorus would always dislodge a well dug-in machine-gun crew. The infantry was alert to deal with any enemy who escaped the tankers, in their rapid advance.

When attacking a wooded area it was found best to have the infantry advance to within 400 or 500 yards of the wood's edge. The tanks moved up to the infantry and placed direct fire into the woods. When the infantry entered the woods the tanks fired overhead machine-gun fire and moved with the forward infantry

elements through the woods with all around protection. This operation, as all others, was influenced by the terrain, enemy weapons and the situation. For example, in taking a wooded area with open, level country to our front and well dug-in enemy antitank guns, it was found better to have the infantry cross the open country at night without the tanks and with no artillery preparation. The infantry was in the woods at dawn; they destroyed the antitank gun fire; the artillery was adjusted on the enemy's rear and the tanks joined the infantry for the push through the woods.

In the approach to the Siegfried Line most of the movement had been made along roads, but after the first defenses of the line had been contacted, the tanks moved off the roads and cross country through the woods. Although the woods were dense for tanks, the defenses of the line were weaker in the wooded areas and the fields of fire were shorter and greatly to our advantage.

The tanks moved up as close as 50 yards in some cases, to pillboxes and fired 75mm APC at the embrasures.

After an opening had been made 75mm HE and WP was fired into the pillbox. This usually brought the occupants out of the box, and enabled the infantry to close in and throw hand grenades and prepared demolition charges into the pillbox, destroying the enemy who remained inside. The engineers blew openings through the dragon's teeth in some places and covered them with dirt in others. Tank dozers filled ditches and covered openings of pillboxes in many cases.

Tank-infantry teams worked very well in the taking of Aachen. A large city such as Aachen channelized the fighting by streets and the standing stone buildings. It was found that the best combination was two tanks on a street with a platoon of infantry providing all around security: this was necessary since the houses offered the defender great opportunity to fire panzerfaust from the windows at tanks. He could also fire his small arms at the infantry. The infantry preceded the tanks by at least 100 yards thoroughly searching the houses on both sides of the street for the enemy. The tanks provided machine-gun and tank cannon fire as requested by the infantry. Before moving ahead the tanks placed HE and machine-gun fire on all positions known to be occupied by the enemy and on all positions thought to be occupied by the enemy. The tanks placed fire on all corners of a street intersection before the infantry moved in and also placed fire down the streets at likely occupied positions, before the infantry entered those streets. This caused the enemy to surrender or to take cover in the cellars, making the infantry advance much more rapidly and easily. The tanks gave the Infantryman a feeling of security as he advanced down the street, since he had the knowledge that either cannon fire, machine-gun fire, or both, would be placed on any enemy who attempted to impede his advance. The Infantrymen had to protect their protectors by constant reconnaissance. Infantrymen observed



intersections and described targets, gave range, direction, and location to the tankers in order that they could move rapidly into an intersection and quickly bring fire on an antitank gun. Four riflemen were assigned to each tank to be directly under the command of the tank commander. It was the duty of these four men to provide close-in security, act as runners and keep the tankers informed of the exact location of the infantry groups working through back yards and from house to house through openings not visible to the tanker. This type of fighting was slow and consumed a great deal of ammunition. This necessitated the maintaining of a battalion dump close enough to enable the tanks to go back to replenish their supply. Each battalion commander had to coordinate the progress of the teams on parallel streets, to keep them abreast.

In attacking small towns, tanks were normally not sent into the town with the leading elements, but remained in a covered position and delivered direct fire into the town prior to the infantry going in and seizing some houses and the town's antitank defenses. The tanks then moved up and supported the infantry in clearing the town.

In a river crossing tanks covered the crossing infantry by firing across the river at possible enemy positions. After the infantry had secured the opposite bank, bridges were built and tanks crossed on them.

Tanks were used successfully in night attacks, moving with the leading elements of the infantry. The tank fire was not too accurate and all adjustment was made with tracer. It was found that it was best to fire only when necessary at night as the fire was inaccurate and disclosed the tanks' positions. The tanks gave the attacking infantry a defense against machine guns, built up his morale and unnerved the defender. The enemy or anybody, hearing tanks at night becomes very much alarmed and especially so if he cannot locate them or determine their number. It was found that better results were obtained when a detailed daylight reconnaissance was made prior to the attack and when plans further provided that the forces arrived on the objective while there was sufficient light to reorganize the ground in preparation for possible counterattacks. This denied the enemy the opportunity for launching a night counterattack against an unprepared position.

In a defense position some rifle battalions kept the tanks with the most forward infantry elements while other battalions assembled the tanks in the vicinity of a forward company or battalion command post. In other cases the entire company was assembled in the vicinity of the regimental command post.

The tanks should always remain on a newly taken objective until it is fully organized and ground mount antitank guns have been brought forward to cover the possible tank routes of approach. Tanks should always be allowed to assemble as a company, if the infantry remains on the defense for more than a day. This permits the tankers to take care of maintenance, familiarize their replacements, reorganize the platoons and allow

the men to clean and rest themselves.

The tanks moved in the tank-infantry team set-up on road marches when there was any possibility of encountering the enemy. This was rough but it was the accepted way of moving infantry when the truck attachments were limited. It was found to be better to move the tank company as a unit for marches in excess of 25 miles. This allowed the tanks to move more slowly, thus reducing wear and maintenance troubles.

The light tank company of the 745th Tank Battalion was attached to the 16th Infantry Regiment for the greater part of the European War. It is my opinion that the light company should be attached to a regiment and employed as a company whenever possible, attaching a platoon to each battalion only when absolutely necessary. This company can only be used in the absence of enemy antitank guns and enemy tanks, but it is highly maneuverable and can be used to advantage when a fast, light striking force is needed. I remember one night when an infantry battalion failed in two attacks, to take a hill objective and suffered heavy casualties. This battalion had a company of M-5 light tanks but failed to use them because they did not know the value of such an attachment. The light tanks were finally ordered to take the hill with infantry following in close support. This could have been done at first with practically no casualties, but in this case the value of the company was learned by experience.

The tankers were furnished with post exchange supplies and rations along with the infantry, since it was impossible for the tank company to feed its separated platoons B rations, and it was another binding feature to have the tankers fed hot meals by the ration details of the infantry.

Tankers and infantry both saw the value of teamwork developed through close cooperation under combat conditions. The attachment of the 745th marked the first time that the 1st Division had really worked with a close support tank unit. At first the infantrymen were not sure what they could expect from the tankers but early in the hedgerow country there developed mutual respect which furthered the spirit of cooperation. The 745th was a hard hitting unit that could be counted on to supply the big punch. The infantry showed the tanks that they did not expect them to fight alone and gave them the protection that they needed.

It is felt that in future wars the tank-infantry team will be the great striking force. Such a team should not be made up on the battlefield but must be trained long before battle. Its men must know each other well, must work together, and must learn each other's capabilities and limitations. Its officers must have the spirit of cooperation and teamwork. This is the lesson that can be learned through the experiences of the 745th Tank Battalion and the 1st Infantry Division: that a strong team can be built by the attachment of tanks to infantry; that the team can be adapted to almost any job and that friendly cooperation is the secret of teamwork.



# THE TANK *versus* TANK PHASE\*

*by N. Campbell*

**The writer's concluding statement—"the answer to tanks is neither the mine nor bazooka, nor the gun or airplane, but simply bigger and better tanks and, preferably more of them," refers to the battle of Sidi Rezegh in November 1941. How does this compare with our own concepts of armored warfare in the future?**

**I**N the autumn of 1942 the introduction of considerable numbers of Shermans to the Western Desert meant the passing of a phase in tank tactics. In the previous two years tank *versus* tank actions had been accepted as the best answer to an enemy armored attack. The Sherman, with its 75mm high-explosive shell, opened a phase when the legitimate opponent of the tank became not an enemy armored vehicle but an anti-tank gun.

The previous campaigns in the desert, however, had produced two outstanding British tank victories, the Battles of Beda Fomm and Sidi Rezegh.

## BEDA FOMM

By January 28, 1941, General Wavell's advancing army had invested Derna, about 130 miles beyond Tobruk, which had fallen a week previously.

The advance along the coast was led by the 6th Australian Division, and it was thought that the enemy, retiring before it, intended to make a determined stand in Benghazi. The plan was to maintain pressure on the town itself with the Australians, while the armored force went across country to cut the Benghazi-Tripoli road about 150 miles to the south.

The armored force had arrived at Mekili at about the same time that the Australians were assaulting Derna, and it had been hoped to allow them ten days' rest in order to establish supply depots. Reconnaissance patrols had already been dispatched to examine the projected route of the Division, and on February 2 they returned and described it as "almost impassable." Meantime, an aircraft returning from a flight over Benghazi had reported that the Italians were pulling out of the town to the south. All ideas of rest and maintenance immediately went by the board, and General O'Connor, the Corps Commander, at once ordered General Creagh to "proceed with all speed to prevent the enemy escaping and destroy him as opportunity offers."

It was about 150 miles to the Benghazi-Tripoli road, and a dust storm was developing, but a flying column

was immediately formed, consisting of the 11th Hussars, 2d Rifle Brigade and 4th and 106th R.H.A., to push ahead in the lead. It left at first light.

The main force moved off at midday on February 4, and found the worst reports of the going to be true. By 5 o'clock on February 4, the flying column had arrived at and captured Fort Msus and, leaving behind a small guard, pushed on immediately. The main column did not arrive at Msus until 1 o'clock in the morning. Here a brief halt was ordered, and a count of the vehicles showed encouragingly few absentees. Before first light the flying column was again under way and was followed at dawn by the main body. Throughout the morning the Division plunged on, and at 12:40 p.m. great news came from the flying column by radio. The armored cars had reached the road. They reported that traffic was flowing in both directions, which could only mean that the Italians had not arrived. How far back they were along the road was still a mystery, for we had refrained from sending out reconnaissance aircraft for fear of revealing our knowledge of their retreat.

The flying column had not done their journey with much to spare, for exactly one hour and forty minutes after their first patrols had reached the road, the head of the Italian column came in sight. As the guns opened fire on the first lorry to come down the road it skidded sideways and stopped. Behind it there piled up a 10-mile-long convoy of tanks and guns, lorries and motor buses, transporters and motorcycles. The very size of it added to its confusion, for, although the Italians could muster 150 tanks and nearly 230 guns, they never came into concerted action against the tiny flying column. The battle raged all day, and to the main body of the Division, racing to the assistance of its advance guard, came many anxious moments. However, the curious reluctance of the Italians to leave the road for the good going on either side of it, combined with the fact that General Tallera, who was in command of the column, was killed early in the first day, accounted for the Italian failure to break through.

The battle raged for 36 hours, taking the form of

\*The Royal Armored Corps Journal.



individual actions between the various components of the enemy column and the extremely active, but well-coordinated movements of the British force. There is no doubt that the Italians were deceived by the effrontery of the armored force into thinking that the British were far more numerous than was in fact the case.

By nightfall of the second day the battle was almost over, but at dawn the following morning the Italians made a last determined attempt with tanks to break through. By 9 a.m. it was all over, and the weary men of the armored division turned to counting their booty. Stretched back along the road in the broken enemy convoy the count showed that we had destroyed 112 tanks, almost 1,500 lorries and 216 guns of all calibers. In addition, we had taken over 20,000 prisoners and smashed the remnants of the Italian army in Africa.

The Battle of Beda Fomm stands out from an outstanding campaign because the armored force engaged was working at the very limit of its communications, and fought a successful action alone and unsupported against a numerically superior enemy. This feat was never again accomplished by either side during the whole of the remaining four years of the war.

#### SIDI REZEGH

In November, 1941, over two years after the outbreak of war, the Germans were, for the first time, attacked and defeated by the British forces and driven from ground of their own choosing. The material gains of the campaign included the relief of Tobruk; the occupation of a large part of Cyrenaica; and the destruction of approximately 400 enemy tanks, as well as the infliction of a totally disproportionate number of casualties on his unarmored troops.

The spearhead of the British attack, in which the majority of the armor was concentrated, was the 7th Armored Division. At times it became nearer a corps, and it resembled not so much a division as a convenient battle headquarters to which other formations could be attached as it became necessary.

The campaign, which lasted for six weeks, can be divided into four phases:

- (1) The Battle of Sidi Rezegh.
- (2) The defensive phase and the enemy counter-offensive.
- (3) The resumption of our offensive around El Gubi.
- (4) The pursuit and the capture of Benghazi.

Of these, the two most interesting are the Battle of Sidi Rezegh, with the fierce reactions it produced from the enemy, and the period following close upon it when the enemy spent himself in fruitless counterattacks against our depleted armor.

On November 18, the day on which the advance started, the 7th Armored Division had under command three armored brigades of cruiser and U.S.A. M3

(light) tanks. The tank strengths of these brigades were:

4th Armored Brigade, 166; 7th Armored Brigade, 129; 22d Armored Brigade, 158.

In addition to the 7th Support Group, the Division had under command three armored-car regiments, which were allotted to brigades as follows:

King's Dragoon Guards to the 4th Armored Brigade.

4th South African Armcd. Car Regiment to the 7th Armored Brigade.

11th Hussars to the 22d Armored Brigade.

The concentration and approach march of the Division had been carried out with practically no interference from enemy aircraft, indicating that the R.A.F. had gained marked air superiority before the campaign opened.

It had been appreciated that the high ground at Sidi Rezegh, overlooking the main German communications east and west and giving observation over his forces investing Tobruk, was vital to the enemy. The divisional plan was, therefore, to advance on a three-brigade front with the 4th Armored Brigade on the right, the 7th Armored Brigade in the center, and the 22d Armored Brigade on the left. These brigades were to establish a battle position in the area Bir du Meliha—Gueret Hamza—Bir er Reghem, where, it was hoped, they could meet and beat any enemy armor deployed against them. This was estimated to be about 250 German tanks and approximately 150 Italian tanks, provided that the enemy concentrated his available tank strength from all the battle areas.

By last light on November 18, the Division had established itself on its first objectives with the exception of 22d Armored Brigade, who had been delayed refuelling. No major action had so far been fought. On the following day, however, the 22d Armored Brigade (136 tanks) made the first contact with enemy tanks eight miles southeast of Bir el Gubi, and by the evening, after a heavy engagement with M13 tanks supported by Mark IV's and antitank guns, claimed 45 M13's knocked out, though the 2d Royal Gloucester Hussars had suffered about 50 per cent tank casualties.

Meanwhile, the 4th Armored Brigade (165 tanks) had also been engaged with numerous parties of enemy, including tanks, in the area Bir du Meliha, while the 7th Armored Brigade (123 tanks) was ordered to advance and secure a battle position in the area of Sidi Rezegh. At about 1630 hours the 6th Royal Tank Regiment reached the aerodrome at Sidi Rezegh, where they destroyed 19 aircraft on the ground and took 60 prisoners. While this advance was taking place, the 7th Armored Brigade reported a force of 100 enemy tanks moving southeast on its eastern flank. This force was engaged by the 4th Armored Brigade and fierce tank *versus* tank battles continued until last light, when the 4th Armored Brigade count showed 19 enemy tanks definitely destroyed, and a possible further seven.



The 4th South African Armored Car Regiment had by now established observation on the Trigh Capuzzo, and the enemy reactions to the thrust for the high ground at Sidi Rezegh were beginning to become more violent.

On November 21, the escarpment to the north of the aerodrome was attacked by the 1st King's Royal Rifle Corps and 2d Rifle Brigade supported by the 6th Royal Tank Regiment. The attack was successful and the high ground commanding the area was now in our hands. The enemy, however, had no intention of allowing it to remain so, and spent the day attacking the 7th Armored Brigade heavily and continuously from the area south of the aerodrome. By last light the 7th Armored Brigade had been reduced to 40 tanks and the 22d Armored Brigade, which had been ordered northwest to assist the 7th Armored Brigade, had been unable to make its presence felt in time. It had by now become clear that the enemy was prepared to stand very heavy losses in order to regain the escarpment to the north. The main problem on our part was the reinforcement of the Support Group on the high ground, and the defeat of the enemy tank attacks which were being launched from all sides of the aerodrome.

By last light on November 22, the enemy was once more in possession of the aerodrome area, and had overrun the 1st King's Royal Rifle Corps on the escarpment to the north, although he had suffered extremely heavy tank casualties during the day. By nightfall, when the fighting ceased, the British dispositions were:

Support Group: on top of the escarpment south of the aerodrome.

4th Armd. Brigade (approx. 100 tanks): area south of Hareifet en Nbeidet.

22d Armd. Brigade (about 45 tanks): area to the south of escarpment area 4240 (see map).

5th South African Infantry Brigade: area 429398, having attacked the escarpment without success during the morning.

7th Armored Brigade (10 tanks): area 4339, protecting rear of the 7th Armored Division headquarters.

On November 23 plans to assault the southern escarpment were thrown out of gear by a heavy tank attack on the 5th South African Infantry Brigade leaguer. This attack was beaten off and the 22d Armored Brigade (48 tanks) was ordered to reconnoiter the area south and southwest of the leaguer and to engage any threatening enemy tank forces contacted. By midday an artillery duel had established that the Sidi Rezegh ridge was held by the enemy with a large number of guns and at 1330 hours these put down a heavy concentration on the north flank of the South Africans' leaguer, under cover of which an infantry attack came in that was halted only 1,000 yards from the forward troops.

There followed a lull, but at 1530 hours an attack by over 100 tanks was launched from the west and southwest. The 22d Armored Brigade immediately counterattacked in the flank, but were unable to check the advance. The enemy attack was pressed home in spite of heavy casualties, and the leaguer was overrun. Lorried infantry in large numbers followed close behind the tanks, and by last light the enemy was established in the area previously occupied by the 5th South African Infantry Brigade.

The counterattack had cost the enemy over fifty tanks, but for the moment it had deprived us of the commanding ground at Sidi Rezegh. It proved, however, to be the decisive battle, for never again did the enemy attack our armored forces so violently, and never again did he manage to mass such large quantities of tanks. Like our own, his tank casualties had been very high.

In the next phase of the campaign—the defensive and defeat of the enemy's counteroffensive—it became necessary to amalgamate the three armored brigades into one. Almost the first job of the Brigade on December 1 was to go to the assistance of the New Zealand Brigade, who a couple of days earlier had succeeded in reoccupying the high ground at Sidi Rezegh. They were now being subjected to attacks by tanks from both east and west, and the 4th Armored Brigade, in the words of the G.O.C. 7th Armored Division's order, was "to reconnoiter Sidi Rezegh at first light and counterattack enemy tanks at all costs." This task the Brigade successfully performed, escorting the New Zealand Division as it withdrew eastward along the high ground.

During the six days that had elapsed between the withdrawal of the Division from the aerodrome and its resumption of the offensive toward Bir el Gubi, the reorganization and regrouping were carried out behind the armored-car screen, while the offensive was maintained by columns from the Support Group. The enemy appeared to consider that he had gained the initiative, and on November 28, 80 enemy tanks tried to drive a wedge between the 4th and 22d Armored Brigades at Sidi Mutta. He was driven off and appeared to be surprised to find British armor still in such strength, for it was his last major attempt at a counterattack.

Of the many lessons learned in the campaign three stand out. The first was the importance of immediately reinforcing the ground gained by the armor with troops that can hold. Our failure to do this cost us, initially, the escarpment to the north of the airfield at Sidi Rezegh. The second was the masterly cooperation of the German antitank guns with their armor, and the bold manner in which the antitank guns advanced with, or even in front of, the tanks. The third lesson administered by the enemy was that the answer to tanks is neither the mine nor the bazooka, nor the gun or aeroplane, but simply bigger and better tanks and, preferably, more of them.



CARDED

# RUSSIA IN ASIA\*

by Lieutenant Colonel J. V. Davidson-Houston\*\*

I MUST preface my remarks by saying that my description of the history, geography and expansion of Russia will be somewhat sketchy, because time will not allow me to go into all the details, and the country to be covered is most extensive. In most instances the character and policy of a nation is determined by its physical environment, and nowhere is that more obvious than in the case of the Russians. On studying a map of the Soviet Union you will find that the country is hedged about by geographical circumstances. On the European frontier in the early days the Russians were constantly subjected to attacks by Finns, Scandinavians and other enemies from the north and west, and they were cut off from intercourse with Europe and from the influence of Rome. They therefore grew up quite differently from the rest of Europe, which probably partly accounts for their difference in outlook. Later in history the density of population in Europe and the strength of the armies of Central and Western European Powers made it impossible for the Russians to achieve any sort of expansion in those directions. In the north there was the extensive Arctic front covered by the frozen desert known as the *Tundra*, and the sea itself, frozen for a great part of the year. Eastwards, on the Pacific seaboard, the Russians during their expansion have from time to time come up against, first, the Chinese Empire; secondly, the Japanese; and now American sea power. Along the extended southern frontier, from the Pacific to the Black Sea, there is an expanse of desert, semi-desert and mountains.

In addition to this geographical enclosure the Russians have always felt themselves to be hedged about psychologically. In the early period of their development they were subject to constant attack by enemies—in fact, any foreign nation came to be regarded by the Russians as hostile. Even in the time of Ivan the Terrible (a contemporary of Queen Elizabeth), who tried to open foreign trade, merchants who arrived at Moscow were kept outside the city walls in the same way as the Chinese treated European merchants. The obvious reaction to that physical and psychological feeling of being hedged about is, as we saw to some extent in the case of Germany, an attempt to expand to the circumference of the ring and, having done that, to try to break out somewhere.

## EXPANSION

The history of Russian expansion is often regarded as something recent because it is so much in the news at the moment, but it has in fact proceeded ever since the Russians became a nation. It was a case of the flag

following trade, and to a great extent it was directed by geography. The map of Russia, both in Europe and Asia, shows a number of great rivers mostly flowing from north to south, or the other way, and connected by the valleys of their tributaries, themselves in many cases navigable rivers. The Russians tended to follow those tributaries of the great rivers, and that gave direction to their expansion. Every now and then they used to come up against a check, and whenever that happened they stopped and began to look somewhere else. Throughout Russian history there has been expansion followed by a check somewhere, and then a change of direction.

I believe the first event in Russian expansion was in 1482, when Ivan III was proclaimed Tsar of all the Russias and for the first time united the various small principalities. He was the Prince of Muscovy, with Moscow as his capital. From that time until Peter the Great, Moscow remained the capital of Russia. As soon as the Russians consolidated themselves into a nation they began to push out the Tartars and to occupy the Tartar kingdom of Kazan to the east, and in 1558 they entered Siberia. Expansion into Siberia was very natural. The Ural Mountains are no physical barrier and Siberia is similar to Russia, a country of vast forests and steppe, through which flow great rivers with tributaries affording means of movement. The Russians also knew that there were furs, gold and spare land to be had in Siberia. The population was primitive and sparse, so the Russians expanded quite naturally eastward across Siberia. They expanded so quickly that less than one hundred years later, 1638, they reached the Pacific. Here for the first time they came up against a Power, the Chinese Empire (then ruled by the Manchus and at its heyday). These objected strongly to the presence of the Russians. There was a good deal of sporadic fighting, and eventually an agreement was concluded in 1689, the Treaty of Nerchinsk, by which the Russians agreed to halt on the line of the Argun River, which flows north and south some hundreds of miles west of the Pacific. The Manchus claimed all the country to the east of that, and the Russians had to be content with the territory to the west. This merely caused a change of direction: the Russians moved north-eastwards into the country of the Samoyeds and occupied Kamchatka; they also reached the Behring Sea and crossed into Alaska, which remained a Russian colony until 1867, when the Americans induced the Russians to sell it for a modest sum just before the discovery of gold there.

During this time, although their military expansion into Chinese territory stopped, Russia's political expansion continued, and by means of embassies, peaceful

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\*\*British Engineer Officer.



penetration and exchange of merchandise, the Russians during the next century established themselves very well in China, and there was actually a Russian Mission in Peking long before any of the other European Powers were admitted.

The next direction in which the Russians began to expand was in the Caucasus. In the time of Peter the Great certain explorations and movements were made into the country between the Black Sea and the Caspian, which at that time contained territory belonging to the Persian and Turkish Empires. There was a certain amount to attract the Russians there: the valleys were fertile and there were minerals to be mined. This expansion continued slowly for a long time and was accompanied by campaigns against both the Turks and Persians, which were not consummated until after the Crimean War. The expansion into the Caucasus was a reaction to the failure of the Russians to reach Constantinople by the Black Sea. The British and the French had checked Russian ambitions in the Straits, and as a kind of offset they began to get at Turkey by the back door, for there we could not interfere.

Another direction in which expansion began in the nineteenth century on a big scale was into Turkestan, east of the Caspian. The territories there were under Persian and Chinese suzerainties. The economic attractions were cotton, minerals, and the fact that through that area east of the Caspian ran the old trade routes between China, the Far East generally, Central Asia and the West. At this time there were two Khanates, Khiva and Bukhara, where the Russians found it necessary to assert themselves owing to the fact that their communications and caravans were being constantly raided by warlike tribes. In that part of Asia the Russians have been compelled at various times to subdue lawless peoples which raided their caravans and their peaceful settlers, and having subdued those tribes and made them law-abiding they had to protect them against other tribes which raided them. Thus one thing led to another, resulting in considerable expansion in and eventual Russification of most of Turkestan.

Later in the nineteenth century, having overrun Turkestan, the Russians found themselves up against the borders of Afghanistan and began to experience a check from that direction. Their appearance on the Afghan frontier naturally attracted the attention of the Indian Government. That is recent history. The Russians did, in fact, pause on the Afghan border at the end of the nineteenth century. In the meantime the Chinese Government had grown very weak, and the Russians took advantage of that to push on again in Eastern Siberia; they reached the Pacific coast and thus brought their eastern march to the sea.

In 1898 they leased, from China, Port Arthur and the territory where they built the entrepot of Dalny, the first ice-free ports the Russians had managed to acquire. Between 1891 and 1903 they completed the Trans-Siberian railway, joining Vladivostok to Euro-

pean Russia. That railway had two branches in the Far East, one of which went round the Manchurian border entirely in Russian territory; the other took a short cut straight through Chinese territory. That afforded the Russians a stake in Manchuria itself; it gave them communications to protect and country to exploit by means of the railway. They thus began to take an interest in Manchuria. They developed a branch of the railway south to Port Arthur, where they had established a naval base. After the completion of this railway the Russians experienced another setback because they came up against the Japanese, and the Russo-Japanese War checked their ambitions in Manchuria. The Revolution followed shortly afterwards, which made it difficult for the Russians to achieve any further expansion. There was thus a period of stalemate, but to compensate for this lack of external expansion in the Far East and Europe the Russians began to busy themselves about the central part of their frontier, particularly in Mongolia and Sinkiang, where they were not up against any strong opposition. As they extended their sphere of influence there they also began to develop communications along the long land frontier: they completed the Turkestan-Siberian railway, joining the Trans-Siberian to the Turkestan systems; they established a line of air bases parallel to the frontier and air communication along the whole of the southern border. It is interesting to note that up to the present time, in spite of all this expansion, the total population of Soviet Asia is reckoned to be only 30,000,000 out of a total population for the whole empire of 190,000,000, so that there is no pressure of population to account for this phenomenon.

#### MOTIVE FORCES

With the foregoing in mind, we must ask what were the motive forces behind this expansion. History shows that they can be, broadly, divided into three: desire for protection or security, economics, and out-and-out imperialism.

The security aspect can be further subdivided: the first and most important subdivision being the strategic one. From the defensive point of view the Russians wished to deprive any potential enemy of bases from which to launch an attack on their territory, and themselves to occupy bases convenient for attacking an enemy's territory. At the present time many of the resources of Soviet Russia—such as oil, coal, iron and the newly developed industrial areas—are near the frontier, and it is therefore desirable for them to control the territory beyond the frontier so as to make it difficult for an enemy to threaten these resources. In addition, the Trans-Siberian railway and the Turkestan railway run near the border practically the whole of their way. In modern times the development of air attack and long-range weapons, such as rockets, makes it desirable to control territory farther and farther away from the centers of industry and population. In fact, there is no end to the range which one can claim to bring under one's



control in these circumstances.

A second method of protection is to induce one's neighbors to be friendly or to be puppets, and the Russians have adopted those principles. Where they have not actually occupied a country with their armies they have encouraged the setting up of Communist Party governments or frightened the existing government into being friendly.

The third method of protection has been ethnic. Practically the whole way along the Russian land frontier the population on each side are of the same stock, and the Russian is a good assimilator. Since he first started to expand he has never had any racial prejudices or color bar; he has always mixed with the people—Turkoman, Tartar or whatever they might be—and he has been very successful in Russification, so that the population of the Soviet Union is far more homogeneous than that of the British Empire. This assimilation has a certain value offensively and defensively; if people on the other side of the frontier can be brought to think in the same way as those on the Soviet side it affords a zone of influence—as, for instance, in Persian Azerbaijan; it also encourages attempts to control the territories beyond the frontier, so that the Soviet people will not be influenced by their kinsmen on the far side.

Then there is the system of economic zones. When the Russians trade with a neighboring country they usually try so to dominate that trade that it is conducted to their advantage. There is also the question of protection of trade routes. As I have said, the Russians in their early days often had to subdue tribes who raided their trade routes or nations who threatened them, and, having pacified these, they had to protect them by dominating somebody else. That is not so important at the present time. The chief economic interest the Russians now have is to dominate or control the trade between their country and neighboring countries.

Another economic desire is to obtain ice-free ports. Geography has given Russia ports which are closed part of the year by ice, and she is always trying to find outlets to warm seas which will be open all the year round without the use of ice-breakers.

Lastly, there is simple imperialism, the idea of expanding wherever the soil is propitious. That went on under the Tsars, and it appears to be going on today. It is partly a question of prestige. The Soviet Union does not want to occupy an area smaller than the Tsar's Empire, and in late years has turned its attention to territories lost during the Revolution.

#### THE ASIAN MARCH

Let us then look along the Asiatic frontier and see what is going on there, what expansion is taking place at the moment, and what is the likelihood of attempts at future expansion.

*Manchuria.*—The present frontier is the Amur River—an ethnic frontier, not an economic one. Rivers are nearly always bad frontiers, because the economy of a country builds up on both sides of the river. But this is

an ethnic frontier in that the population to the north is overwhelmingly Russian owing to colonization; while to the south is overwhelmingly Chinese, also owing to the colonization which took place during the nineteenth century. In this case the Russians cannot claim to have fellow-countrymen on the far side. On the other hand, the Amur River is a great trade route, navigable by steamers, and is not a good frontier from that point of view; both banks really belong to the same unit. Russian interests in Manchuria are both economic and strategic. There are coal mines and unexploited minerals; there is a tremendous soya bean output; and there are hides to be had from the considerable stock of cattle there. Manchuria also offers a number of ice-free ports—Port Arthur, Newchwang and Dairen in the south; Vladivostok, although on the same latitude as Madrid, is only kept open by ice-breakers in the winter. The Russians have also communications to defend; there is a railway running through Manchuria which they wish to be sure is free from threat by any other Pacific Power. We have seen during the last few months, that the Russian troops which entered Manchuria at the end of the Japanese war have been induced to withdraw, but as the Central Chinese Government forces come into Manchuria to take over they find themselves opposed by Chinese Communist armies who seem to be taking the place of the Russians.

*Korea.*—To the south of Manchuria is Korea. The frontier between Korea and the Soviet Union is a short one, the estuary of the Tumen River. The Russians are obviously interested in Korea because it would round off their eastern seaboard and make it difficult for any other Pacific Power directly to threaten Vladivostok or Manchuria from that side, and it forms a right flank to their Far Eastern possessions. Again, Korea has some well-developed warm-water ports, particularly Seishin and Rashin, which the Japanese were completing just before the war. Again, Korea has never in modern times governed herself; she was first under Chinese and next under Jap suzerainty, and has not since set up any satisfactory government of her own. The country is occupied by Russian forces in the north and American forces in the south. The Russians in their zone have been encouraging the Korean Communist Party, which I should say is much better organized than any party in the American zone and may eventually, when the Russians and the Americans remove their troops, achieve considerable influence in the polity of Korea.

*Outer Mongolia.*—West of Manchuria we come to Mongolia, a neighbor with a hilly but not difficult frontier, including the Gobi, which is desert in parts but elsewhere supports considerable herds of cattle, sheep and ponies. There the Russians possess the advantage of having the Buryat Soviet Republic just north of the frontier, where the population is of similar stock to that in Mongolia itself. Communications are well developed; there is a railway running from the Trans-Siberian line to Urga, now called Ulan Bator Khoto, the capital of Outer Mongolia. Russian inter-



ests in Outer Mongolia are partly economic; there is a well-developed trade route which is motorable right across Outer Mongolia into North China; there is also considerable pasture for sheep and cattle; there are many unexploited minerals. Another attraction is the fact that Outer Mongolia affords a kind of cushion to Siberia; it is a protective zone to the Trans-Siberian railway in case any hostile Power tried to operate from North China. Mongolia has always been technically under Chinese suzerainty, but the Russians had considerable interests there long before this present century began, and during the Revolution they were afforded an opportunity to intervene in the country because a White Russian force had entered Outer Mongolia and occupied Urga. The Red Army came in, destroyed the White Army, set up the "Mongolian People's Republic" in 1921, and the country was organized on Soviet lines with Russian troops to see that it remained so. It is now an independent state, with strong pro-Russian leanings. It is not possible, however, to get into Outer Mongolia from any direction except under Moscow's sponsorship. I have tried, and have been told, "You can do it only by applying to Moscow," well knowing that such an application would be met by the argument that Mongolia is an independent country and that reference must be made to Ulan Bator, where Great Britain is not represented. Russian influence over Outer Mongolia is going to have repercussions on Inner Mongolia, which has hitherto been much more under Chinese influence than Outer Mongolia. Now that Chinese Communist troops in North China have set themselves up in Inner Mongolia there may be a pro-Russian sphere of influence right down to the Great Wall on the borders of China proper.

*Tannu Tuva.*—At the northwest corner of Outer Mongolia there is an interesting little country called Tannu Tuva, of which most of us had not heard until recently; it is very mountainous and about one-third of the size of Germany, with a small population. Its only link with the outer world—that is, the U.S.S.R.—is either by air or along the valley of the Yenisei, a river running toward the Arctic. The population is Uriankhai Mongol, akin to the Buryats of the Soviet Union. The chief Russian interests in the country are the considerable livestock grazed there and the fact that it stands in a central position between Mongolia, Chinese Turkestan and Soviet Asia. It was set up as an independent "republic" under similar conditions to Outer Mongolia, and even issued its own stamps. But quite recently it has become a province of the Soviet Union, apparently at its own request.

*Sinkiang.*—Farther west we come to Sinkiang (or Chinese Turkestan). The frontier is mountainous and the country in the north of Sinkiang is quasi-desert, but communications with Russian territory have been improved considerably by means of the Turg-Sib railway and the road across the frontier to Urumchi the capital. The distance from Sinkiang to the trade centers of China is so much greater than to Siberia or to Russian

Turkestan that trade naturally tends to flow to and from the U.S.S.R. rather than China. Sinkiang has therefore long been subject to considerable Russian influence. The population of the country is mainly Turkoman, similar in race to the people of Russian Turkestan; there are also inhabitants of partly Chinese origin called Tungans. Periodically there have been Moslem risings against Chinese rule, of which the Russians have been able to take advantage by sending in troops and occupying parts of the country. During these operations they succeeded in detaching a piece of Chinese Turkestan in the neighborhood of Lakes Balkhash and Issik Kul, which during the last century was made part of the Russian Empire; but there is no ethnic frontier and the Turkoman-Moslem population flows over both sides of the political boundary. The chief interests, besides trade, are considerable resources of minerals not yet fully exploited but which may possibly yield results if the Russians are able to develop them. Russian influence in Sinkiang has an inevitable effect on India because there is a trade route over the passes into Chitral, where recently it has been reported that Russian piece-goods are to be found in the bazaars. Indian merchants in Sinkiang have been suffering as a result of the increase of Russian predominance over the last twenty years or so, so that we could not be indifferent in India to Russian ascendancy in Sinkiang.

*Afghanistan.*—Farther west again we come to Afghanistan, the frontier of which is partly the River Oxus (again not a very good boundary) and partly a line of mountains. It is not the ethnic frontier, because in Northern Afghanistan there are Tajiks and Uzbeks, who are kin to the inhabitants of Soviet Tajikistan and Uzbekistan. The ethnic line is the Hindu Kush, a range of mountains running northeast to southwest, south of which the people are Pathans with no ethnic connection with the Soviet Union. Russian interests in Afghanistan until recently have been entirely strategic, because occupation of Afghanistan puts them on the frontier of India, and, on the other hand, they affected to believe that the British had ideas of threatening their territory through that country. There are now signs that the minerals of Afghanistan, particularly oil, are interesting the Russians. They have developed communications into Afghanistan by two main routes: one is from the region of Tashkent on the Turk-Sib railway to Termez on the Afghan border, from where there is a road through Balkh to Kabul and so into India; the other route is from Merv, also on the Turk-Sib railway, to Herat. Herat is a center of communications with Persia, Baluchistan and India. One can thus see that if we withdraw our forces from India and cease to direct Indian policy we should not be able to help Afghanistan, and Afghanistan by herself is unable to offer effective opposition to pressure from Russia. It is thus most important that under present conditions in India the Foreign Office should take over from Delhi control of our relations with Afghanistan.

*Persia.*—Perhaps the most interesting country at the



present time is Persia, the frontier of which has been moved back and back for a number of generations. Much of the territory in the Soviet Union was part of the Persian Empire. The frontier at the moment follows the Araxes River west of Caspian), the southern shore of that sea, and roughly the line of the Atrek River to the east of the Caspian. The population in the north of Persia is similar to the Soviet inhabitants in the south of the Union. On the west the Armenians lie opposite the Armenian Soviet Republic, the Azerbaijani are neighbors to the Azerbaijan Soviet Republic, and the Turkomans live next to the Turkmenistan Republic, which makes it easier for the Russians to assert their influence in North Persia. The Persian proper does not come up to the frontier; his home is in Middle and Southern Persia. The chief Russian interests in the country, besides its races, are oil and grain. Moscow has recently succeeded in achieving an agreement regarding North Persian oil by putting pressure on the Persians. The oil fields of the Caucasus are believed not to be yielding as much as they did and the Russians therefore want new sources of oil in the same part of the world. Most of the grain of Persia is grown in the north; if, therefore, they were able to assert themselves in North Persia the Russians could put pressure on the whole country. They would like to control the southern Caspian shore to give them east-west communications and avoid sea journeys across the Caspian. Again there is the ever-present lure of warm-water harbors. In South Persia there is the newly developed port of Bandarshahpur, joined with the Caspian by the Trans-Persian railway, both of which were completed shortly before the late war. If, therefore, the Russians were able to secure special rights in ports on the Persian Gulf they would find the Trans-Persian railway available for their use. Among the methods they are adopting at the moment is that of seeking the sympathy of the border races, and I note that they have been encouraging the establishment of a Kurdish autonomous government, although there are no Kurds in the Soviet Union itself. The significance of this is that there are Kurds in Asia Minor and in Iraq. Therefore the establishment of any sort of Kurdish government in Persia would have an effect in Northern Iraq and in Eastern Turkey. Again, there is a political party in Persia called *Tudeh*, which appears to be organized rather like the Communist Party. Its point of view has openly been expressed as anti-British and pro-Russian. It is not a racial organization: it is a general political party which has a certain amount of influence in all parts of Persia. The withdrawal of our forces has left Russia with relatively greater influence, and the Anglo-Iranian oil interests in the south are without any protection other than international good will. It is significant that the company is having labor troubles fomented by the *Tudeh* Party.

*Turkey.*—The last country on our tour is Turkey, whose frontier with Russia is the Caucasus, always unstable because the people in the area are neither Turks

nor Russians. The Russians have been advancing in that area for generations; in 1878 they occupied Kars and Erzerum and in 1886 they occupied Batum on the Black Sea. Recently the Russians have been putting considerable pressure on Turkey; an article in a Russian newspaper even argued that certain areas should be given to Russia because they are ethnically Georgian, and, although the Georgians are not Russians, there is a considerable Georgian population in the Soviet Union. The object all the while has been to obtain a warm-water port. Constantinople and the Straits lead to the Mediterranean and the sea lanes of the world. We have heard of the demands for influence in Tripoli and the argument over the port of Trieste. If the Jugoslavs controlled Trieste, their friendship with Moscow would give the Russians facilities in the Mediterranean. Pressure has also been exerted in Bulgaria, where the concentration of Russian troops caused a certain amount of alarm to the Turks in Thrace; again, any Kurdish national movement is bound to have repercussions on Turkey's eastern territory.

#### CONCLUSIONS

I suggest that the Russian land frontier in Asia has consistently shown itself to be unstable and that the expansion of Russia can be attributed to three motive forces: first, an exaggerated desire for security against a possible enemy; secondly, the tendency to assimilate neighboring peoples and, having assimilated them, to take an interest in any other cognate peoples across the frontier; thirdly, economic and political imperialism, one of the strongest factors in which is the desire for ports on the open sea lanes of the world. There is another factor which I think needs further investigation, and that is the possible desire to keep considerable parts of the Russian armies abroad for a few years rather than bring them home and make recovery more difficult.

I think we can conclude that the expansion does not arise from any need of living space; the Russians have plenty of that. Their economic needs appear to be somewhat exaggerated. Perhaps we can yield that in Persia the desire for oil is natural because the Persian oil fields are in the same area as the ageing fields worked by the Russians and would be most convenient to the Soviet Union, as would the resources of other minerals not yet thoroughly exploited.

It must be remembered that all these countries from the Pacific to the Black Sea are weak, and have depended in recent years on the backing of Great Powers to prevent any encroachment on their territory. Unless the Great Powers take an interest not only in what happens near home but also in the whole of Asia, the Russian expansion is likely to continue. One of the main difficulties arises from *faits accomplis*. Once an area is occupied, or a sphere of influence is established, it is much more difficult to take steps than if something had been done to prevent or foresee the event. Who is going to do anything about Tannu Tuva now, even if he wished to?



# THE LIPPIZANERS\*

## Royal Horses of Austria

by H. H. Douglas

### PART I

WHEN the late General George S. Patton, Jr., restored the Lippizaner horses to Austria in the summer of 1945, he gave back to their rightful owners the purest strain of a breed that, both historically and zootechnically, is without doubt the most remarkable in existence. Especially bred since 1580, Lippizanners have taken their place in practically every horse raising establishment in Europe, particularly in Austria, but also in Hungary, Germany and other neighboring countries. For centuries they were the riding and carriage horses of Austrian Royalty, and they made famous, and were made famous by, the Spanish Riding School (Spanische Reitschule) in Vienna.

The first Lippizanners to tread the soil of the western hemisphere arrived in California on January 5, 1937, at San Pedro, the port of Los Angeles. These horses, two pure white stallions and two mares, were the gift of a grateful Austrian Government to Maria Jeritza, who sang at the State Opera House in Vienna during a period of severe financial stress, and waived her fees. She also assisted numerous students to continue their musical educations, which would otherwise have come to an end. The ranch of the late Winfield Sheehan, then husband of Mme. Jeritza, at Hidden Valley, Camarillo, California, near Los Angeles, has since been the home of these Lippizanners and their offspring. One of these stallions, *Pluto II*, played the part of *Florian*.

The second group of Lippizanners to set foot on the soil of the United States arrived in the fall of 1945 under the auspices of the Army Remount Service. They were but a small part of a shipment of Thoroughbreds, Arabs and Halfbreds that had been selected from the cream of the horseflesh in Germany by Colonel Fred L. Hamilton. But the Lippizanners were not German; they were mostly Hungarian, as was the case with about half the horses brought over by the Army from Germany. A few of the Lippizanners were Austrian. Back in 1944 the Hungarian and German governments made an arrangement for the transfer of a large number of

Hungarian horses to Germany, to keep them out of the hands of the advancing Russians. The entire shipment included about 600 horses from Mezöhegyes, 300 from Kisber, and 300 from Bábolna, the principal Hungarian Lippizan Stud, which has also been famous for its beautiful Arabians. In November 1944 the shipment left Bábolna. Of the 300 horses approximately 100 were Lippizans, including six stallions, with the remainder about equally divided between mares and colts.

The entire shipment of 1,200 horses, accompanied by the Hungarian Minister of Agriculture and a group of staff officers from the Hungarian Cavalry, was taken to an unoccupied remount station at Bergstetten in Bavaria, near the village of Donauwörth on the Danube River not far north of Augsburg. When Major James P. Owens, of the American Army, took over Bergstetten on April 25, 1945, every horse that had been brought from Hungary, plus numerous younger arrivals, was still there. The Germans used a surprising number of horses in World War II, and hence must have previously had a considerable supply to draw from.

After V-E Day many of the tough Halfbred horses from Mezöhegyes were distributed throughout the countryside by Major Owens for the use of the German farmers. Some of the Bábolna Lippizanners were also farmed out. From those remaining at Bergstetten Col. Hamilton made his selections for shipment to the United States. He picked two stallions and four mares. Authentic though they are, as part of a breed that goes back for more than 350 years, the United States Government got none of the Lippizan aristocrats when Col. Hamilton picked out the nine horses at Donauwörth.

From among the Austrian Lippizanners previously brought from Hostan, Czechoslovakia, to Mansbach, Germany, Col. Hamilton selected the stallion *Siglavý-Virtuosa* and the mares *Saffa* and *Madera*.

While several colors have gone into the breeding of the Lippizanners during the past centuries, white is the predominant color, and every horse reared at Lippiza destined for the Imperial Court at Vienna had to be of the purest white. Bay, brown and black, as well as

\**The Horse*, July-August, 1947.



gray, still exist, but all of these have sprung from the less pure lines bred in dozens of state and private studs throughout Central Europe. At nearly every stud farm from the Swiss Alps to Fogaras in Transylvania, Radautz in Bukowina, Holitsch and numerous others in Galicia, Lippizan stallions have been maintained. Outside of Austria, though the Hungarians have bred many elegant Lippizans, as is evident from the prize-winning four-in-hand shown here, they were used chiefly for the rejuvenation of the native stock rather than for the breeding of a pure line, and these crosses have always been extremely popular and hardy.

Hungary, as a nation highly dependent upon the horse for power and locomotion, and for a long time part of the Hapsburg Empire, was naturally deeply interested in the Lippizans. Many of the more important Hungarian state studs were established during the 18th century to bring about better breeding, and sooner or later they almost invariably maintained a Lippizan section. This was particularly true of Radautz (established in 1729), and Bábolna (1789). The latter, though independent since 1806, was established by Joseph II as a branch of Mezöhegyes (1786), and has been known as a dual stud—Arab and Lippizan. The Bábolna and other Hungarian Lippizans have always been much more mixed than the Austrian Lippizans, and were bred with the idea of supplying a rugged horse for the needs of the poorer, more barren mountain and upland districts of Hungary which could use neither the exacting English horse nor the excitable Arabian. The Hungarian Government really took over the management of the larger stud farms about 1868, and it was for the above reason that Fogaras, established in 1874 in the valley of the Olt in mountainous Transylvania, was originally stocked with 94 Lippizans and 16 Siebenbürgers. This resulted in the *Incitato* line, which was transferred to Bábolna in 1918. The influence of the breeding done at the Hungarian state studs had really begun to be felt about 1816. Kiszér, only two or three miles from Bábolna, west of Budapest and south of Komorn (Komárom), was established in 1853-54, but no Lippizans have ever been bred there. Nor has Mezöhegyes, Hungary's military stud and its oldest state stud, founded by Joseph II to supply cavalry horses to the Hungarian army, ever bred Lippizans.

Of the three Lippizan stallions selected by Col. Hamilton, one of them, the eight-year-old *Maestoso* XXVII, is a bay horse with four white feet and a narrow white blaze from ears to nostrils. *Pluto* XX, twelve years old, is a white horse flecked with tiny black spots. His Roman nose is a marked characteristic of the Lippizans. The five-year-old *Siglav-Virtuosa*, to all appearances more Arab than Lippizaner, is light gray, with a dark tail and mane. Of the six mares four—44 *Favory* XVII, 48 *Favory* XVII, 89 *Maestoso* XX, and *Soffa*—are flecked with black spots. *Madera* is pure white, while 65 *Maestoso* XX is nearly pure white.

For the same reason that Lippizaner stallions were

used so extensively throughout Central Europe for the strengthening of the native stock, two of the Lippizaner stallions of the Remount Service have been placed with private breeders in the West for service to any who desire it at a stud fee of not more than twenty dollars. *Maestoso* is now in the hands of Mr. George Shadbolt, Merriman, Nebraska, while *Siglav-Virtuosa* is in the hands of Mr. Joe Grote, Dayton, Washington. *Pluto*, at the Pomona, California, Remount Station, is available on the same basis. The six Lippizaner mares are now at Fort Reno, Oklahoma. Since horse cavalry became almost nonexistent in the United States Army during World War II, and since the function of the Remount Service has now become more agricultural than military, it is expected that all Government horse breeding activities will soon be transferred to the Department of Agriculture.

The Lippizaner horses derive their name from the tiny village near Trieste where their breeding began in the year 1580. Lippiza is located in the Karst region about eight miles directly east of Trieste, at an altitude of about 1,400 feet.

Under the hands of the builders of Lippiza the stud became a veritable oasis in a sea of rocks and more rocks where, though the climate was generally mild, the summer sun was very hot, and where in winter the animals suffered under the blasts of the northeast wind known as the "Bora," which sometimes continued unabated for two weeks at a time. The cold, especially for the foals, necessitated great attention and care, while from both the sun and the wind the forest offered a certain measure of protection. In contrast to the "Bora," the warm "Scirocco" wind from the south, from the deserts of Africa across the Mediterranean and Adriatic, had an enervating effect upon both men and animals.

Every year the humus from the Dolinen was spread over the meadows to fertilize the hay crop, and the horses were kept in the stables or on the wild pasture land until the hay was harvested. The annual hay crop produced less than one hundred tons of excellent fodder, and as it was not enough, hay had to be brought from Prestranek, the branch stud to the east, which was surrounded by many mountain meadows.

The whole territory of the Karst suffered a shortage of water. Lippiza had but one spring, and since wells were unsuccessful, it was necessary to build cisterns in which rain water was collected from the roofs to be used as drinking water. It was sufficient for the Stud and was equally good for man or beast. Water for the animals was also collected in troughs or tanks, which were, in effect, large Dolinen, cemented, in which the rain water collected.

The Royal Stud of Lippiza was founded near the end of the 16th century by Archduke Karl of Steiermark, son of Emperor Ferdinand I. Previously, as a deserted village, it was the property of the Bishop of Trieste, from whom it was bought for the establishment of the Stud on May 19, 1580. The attention of the Archduke



was probably attracted to this waste region by the horse breeding practiced in earlier times in the neighborhood of Aquileia, and at the sources of the Timavos River, near Monfalcone, which roars through the Karst region as the Rieka, disappears underground for twenty miles, and emerges as the Timavos. It crosses the Istrian Peninsula in a southeasterly direction to enter the sea at Fiume. Venetian history mentions the Timavos and the environment of the area. On its banks a temple to Diomedes, patron of horse breeding, was said to have been built and surrounded with a holy grove in which fast horses were bred. From this region the Roman rulers took their horses. The stallions of the region were also used in the Middle Ages. Because of their energy, speed and flexibility, they were preferred for the war service and were also excellent as tourney horses.

The horses originally used for breeding in Lippiza were of Spanish origin, as well as certain of the fine Oriental type "Karst" horses native to the area. The proud Andalusian, the historic, noble Spanish horse descended from Moorish blood, was bred at the "Carthusian-Monk" Stud near Jerez in the Province of Cadiz. From there, and from Aranjuez, were taken the magnificent high school, coach and riding horses for the Court of Isabella. The best horses of Spain were bred along the Guadalquivir, in the region of Cordoba, Sevilla and Cadiz—the home of the regal Andalusians.

The black Andalusians were a pompous and showy breed, particularly well liked in an age when everything was sacrificed to outward appearance. The Spanish horses were high-steppers, naturally adapted for display and trick riding. It was because of this, as well as for their fiery and distinguished natures that, in 1580, Freiherr von Khevenhüller was dispatched to Spain to buy breeding horses for the foundation stock of Lippiza. He brought back three "Brincos-Pepinier" stallions which were followed a year later by six more outstanding stallions and 24 brood mares. Other shipments of Spanish horses arrived at Lippiza in the years 1582 and 1584. At that time the Spanish horses were divided into two types: The heavy, but noble, type, the so-called "Villanos," which had much to do with the later development of the strong, faultlessly developed and placed legs of the Lippizans. The second, a much lighter type, graceful, noble horses called "Genetten," were harmoniously proportioned high-blooded animals.

In addition to the Andalusians, six white Arab Barbs, and later some Danish horses, were imported, as well as Upper Italian horses already possessed of some Spanish blood. These came particularly from Polesina, near Verona and Rovigno, on the lower reaches of the Po and the Etch. The large, showy, festive-gaited Neapolitans, introduced somewhat later, were of excellent structure and elegant movements, being especially fitted as riding and carriage horses. Among the stallions used in the early breeding the Stud had the good for-

tune to possess animals of unusual breeding power which, through careful culture, have handed their names down to lines still flourishing—*Pluto, Favory, Maestoso, Neapolitano* and *Conversano*.

Baron Georg Rupprecht von Herberstein took over the original establishment and management of the Stud; shelters and stables were rapidly erected for the horses; cisterns and tanks were built, and the soil made productive, after being laboriously cleared of endless rocks, by fertilizing with humus from the Dolinen. Oats were secured from Mitterburg, and hay from Adelsberg (about 15 miles to the northeast).

The enlargement of the Stud was accomplished under Leopold I (1657-1705), and Joseph I (1705-1711), but as a growing and flourishing institution it had always to contend with the meagerness of the soil. On June 19, 1728, under the government of Karl VI (1711-1740), the Cloister Prestranek ("Pröstranegg"), about fourteen miles to the east and slightly north of Lippiza, was bought and established as a branch of the Lippiza Stud. To this estate belonged large mountain meadows which produced nourishing hay for Lippiza. About the same time the Stud was enlarged by the purchase of the Adelsberg establishment, just a short distance north of Prestranek.

The breeding of the noble horse of the Imperial Stud exerted a strong influence on the breeding of the rest of Central Europe. Nobility and cities established studs for which Lippiza, especially, furnished the breeding stock.

Under the government of Joseph II (1780-1790) the continuation of the Stud was seriously menaced. For economic reasons the proposal was made to terminate the Lippiza Stud and move it to Galicia. Fortunately this was not done.

In the period after the government was taken over by Franz I (1792-1835) there were stormy times. The Stud was evacuated three times as the French armies approached. It was transferred twice to Hungary and once to Slavonia. During the period from 1809 to 1815 the entire Karst Royal Stud was transferred as a "gift" to Marshall Marmont, and moved bit by bit to Hungary in the neighborhood of Arad. It was later returned to Austria. In 1829 the riding horses of the stud were incorporated into the Koptschan Stud near Holitsch, north of Pressburg. Altogether the Stud spent six years on foreign territory. During this period Lippiza was either occupied by the French Army or farmed out by Napoleon to private individuals at a yearly rental of 25,000 francs. Even now two French stone eagles adorn the gate posts at the entrance.

The period was a great trial to the Stud, and when in 1815 the order came from Vienna, "Return to Lippiza," it was high time. In the following quiet epoch the breeding stock was even more highly selected, and they gradually succeeded in eliminating the evidences of the years in exile.

(To be concluded)



# Armored Division Associations

## 1st Cavalry Division

Under the personal supervision of Major General William C. Chase, Commanding General of the 1st Cavalry Division in Japan, a history of the 1st Cavalry Division in World War II is being compiled and printed in Tokyo for free distribution to all members of the 1st Cavalry Division Association and all other members of the Division who wish to join the Division Association. Some 25,000 former members of the Division are being solicited for membership in the Association and will automatically be entitled to a copy of the history as well as a directory of Association members.

Of particular importance is the gathering together of the correct addresses of the families of men of the Division who were killed in action, died of wounds, or have since passed away. Any such address should be sent to the office of the Association Registrar.

The first local chapter of the Association has been established in El Paso, Texas, by Colonel Chester Chambers, former Division Quartermaster, and Colonel Roy Lassiter. The purpose of this and other local chapters to be established is to focus attention on the activities of the Association, enlarge the membership, develop plans for local reunions and smokers when a reunion of the entire membership is not feasible, and to generally foster the friendships formed in combat.

General Jonathan M. Wainwright, the hero of Bataan, has been extended honorary membership in the Association. He at one time commanded a brigade in the Division.

Chaplain Charles V. Trent, formerly of the 5th Cavalry and now a resident of Winfield, Kansas (1105 East 7th Street), periodically publishes a Newsletter for known members of that regiment.

Major General Verne D. Mudge, former Division commander and now retired, who is currently a member of the Professional Advisory Staff of the Senate Armed Services Committee, has been in California recently conferring with the Association Registrar in regard to reunion plans, general membership campaign, the establishment of local chapter groups such as have been developed in El Paso, and a special meeting at Fort Bliss, Texas, on November 8, 1948, which is the 100th anniversary of the establishment of that famous Army post.

Colonel Edmund P. Stone is registrar of the Association and all correspondence should be addressed to him as: Registrar, 1st Cavalry Division Association, P.O. Box 201, Pomona, California.

## 1st Armored Division

Organization of the First Armored Division Historical Association is progressing rapidly.

The Washington, D. C. Branch started to get organized on May 1, 1947. Paid-up membership on August 1 was 44; on September 1, 122. Colonel Peter C. Hains, III, is president of the Washington, D. C. Branch. In Kentucky, the Fort Knox Branch has been organized with Colonel Maurice Daniel as president. In Kansas, Lieutenant Colonel Bogardus S. Cairns, at Fort Leavenworth, is gathering the 1st A. D. clan together. In New Jersey, Bill Prati, 413 Prospect Avenue, Asbury Park, and Richard K. Van Nostrand, are working on the organization of 1st A. D. veterans who now live in that state.

The Association is seeking to establish active representatives in every state, preferably men now in civil life. The idea is to round up all 1st A. D. veterans as members of the Washington, D. C. Branch initially; and subsequently to establish state or regional branches as soon as membership in a particular area is strong enough to form a separate self-supporting organization, with its own officers, committees and activities.

Plans for the preparation and publication of the 1st A. D. history are taking more definite shape. The Division Historian, Colonel C. C. Benson, has submitted to various members of the Association the following tentative outline of the proposed historical works:

Part I. Activation to North Africa.

Part II. Operations, Bivouacs and Battlefields in North Africa.

Part III. Operations, Bivouacs and Battlefields in Italy.

Part IV. Cease Firing to Inactivation.

Appendices:

1. One for each battalion or higher unit, giving a brief factual history of the unit, including battle honors and unit citations.

2. Individuals cited for Legion of Merit, Silver Star or higher awards.

3. Individuals who died in service or were Listed as Missing in Action.

4. Statistics—days in combat, casualties, replacements, prisoners captured, rounds fired, etc.

All concerned are requested to revise and amend the above outline, so that the membership of the Division Association will get what they want.

The members of the 1st Armored Division Historical Association desire to express their appreciation of the valuable services rendered gratis by the ARMORED CAVALRY JOURNAL.



### 3d Armored Division

On Friday, August 15th, 300 New York and New Jersey Spearheaders met at the Park Central Hotel in New York City for the first get-together there. Dr. Prigott, Joe Napoli, Morris Goldner, Harold Axel, Charlie Webb, Harry Tarzian and Pete Sweda, the temporary committee appointed to arrange the dinner are certainly to be congratulated. They arranged to obtain the colorful Cocanut Grove Room on the 26th floor, with a bar conveniently set up just around the corner. About 7 P.M. the Spearheaders adjourned from the Mermaid Room on the first floor and went up to start their party; by 8:30 all were present and called to take seats by Dr. Prigott, who acted as Toastmaster.

After introducing Colonel Smith, Jack Welborn and Chubby Doan, the Secretary of the Association, he called on Joe Napoli for the first number of the floor show. Jinx Falkenburg, accompanied by her husband, Tex McCrary, gave us their line of patter. They tried to kid General Hickey but soon found they were outsmarted.

After this dinner was served. It was a very excellent banquet. After the dinner additional entertainment was furnished by Nick Kenney, who acted as Master of Ceremonies, and Vic Damone, star of "The Saturday Night Serenade" and future replacement for Frank Sinatra. Vera Barton, CBS star, and James Barry from the Havana-Madrid and La Conga also entertained with songs. Ray Palmer was at the piano.

After the visiting stars had put on their show General Hickey made the main speech of the evening. He was enthusiastically received by the New York Spearheaders. Following General Hickey a short business meeting was held. A motion was made from the floor to continue the present set-up of temporary officers of the New York chapter in office until after the national convention is held this fall. This was unanimously carried. President, Dr. Aaron Prigott, Captain Charles Webb, Harold Axel, Joseph M. Napoli, Harry Tarzian, Peter Sweda and Morris Goldner.

Despite the fact that this was the hottest day of the season in New York a holiday spirit prevailed and all enjoyed the reunion very much. According to reports, the last twenty "diehards" were thrown out of Greenwich Village about 6:15 A.M.

The Secretary of the Third Armored Division Association has announced that at the time we went to press the last of the votes of the Association members on where the first annual reunion will be held were being received. As soon as the votes are counted the members will be informed of the choice made. At this time it seems quite certain that it will be either Chicago or New York.

It is hoped that complete plans can be made in time to have the annual reunion in the selected city during the middle of November of this year. A publicity campaign is being prepared so that every Spearheader will be sure to hear about the reunion. We are counting

heavily on all members to give us every assistance in publicizing the reunion when the date and place are announced.

### 5th Armored Division

At its meeting on August 7, the Chicago Chapter approved in final form the main items of business to be presented before the Division Convention and then elected officers to head the Chicago Chapter for the coming year.

Officers selected were:

President, Ed Murphy (22)

Vice President, Fred Sustik (Div. Hq.)

Secretary, Lou Filas (22)

Treasurer, Ed Hawkins (127)

Service Officers, M. E. O'Malley and J. J. Newhouse (CIC)

Chaplain, Rev. Kolberg (CCB)

Sergeant-at-Arms, John Lukanitsch (10)

Elected to the Executive Board were Philipsborn (CCB), Entrekin (Div. Hq.), Kellner (Tns.), Schoen (71) and Kriza (127).

With the assistance of legal talent available in the Chicago Chapter, the Fifth Armored Division Association was formally incorporated under the laws of the State of Illinois on August 5, 1947.

Enthusiasm is running high among former Fifth Fighting Men in the Minneapolis-St. Paul area. They now have over a hundred names of residents in that area as the result of a meeting early in August. Many are sending in addresses of friends in near-by localities.

Those who attended the first meeting to start the ball rolling were: William H. Anderson, Gordon J. Benson, Robert M. Berglund, John H. Brown, Gerald E. Flattem, Stanley C. Krueger, Theodor A. Malaske, Walter J. Marohn, Arnold S. Moberg, George L. Persson, Stephen O. Sherry, Leonard D. Tauber, Loren Woolsey, and M. F. Jordan whose address is 14 Oak Grove, Apt. 102, Minneapolis.

Over 1,000 members and wives of the Fifth Armored Division Association gathered in Chicago for their first annual convention August 28-29 at the Congress Hotel.

Cleveland was selected as the site for the 1948 convention with Labor Day week end as the probable date.

As an expression of their affection and gratitude, the members of the Fifth Armored Division Association presented to Major General Lunsford E. Oliver, former Division Commander and outgoing Association President, a handsomely lettered parchment scroll. Presentation was made during the luncheon of the Division Convention on August 28th. The scroll read as follows:

"Presented to:—

MAJOR GENERAL LUNSFORD E. OLIVER  
by his comrades-in-arms, the former members of:—

THE 5th ARMORED DIVISION

in gratitude for his courage and leadership on the field of battle and in time of peace; to acknowledge his



earnest and unstinting care for his officers and men; to mark our realization and admiration of his dignity, simplicity and unselfishness, and our recognition of the fine example of true Americanism that he has set for all. No Division had a more beloved leader."

In their main business meeting on August 29th, the convention delegates elected as Association president Mr. Lon P. MacFarland, former Division G-2 and now a resident of Columbia, Tennessee. In his acceptance speech MacFarland pledged himself to do his best to continue the precedents and policies established by his illustrious predecessor, General Oliver.

General Oliver, who was president of the Association from its organization on September 11, 1946 until this first Convention, expressed himself as being extremely well pleased at the members' choice for his successor. The General, when he accepted the post of president over a year ago, stated that he would serve only until a successor could be chosen from among the civilian ranks of former division members at their first convention, and held consistently to this position during his term of office.

Other officers elected were: To be Vice Presidents: William Malpede (CCB), Ed Murphy (22), and Hal Schiering (81), and Secretary-Treasurer, G. J. Cicone. Members of the Board of Directors were elected as follows: to serve one year: Rene Primeau (34), Harry Entekin (Div. Hq.), Martin Philipsborn (CCB), and Armund Schoen (71); to serve two years: William R. Fullerton (Div. Hq.), Al Beer (CCR), George E. Baker (34), L. Gifford Kessler (387), and James V. Swift (Div. Hq.); to serve for three years: Colonel Glenn Anderson, USA Ret. (CCR), Bill Reynolds (22), Dave Batey (CCA), Richard Rosner (15), and Roland Biersach (127).

Members chosen to the Honorary Board of Governors were: Major General Oliver, Chairman; Major General Jack Heard, Brigadier General Eugene Ragnier, Colonel Douglas Page, Colonel John T. Cole, Colonel Glenn H. Anderson, Lieutenant Colonel William Hamberg, Lieutenant Colonel F. E. Ressegieu, Lieutenant Colonel John S. Wintermute, and Lieutenant Colonel Thomas Bartel.

### 6th Armored Division

The Sixth Armored Division Association is now a going concern and the response from the initial letter announcing the formation of the Association has been gratifying.

Our first Newsletter has been mailed to over 7,000 former members of the Division and is expected to assist materially in our membership drive.

Local chapters will be organized shortly and further information on this subject will be furnished at an early date.

The following units have had scheduled reunions: Co. B, 9th A.I.B., Louisville, Kentucky, on July 28;

68th Tank Battalion, Chicago, on August 30; Troop E, 86th Cav. Recon. Sq., New York City, in October; Co. A, 69th Tank Battalion, Philadelphia, on April 17.

The Association is still in need of quite a number of addresses in order to complete our files. Anyone having addresses of former Division members or those seeking additional information should contact: H. C. Smith, Secretary-Treasurer, 6th Armored Division Association, Fort Knox, Kentucky.

### 11th Armored Division

You will all be very glad to know that the Convention at the Congress Hotel in Chicago on August 14, 15 and 16 was a huge success, and due, in no small part, to Bill Lipp and the entire Chicago Chapter of the Eleventh. They deserve a fine round of applause for their hard work and untiring efforts to make the convention one that will be remembered for some time to come. The attendance far exceeded everyone's expectations and there were representatives from coast to coast—a grand time was had by all who were there. Many who expected to, but at the last minute for one reason or another could not, sent telegrams of good wishes and congratulations, and these were read at the business meetings. Several of the former Commanding Officers sent letters of regret that they could not attend.

We'll try to give you a few of the "highlights" of the convention—A Board of Governors was nominated and elected by the entire membership present at the business meeting—as follows:

Ted Cronyn, II (Retiring President), Hill Blalock, Willard A. Holbrook, Jr., Harry Muller, George D. Halprin, Bernard Walker, Warren Melgaard, William L. Lipp.

The Board of Governors, in turn, elected the Association Officers for the new term, to serve until the next convention business meeting, as listed:

George D. Halprin (N.Y.) President; Willard A. Holbrook, Jr. (D.C.), 1st Vice President; George F. Falvella (N.Y.), 2d Vice President; William F. Lightholder (N.Y.), 3d Vice President; Morris D. Stolar (D.C.) Secretary-Treasurer; Rev. William Hamilton (Conn.), Chaplain; Albert H. Buschmann (N.Y.), Counsel, and Alfred E. Dugan (N.Y.), Assistant Counsel.

Everyone will be glad to know that General Charles S. (Pete) Kilburn came all the way from California to attend the convention and was made an Honorary President of the Association, by unanimous acclaim. Upon being asked at the meeting, just why he left the Division—he stated the reason in no uncertain terms to the entire membership present—and he was given a thunderous applause and resounding cheers. It's a wonder that "Pete" was able to raise his right arm—after all the handshaking and good wishes he received. Incidentally, he was heard to say "that all the money in the world couldn't buy the respect and admiration shown him by the boys of the Eleventh."



Ted Cronyn gave all the credit for the formation of the association to Willard A. Holbrook, and he was given a big hand by the membership for the grand work done during the past year, as were the other "retiring officers." Gen. Holbrook very graciously praised the staff of the ARMORED CAVALRY JOURNAL for their assistance and ideas given him, in the establishing of the association and it was agreed by all present to keep the offices in Washington, D. C., at least until the next election of officers at the 1948 convention.

After nominations for various convention "sites" for 1948—New York City was generally voted for and the date to be around the middle of August . . . so . . . all of you begin planning to attend, so we will have even a bigger and better convention, than held in Chicago.

Most of the units of the Eleventh were well represented at the convention, except those for whom we did not have complete rosters, but I think there were members from every unit present—and they hailed from coast to coast. We wish to acknowledge receipt of Hq. & Hq. Co. of the 81st Medics, also Co. "B" of the 55th A.I.B. which were sent in to us by members. We hope to obtain all of the missing rosters in time to contact individuals regarding the 1948 convention.

There were many little informal get-togethers of the various units—John Janecek of Lincoln, Nebr. got the Band members together—but none of them brought their instruments, so there was no "jam session." The 133d ORD seemed to be well represented at the convention and their Headquarters were (unofficially, of course) George Halprin's and Jim Miller's suite. The Tavern and Casino Rooms had their share of fellows "remembering this and that" and everyone seemed to be enjoying seeing each other again after such a long time. Many pictures were being taken at the Dinner Dance and we spotted Warren Melgaard's father taking informal shots of folks on the dance floor, as well as the 22d Tank boys. The music and the floor show at the dance were superb and the array of feminine pulchritude the Thunderbolts escorted to the dance was pleasant to behold.

There was quite a large crowd at the Luncheon on Friday at which Maj. Gen. Leslie Groves was the principal speaker and Bob Race acted as M.C. Chaplain Rhea of Fort Sheridan was also a guest at the Luncheon. By the way, if any of you would like a copy of the "group" picture taken at the luncheon, you may

get one from Oscar & Associates, located at 43 East Adams Street, Chicago 3, Illinois, for \$1.50.

We had hoped to have some "local chapter" news for you in these notes, but we haven't anything official. Guess everyone has been too engrossed with the convention to give us the latest dope on what's been going on. Willard Rayburn (133d ORD) who attended the Los Angeles first meeting on July 24th, told us at the convention that they had a good turnout. We will do our best in future notes in this column to give you an account of the activities of the individual local chapters, when and where their meetings will be, so if you are in the "neighborhood" you can drop in and meet the boys and say "hello." Now that the convention is over, we hope to get many more local chapters going full swing in various parts of the country, and we will let you know where they are and whom to contact, if you are interested in joining any of them.

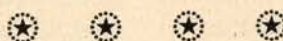
We are planning to get a NEWSLETTER out to the entire membership by the end of September, giving a full report on the business meetings, the election of officers, a financial report of the Association and a booklet containing the Constitution adopted at the Convention and the Incorporation of the Association. The 1948 Membership cards will be sent out, as soon as 1948 dues are received (they are due on August 15th for the coming year, and membership cards expire on August 15th, as stated in the Constitution).

The Washington, D. C. Chapter is having a meeting on Sept. 5th at the Headquarters offices, to help select pictures to be used in the Division History.

Paul Cratty of the Boston area was at the convention and he hopes to have the Boston Chapter organized in a short time. We told members at the convention that were interested in forming local chapters to get in touch with us, listing the names of the near-by towns they wished included in their local chapter area.

If you attended the convention in Chicago . . . we are glad you could come and we know you had a good time . . . if you didn't, we hope you will try to make every possible effort to be at the next one in New York City. Full information will be sent out about it, in time for everyone to make the proper reservations and plans to attend. George Halprin and the New York Chapter will be the hosts for the 1948 convention and we know they will do a good job of it.

LET'S HAVE ALL 48 States AT THE '48 CONVENTION.





# THE BOOK NOOK

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**THE HARD WAY HOME.** By Colonel William C. Braly. Infantry Journal Press. \$3.50.

*The Hard Way Home* is the terrifying story of the inhuman treatment that was dealt American prisoners of war by the Japanese all the way from the Philippines through Formosa, Japan, and Manchuria. From page to page it revives the reader's hatred for cruel, ruthless, inhuman, and indecent Japs.

Brutality of the Japs began almost from the moment the first Americans were taken prisoner in the Philippines. Colonel Braly recounts an early incident at the beginning of Chapter Two. "One American soldier, in mortal agony with both legs and one arm badly mutilated and the other arm less seriously wounded, was refused medical attention by the Japanese. He was attempting to shoot himself and, being unable to do so, asked Private John R. Brown, Battery A, 60th Coast Artillery, to do it for him. Seeing his condition and knowing that otherwise he would die horribly, Brown did so. As a result, Brown and a man from the 803d Engineers whom the Japs claimed had been insubordinate were taken down to the beach and the reports of a submachine gun were heard. Neither of the men returned nor was ever seen again."

This book brings home the fact that the privates and noncommissioned officers who inflicted this suffering in contravention of all the rules of warfare were themselves "Japanese people," and were not necessarily those with a lifetime of military service behind them. The peasant private and the Tokyo noncom alike took great delight in inflicting tortures and indignities on their prisoners. Such should be kept in mind by those who are inclined to forgive the Japs their sins with complete and irresponsible forgetfulness.

"Think what a feeling of pride and superiority it must have given a Jap private soldier to slap a ranking white officer's face at will—especially gray-haired ones! Also, think how much 'face' the officer lost to have to stand there ignominiously on the receiving end," Colonel Braly writes in the fifth chapter of his book.

The author tells the story of four enlisted men who escaped from the notorious Cabanatuan Prison Camp on Luzon in hopes of bettering their lot. On the second day of their escape they hailed a truck that unfortunately contained Jap soldiers and were returned to the camp and locked up. The next day four posts were set in the ground in front of the Japanese Headquarters. The POW was then forced to squat by one while the guards tied his hands and feet behind the post. In this position they inserted a 4x4 timber behind the man's knees. It was studied torture. All that day and the next day these men were left in that position in the blistering sun without food or water.

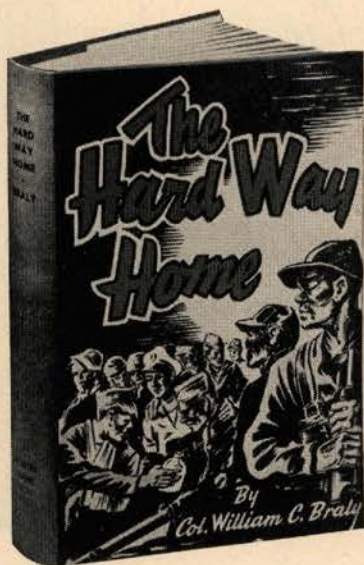
"In the afternoon, around four o'clock, the Camp Commander, the Interpreter, eight guards with rifles, and several others with shovels arrived at the guardhouse. The prisoners were untied but were so cramped it was three or four minutes before they could stand up.

"They were then marched to a point about 400 yards from the Headquarters building and in full view of over 6500 other Americans. The four men stepped down into a depression which was either a common grave or four individual graves. They were given something, perhaps a cigarette, I could not tell, and then were blindfolded.

"The eight guards with rifles advanced four abreast, halted, raised their rifles to their shoulders, and with muzzles slightly depressed, pointing at the prisoners, they fired at a distance of about four feet. All dropped. One



## EVERY AMERICAN SHOULD READ



By Colonel William C. Braly

What happens when an officer of the United States Army, a man who has spent his life in the service, and is known and respected from Corregidor to Fort Williams, Maine, is told he is lower than the lowest Japanese private? How can he keep his self-respect when he is slapped, with or without provocation, by any stray Jap soldiers who happen to pass by? How can he keep his sense of humor when he is shivering in rags, underfed, overworked?

Colonel William C. Braly answers these questions—and poses many more. In *The Hard Way Home* he tells of the privates and noncoms who inflicted suffering on Americans in contravention of all the rules of warfare. He brings home the fact that the Japs responsible for brutality were the “Japanese people” that are being forgiven for their sins today.

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man raised an arm as though in an effort to rise. There was one more shot, then all was quiet. The Jap shovel detail filled in the graves, then all of them returned to camp.

“Later the Interpreter said to me, ‘The Camp Commander was very lenient as the prisoners probably did not realize the seriousness of their offense.’

“What do you mean ‘lenient?’” I asked angrily.

“‘I mean that in future all other men in that squad will be shot also,’ was his reply.”

Every American should read this book. He should read it now. This book will make an impression on a reader's mind that he will not soon forget.

1 1 1

HISTORY OF THE 91ST CAVALRY RECONNAISSANCE TROOP MECHANIZED. By Captain Clifford E. Lippincott, Sergeant Sheldon C. Eller, and Technician Fifth Grade Ebber K. Haltman. Garrett and Massie, Inc.

This 72-page booklet is the complete World War II history of the 91st Cavalry Reconnaissance Troop Mechanized written by the ex-commanding officer and two of the Troop's enlisted men. In addition to being a history it also contains a roster of the Troop.

1 1 1

KNOCK ON ANY DOOR. By Willard Motley. D. Appleton-Century Company. \$3.00.

*Knock On Any Door* is the story of Nick Romane, a sensitive American boy in a large city (Chicago) who dreamed of stars but stumbled into a gutter. In this, his first novel, Willard Motley has caught the pulse beat of a great American metropolis of today.

Such human characters run through the book as: Grant Holloway, who observed the harshness of life from his comfortable eminence as an established writer; Riley, the swaggering cop with three notches (for three dead men) in his gun belt; Judge Drake, calm and kindly on the bench; Rosa, the fat and understanding aunt who loved Nick and could not save him; Julian, the brother who was willing to work for his security; Kerman, the prosecutor who would stoop to any low trick to get a conviction; Juan, who couldn't be beaten out of his Mexican code of honor even by police nightsticks; Owen, the old man who loved Nick as something more than a son; and dozens of others who crowd the pages of this novel with vivid life.

1 1 1

FORGING THE THUNDERBOLT. By Mildred H. Gillie. The Military Service Publishing Company. \$4.00.

This book, which has a foreword by General Jacob L. Devers, is a history of the development of the Armored Force. The only qualification the author has for writing this book, it seems, is that she knew Mrs. Adna Romanza Chaffee, widow of General Chaffee.



**FOUR STARS OF HELL.** By Laurence Critchell. With a Foreword by Lieutenant General Lewis Brereton. The Declan X. McMullen Company. \$3.75.

This book tells the straightforward and exciting history of the part airborne infantry played in the European victory. The author, Captain Critchell, accompanied his unit through its early specialized training, the invasion of Normandy, the assault at Nijmegen, the Battle of the Bulge, and the swift race to Berchtesgaden.

While the book is intended as a record of the 501st Parachute Regiment, the history of the entire 101st Airborne Division is seen running through its pages.

1 1 1

**LINDEN ON THE SAUGUS BRANCH.** By Elliot Paul. Random House. \$3.50.

Boyhood recollections of life in a New England town is what the content of this book is woven around. It is full of turn-of-the-century scenes built around Mr. Paul's boyhood. In the book are found anecdotes, character sketches, comedies, tragedies, and embellished observations.

1 1 1

**PRACTICAL DOPE ON THE .22.** By F. C. Ness. The Military Service Publishing Company. \$4.00.

F. C. Ness, editor of the *Dope Bag* and technical advisor to the *American Rifleman*, has written a book that should be in the library of every owner of a .22. This book is based on nearly 40 years of shooting experience.

1 1 1

**DARK DECEMBER.** By Robert E. Merriam. Ziff-Davis Publishing Company. \$3.00.

This book is the story of the greatest pitched battle on the Western Front in World War II. Commonly known as "The Battle of the Bulge," it involved 29 German and 32 Allied divisions. Over a million men fought together, often in utter confusion and chaos, in the frozen forests of the Ardennes during the wintry weeks of December, 1944, and early January, 1945.

*Dark December* unfolds the whole dramatic story, from the conception of the plan to the final crumbling of the threat to Antwerp and the apologetic statements to Hitler by the German command.

The author has done an excellent job in the reconstruction of this great battle. He has written a book that will be read by every serious student of military history and science.

1 1 1

**TO THE BITTER END.** By Hans Bernd Gisevius. Translated from the German by Richard and Clara Winston. Houghton Mifflin Company. \$4.00.

The author, who was one of the leaders of the German anti-Nazi underground, traces the macabre pattern of scandal, blackmail, betrayal, intrigue, paradox, and tragedy by which the Nazis took and held power. The book is a brilliant informal history of the Third Reich.

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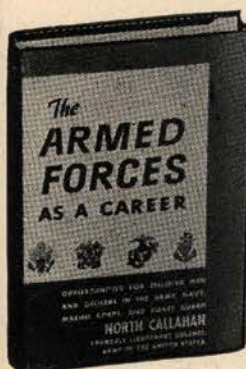
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OR FORFEIT FREEDOM. By Robert Wood Johnson. Doubleday & Company, Inc. \$2.50.

Mr. Johnson explains in clear and simple terms why business in this country has lost public confidence to such an alarming degree, why there is so much labor-management conflict today, and what should be done about it.

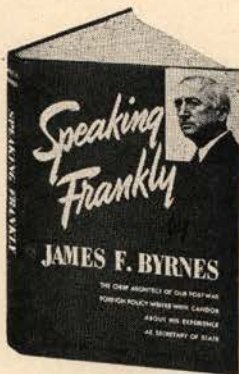
The remedies he proposes in his book for today's business and labor headaches include: (1) Improved training and all-round education of workers; (2) Development of a new craftsmanship superior to that destroyed by modern industrialization; (3) Realism in dealing with unions and improved interpretation of contracts; (4) Good community relations and decentralization of industry to provide the human element without which neither executives nor workers can do a job; and (5) Above all, a production program bold enough to furnish a decent living for all.

DOWN RAMP! THE STORY OF THE ARMY AMPHIBIAN ENGINEERS. By Brigadier General William F. Heavey. Infantry Journal Press. \$5.00.

This book presents the accomplishments and operations of the Amphibian Engineers in World War II. It is the story of the six brigades and the two separate battalions the Corps of Engineers launched to help win the Victory.

The author, General Heavey, commanded the 2d Amphibian Engineer Brigade all through the war in the Pacific. No better qualified person could be found than General Heavey to write this book.





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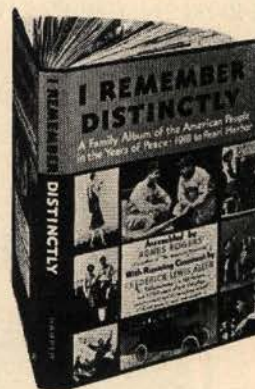
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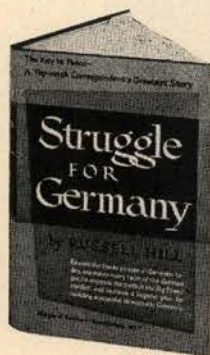
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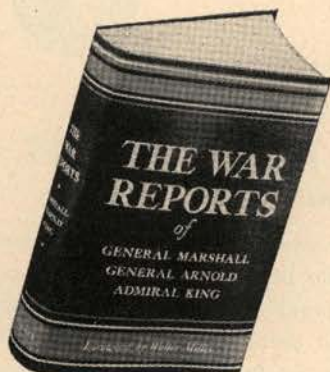
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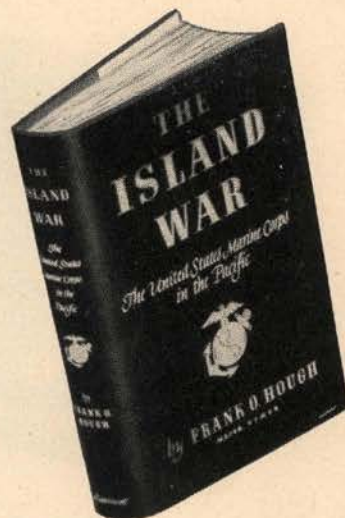


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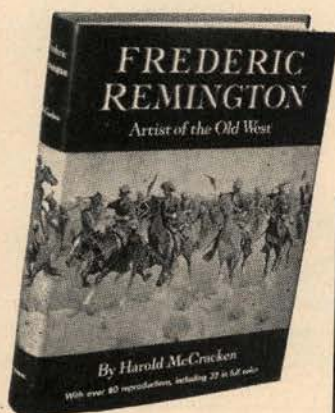
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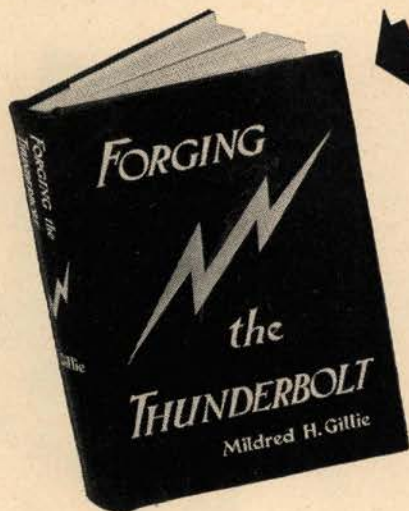
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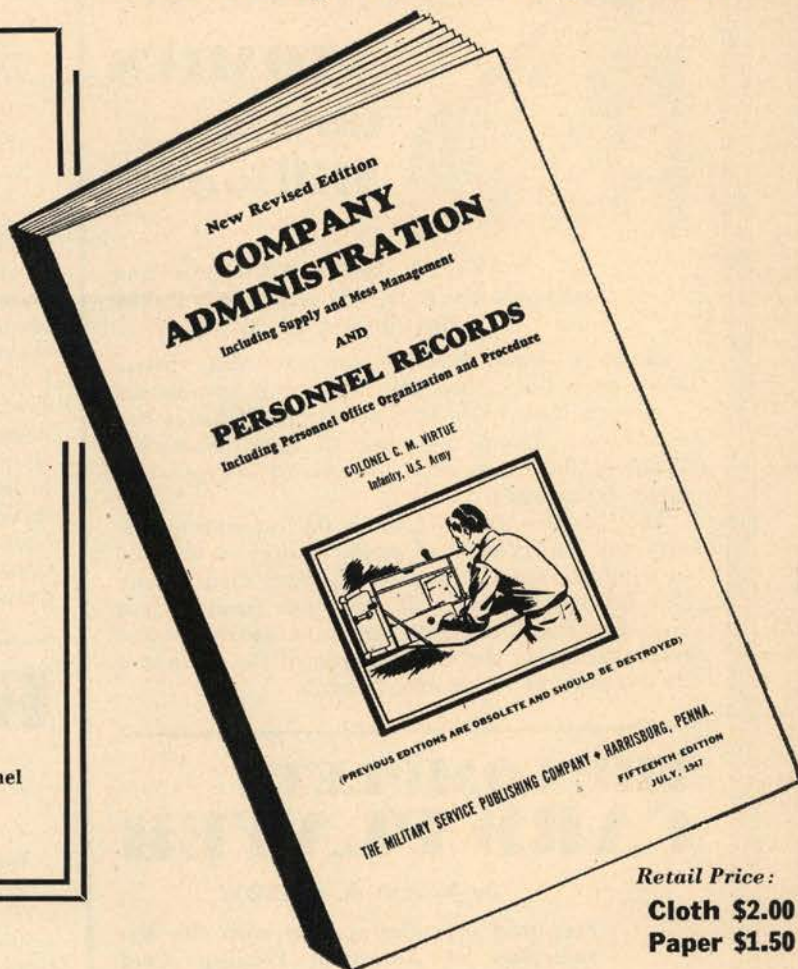
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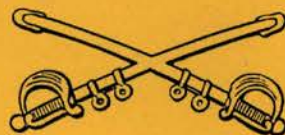
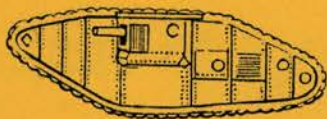
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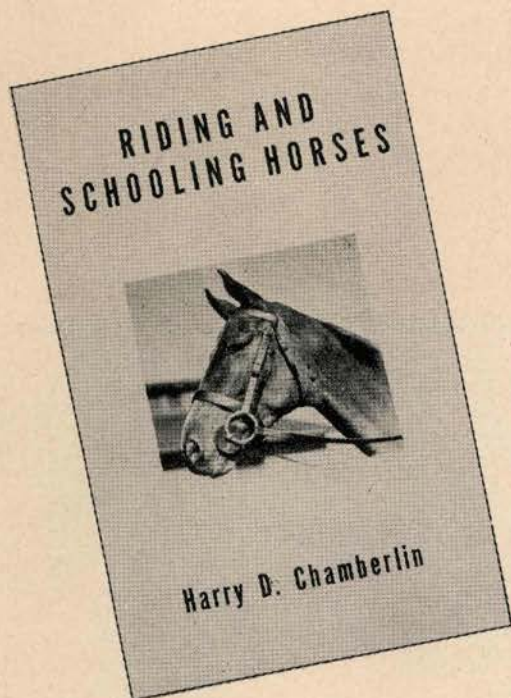
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Armor in the future must fly, contends General Gavin. Presented here are theories and facts that deserve serious study and thought by all military men, but especially those concerned with armor. Forecasts the author, "We must build the weapons, the combat vehicles, and the aircraft, that will permit us to fly our armored divisions. For it is in the air that the future of armored forces is to be found." By the courtesy of the author and the Infantry Journal this article is being published simultaneously in both magazines.

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# THE FUTURE OF ARMOR<sup>\*</sup>

By Major General  
James M. Gavin

(Commanding General, 82nd Airborne Division)

ARMOR in the future must fly, just as all other means of war must fly. Possessing good cross-country mobility, and gunned to destroy any earth-bound vehicle, the tank will play the decisive role in the coming battles for the airheads. Armored recon-

naissance vehicles will be equally important in a tactical role. The dispersion of future antiairborne defenses and troops, and the critical need for information immediately upon landing, will make armored reconnaissance vehicles invaluable to an airborne attacker. High on the list of any enemy antiairborne defensive equipment will be armor. This was so in World War II and

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will be in the future. Against an airborne landing, widely dispersed units will go into action by locating and isolating the attackers. This can best be done by motorized and armored patrols backed by larger units of armor. To cope with this the airborne force must have vehicles capable of reconnaissance and counter-reconnaissance missions and vehicles mounting weapons that can destroy the enemy's armor. Such airborne armored vehicles are most likely to make the difference between victory and defeat in airborne combat.

Besides armored vehicles themselves, successful airborne combat requires the qualities of mind and combat leadership traditionally attributed to cavalry. Boldness, aggressiveness, flexibility of mind and mental as well as physical courage are all essential to the successful conduct of airborne combat. The tactical stage for the cavalry or armored cavalry of the future will be deep in enemy territory where cavalry is at its best. It must be flown to get there. The strategic and tactical employment of our armored cavalry is clear. It must be flown.

This poses a perplexing problem to our contemporary students and planners of warfare. World War II seems to have proven that it takes a tank to fight a tank. And now that tanks are carrying armor plate from seven to 12 inches thick, weighing from 60 to 100 tons, it will take quite an airplane to lift and fly such iron leviathans to the battlefield. Even to fly a 50-ton tank requires a converted B-36. These cost some \$20,000,000 apiece, and there aren't more than three airfields in the U. S. at the present time where a B-36 can land.

It is true that we have such planes and we have such tanks but we also have hand-carried antitank weapons of the shaped charge principle that can knock out a foot-thick tank with a single round.

Obviously there is fallacy in reasoning that concludes we must fly 60- to 100-ton tanks in airplanes that do not yet exist in order to win future airhead battles. The matter most certainly deserves further study. My purpose is to consider our present doctrine, analyze historical trends, and arrive at what I believe is a reasonable prediction of the future of airborne armor.

The need to give our armored cavalry wings has been recognized by our leading military analysts for some time. Even the horse has received serious consideration as an airborne possibility. In the July 1946, *Military Review*, Lieutenant Colonel John H. Swenson, instructor at the Command and General Staff School, impressively presents the effect of airborne horse cavalry landed in an enemy rear area. The War Department Equipment (Stilwell) Board Report of May 1946, recommended that the feasibility of converting tanks and armored cars into gliders be investigated. Writing on future war in his new book *Men Against Fire*, Colonel S. L. A. Marshall says: "The only logical strategic corollary of decisive strength in the air arm is the movement by air of all forces which fight on ground—infantry, tanks and artillery—and of the supply necessary to supply them. This logic breaks down only at the point

where the question arises whether it is economically possible to develop and maintain an air transport of such capacity. That it would be decisively advantageous is incontestable."

In the *ARMORED CAVALRY JOURNAL* for March-April 1947, Colonel Hayden A. Sears, Director of Instruction at The Armored School, thoroughly explored the possibility of transporting armor by air, stating in part: "armored divisions are organized primarily for offensive action in hostile rear areas." How true! And where could they find a better place to fight than in an airhead? As Colonel Sears goes on to say, "armor must be mobile if it is to be employed in strategic offensive operations and must possess the mobility of the troops it supports if it is to be employed on limited tactical operations." This too, is fundamental. Armor must have the mobility of the troops it supports, not only their tactical but strategic mobility as well. And troops of great tactical and strategic mobility need armor if they are to exist as a combat entity on a future battlefield. Colonel Sears logically arrives at this conclusion: "Without lift, neither armor nor its supporting troops will remain truly mobile as that term may imply tomorrow. Armor of the future may be forced to be relatively light in weight if the full advantages of available air lift are to be realized. . . . This cannot occur today and might be incapable of accomplishment tomorrow; however, it is a possibility of the future which cannot be overlooked."

This last statement, considered in its application to masses of vehicles is correct, but the fact is that armored vehicles were flown and fought in airborne operations of World War II. The British airborne forces especially designed and constructed the Hamilcar glider to carry the light tank. They used such tanks very effectively as airborne weapons in the Normandy invasion. We ourselves also had a light tank battalion shipped to the United Kingdom for airborne use in the invasion, but the British planned to use all of their available Hamilcars and tugs and our battalion had to be redesignated as a ground unit.

In the 82d Airborne Division, the Division Reconnaissance Troop had jeeps modified with armor-plate protection for driver and crew. These were flown into Normandy on D-day by CG4A gliders and into Holland on September 17, 1944 in the assault echelon. They proved invaluable and performed magnificently on typical cavalry missions.

The problem then is not one of whether armored cavalry can or will be flown. It has been flown. And it will be flown on a much more extensive scale in the future. Armored divisions will fly. They had better fly or we are going to be soundly defeated if we try to win airhead battles with unsupported ground infantry armed only with hand-carried weapons.

The trends of aircraft development and combat technique point clearly to the fact that armored units will be flown by some nation soon. The real problem is, not whether it *can* be done, but *how* it must be done. And the problem is not as tough as it may appear to be,



for the history of warfare contains many parallels to our present problems. A study of combat history and sound deduction from that study will bring the answers into sharp focus.

The battle of weapon versus armor and of mobility opposed to stagnation is as old as history itself. Perhaps the earliest recorded account of a heavily armored and comparatively immobile combatant overcome by agility, mobility, and a good weapon is the Biblical story of David and Goliath. An account of it published recently is found in the best seller, *A Study of History*, by Arnold J. Toynbee: "Before the fatal day on which he challenges the armies of Israel, Goliath has won such triumphant victories with his spear whose staff is like a weaver's beam and whose head weighs 600 shekels of iron, and he has found himself so completely proof against hostile weapons in his panoply of casque and corselet and target and greaves, that he can no longer conceive of any alternative armament; and he believes that in this armament he is invincible. He feels assured that any Israelite who has the hardihood to accept his challenge will likewise be a spearman armed cap-a-pie, and that any such competitor in his own panoply is bound to be his inferior. So hard set is Goliath's mind in these two ideas that, when he sees David running forward to meet him with no armor on his body and nothing in his hand that catches the eye except his staff, Goliath takes umbrage instead of alarm . . . he does not know that David, having realized, quite as clearly as Goliath himself, that in Goliath's accoutrements, he cannot hope to be his match, has therefore rejected the panoply that Saul has pressed upon him. . . . And so this luckless Philistine triceratops stalks pompously to his doom."

The story of David and Goliath has been repeated throughout history. Implicit and unreasoning reliance on the weapons that have won past encounters is suicidal. Though initial success may seem to justify the soldier's great confidence in his weapons, without at least an occasional reappraisal, this confidence turns very soon into a blind ignorance.

This pattern has been the same throughout the history of war. The individual hoplite succumbed to the phalanx, a seemingly invincible mass of manpower that dominated the battlefield until the Roman Legion came. In the Battle of Pydna the Roman Legion with its greater mobility and tactical versatility supplanted the phalanx. The Roman was prideful of his infantry legions and developed them to an unprecedented perfection. They ruled the battlefield for centuries until they met the mailed horseman armed with lance and sword. Mobility and firepower favored the cavalryman and he rose to the top. He, too, was confident and could not imagine nor conceive of a better arm or method. Soon there appeared on the eastern horizon a new kind of horseman. From the steppes of Asia he brought a hardihood and striking power combined with a greater mobility than had ever been seen before. The slow, heavily armed, completely confident Goliath, the mailed

horseman, was now opposed by an agile quick-striking David, with hand spear and powerful bow. Later, when armor improved, a new combatant appeared, clothed as usual in heavy armor and a profound belief in his own invincibility—the armored knight. But at Agincourt the British bowmen, unarmored but quick afoot, faced the heaviest armored force then known. So heavy, in fact, that when dismounted through combat they lay as helpless victims to the blow of the first foot soldier who could get to them. Agincourt, and Crecy with the first European use of gunpowder saw the end of the heavily armored knight. They were supplanted by the quick-footed bowmen and, in time, by foot soldiers with firearms.

But man learns slowly and the idea of the invincibility of mass, weight and stability still persists. The story of David and Goliath holds the same lesson for today's soldiers it did for the soldiers of thousands of years ago.

War is a dynamic science, ever changing. The principles stay the same but the means and methods constantly develop. Every change is opposed by many of those who won the last war for they are convinced their way was and still is the best.

The psychological basis for this resistance so vitally affecting the soldier's judgment is the strong inner desire for security in something known. They do not want new weapons because these weapons will not be what they know. It is from this subconscious fear of change that mental resistance and inertia springs. This runs throughout history, too, and perhaps its most important specific manifestation today is the reluctance to see that the heavy tank is done. The race between armor and gun, with the tank constantly growing heavier, already spells doom for the heavy tank.

The place for the heavy tank is in the Smithsonian Institution. The future of armored vehicles lies in lighter, much lighter, equipment. These lightly armored vehicles must mount the most highly penetrative guns available for reasonable ranges, say, 2,000 to 3,000 yards. They must have great cross-country mobility. They must have enough armor to protect the crew from flak, small arms, and air bursts. Magnesiums and silicates must be used for lightness of construction wherever possible. Shaped-charge and recoilless features must be incorporated in the artillery. Such vehicles should not weigh more than four or five tons.

History has still another lesson for us that merits continual examination. Air power is any weapon that can be flown. When armored cavalry flies it is air power—just as much air power as a bomb or missile. The present generation has seen air power in its inception and we are today witnessing the first evidences of its development. The question in the mind of every military student is what line of development will it follow? What will air power be ten years from now? What will the elements of air power be *twenty* years from now? There is again a historical parallel worth the closest scrutiny, the development of sea power.

Man once feared the sea. Beyond the horizon were



eternal flames, boiling waters, and consuming monsters. The brave who ventured to sea met frequent disaster because of storms, frail craft, and loss of direction. Those who survived were the heroes of their time. And when Phoenician sailors finally ventured beyond the Pillars of Hercules, they were the greatest heroes of the known world because they had conquered that awesome substance which covered so much of the earth. Despite the early hazards man soon learned to master the sea and turn it to his military advantage. The Persian King Darius launched the first big amphibious operation across the Hellespont in the sixth century before Christ. His son, Xerxes, brought amphibious operations to a high state of proficiency. They were followed by the Greeks and Romans, each improving on the means and methods of their predecessors. But it took until 1944 for man to reach full realization of the possibilities of the sea in war. That year in the Allied invasion of Normandy man employed thousands of seacraft of a multitude of types, each designed and built for a special purpose. There were some that travelled over both land and sea, there were shallow draft and deep draft vessels, infantry carriers, tank carriers, mine sweepers, rocket vessels, missiles—every type of vessel it took to bring the full weight of sea power to bear on the enemy at the decisive place and hour.

It will take no less of air power if man is to carry into combat the means he will need to overcome a well organized defender.

Legend and folklore have passed down to us an account of an amphibious war that contained a situation strikingly like the one confronting us today. It is from the Roman-Carthaginian War. Carthage, great maritime nation and commercial rival of Rome, sent its ablest general, Hannibal, through Spain and across the Alps with, among other things, a herd of elephants. His mission was to defeat the Romans and cause the surrender to Carthage of the Roman nation. He met with many successes, ultimately moving with freedom from one end of the Italian boot to the other, though he did not succeed in capturing the city of Rome, nor in overcoming the will of the Roman people to resist. After several years of fighting the Romans decided Hannibal could be beaten and forced to withdraw if the Carthaginian fleet was defeated and Hannibal cut off from his homeland. To do this required several innovations in the use of sea power. The Romans built up their galleys with several banks of oars to obtain greater mobility. Then on the top deck they placed their fighters, in position to deliver the full weight of their power against any adversary with whom they could close. This striking combination of mobility and fire and its method of combined employment was as radical in its day as the P-80 is now.

Meanwhile, the Carthaginians confident of their invincibility awaited the onslaught. Had they not routed the Romans for the past 10 years? The elephants had proven a decisive factor and the Carthaginians had an unlimited supply of them. The problem for the Car-

thaginian General Staff was merely one of building boats big and strong enough to get the elephants to where they could fight Romans. Meanwhile the Romans went on with their increase of fire power and mobility of seacraft. Soon they had enough to meet the Carthaginians at sea on what they considered reasonably good terms. But the Carthaginians were having trouble. What were they doing? Trying to build boats around the elephants. An elephant is not a seafaring animal; in fact he hates the sea. He wasn't built to go to sea. His bulk is a mass of concentrated weight existing in constant defiance of gravity. Getting a boat around him, and building enough boats to get enough elephants out to sea, was still an unsolved problem when the fatal day came. The Carthaginians suffered the most decisive defeat at sea in their history, which began the national decline that ended in annihilation.

But with their passing they left us a lesson—the lesson that seems so impossible to learn. The fine ground armies that won the last war are not good enough to win the next. If a new means of transport can give them greater mobility and bring to the battlefield greater fire power, it must be exploited. There lie the combat victories of the future, not in remembering too thoroughly how the last war was won. And if, in exploiting this medium, new types of craft, and new types of weapons and combat weapons and combat vehicles, must be built, then let us build them as soon as we possibly can.

We must build the weapons, the combat vehicles, and the aircraft, that will permit us to fly our armored divisions. For it is in the air that the future of armored forces is to be found.

There will be heavy opposition to such a program. Our designers claim that our automotive production potential is our greatest defensive asset and the product it delivers to the American market is a heavy vehicle. There is no place in the American automotive business for a plastic, silicate, magnesium, soybean automobile, and they have no interest in helping the army develop such a vehicle. Well there is no market, either, for 81mm mortars, or 155mm rifles, or P-80s, but we developed them, and we will have other combat requirements in the future that have no civilian counterparts. We had better build such vehicles or we will be left with the finest civilian luxuries in the world and no means of protecting them.

Whether we describe it as the Four Freedoms or as simply, as a British statesman did last year, being able to go down to the railroad station "and get a ticket to go where in the hell we please," our way of life is at stake and the competition in which we are now engaged is a keen one. Either we show foresight now and develop the means that will enable us to fly everything we need for combat or another nation will. If another does, well, we've had it.

Criticism of such a program will be by those who will show statistically that we cannot build enough airplanes to provide all of the bombers, fighters, and reconnais-



sance planes we need, let alone troop-carrier transports in the numbers this program contemplates. My answer is that we had better build the aircraft necessary to get troops about strategically and tactically or we will not have bases from which to operate our other combat craft.

But we must stop building *one* converted B-36 to fly *one* Sherman tank. Our troop carrier aircraft program must be based upon planes especially built for the purposes intended. It is most uneconomical to plan on a completely new craft for every combat load. Troop carrier airplanes should be built so that the engines and flight control surfaces can be used to fly many different types of detachable payloads. For this we could make a maximum use of available craft and at the same time protect them from the hazards of long exposure in forward areas.

Finally, there will still be those who say it takes a tank to fight a tank, and that we found this out when we embarked on a very ambitious tank destroyer program in 1942. It won't be easy for a thin-skinned combat vehicle, mounting however good a gun, to move about future battlefields against conventional heavy armor. It may be that the type of tank I have recommended has greater tactical defensive qualities than offensive despite its great strategic offensive characteristics, but I believe we can develop its offensive qualities. Certainly we must have it if for no other reason

than its strategic and tactical defensive merits. To say that it cannot be any good because we already have the best there is in offensive heavy armor (armor, remember, that anticipates going to the 100-ton class to protect itself from existing guns), is simply setting up to be another Goliath.

This much is clear from the lessons of history. We must develop light armored vehicles. We must develop air-transportable lightweight antitank guns for use on our armored vehicles and on the ground. We must develop light armored reconnaissance vehicles. We must lighten all items of combat equipment used by the armored forces, and their signal, medical, quartermaster, ordnance, and other services. And finally we must develop and produce aircraft suitable for the peculiar requirements of future airborne combat. This last requirement means track-laying, detachable fuselages, and 10-ton payload aircraft of an operational radius of 1,000 miles that can land in practically any area that is cleared of trees, poles, fences, and similar obstructions.

Only when we learn these lessons and apply them will the armored cavalry again have regained its traditional combat role. Striking at high speed by air, and entering ground combat that requires mobility and the retention of the initiative until the decision is gained, the armored cavalry will play the decisive role in future airborne combat. It is in airborne combat that the future of armor lies.

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# GUERRILLA WARFARE

*by Captain Edwin M. Rhoads\**

CARDED

IN time of peace prepare for war—these words were never so true as now. We must plan for adequate defense against all eventualities. Undoubtedly the atomic bomb and the defense against it is one of the most important problems we have to face today, but we must not let this one weapon overshadow other phases of the security of our nation. America is the most dominant country in the world today, eyed jealously by lesser and poorer nations. Unless we start World War III, an action foreign to our way of living, we are almost certain to be invaded, with or without a prior A-bomb attack.

The formula for invasion of a country is well known: fifth-column activity, crippling of industry and transportation by long-range bombing, break-up of troop concentrations, movements and defensive activities by aerial attack, and beachhead. It worked in Africa, the Pacific, and Normandy, why shouldn't it work in New Jersey, California, Canada, Mexico or Alaska? The answer is, that it will work for any power having air, sea, supply, and fire superiority, and we have no way in the world to prevent any country getting the jump on us. We cannot maintain the world's most powerful fighting machine. Such a procedure is economically unsound, since an army costs money, even when it is winning a war. In the past 50 years, other countries have taken the first two strikes while we warmed up for the home run, but next time we'll be up to bat first. What, then, is the answer? Much as we dislike the thought, **WE MUST BE PREPARED TO TRADE SPACE FOR TIME.** Once such a policy is begun, the patriotic spirit of the people helps keep it rolling, as in Russia and China during this past war. Years ago a general did the same thing with the help of a handful of riflemen, and as a result the United States emerged from a piece of paper to a reality.

The resistance carried on to prevent the too rapid advance of an invading army while we are mobilizing our armed forces and industry will follow certain characteristics. Due to paralyzed transportation and widespread areas of invasion, resistance operations will involve many small, independent units rather than large well coordinated forces. Operating with hit-and-run tactics, these units will have to be self-sufficient, utilizing local food supplies, civilian transportation, including cars, trucks, light planes and horses, civilian weapons and ammunition (or government-issued home defense supplies), and will have to improvise equipment not otherwise available. This is nothing more or less than guerrilla warfare. Other names may be more descriptive or

appropriate, but for the sake of simplicity, the term will be used throughout this article.

One needs only to glance at the pages of history to realize the extent and effectiveness of guerrilla warfare in the past and present day. Alexander the Great, Caesar, and Napoleon each encountered guerrilla resistance, and each was forced to acknowledge the effectiveness of these fighters. George Washington's first line of defense consisted of scattered groups of backwoods riflemen, which bore the brunt of war until his army could be assembled and equipped. In our expansion of the West, the Indians waged the bitterest guerrilla campaigns against the invasion of their lands, and were defeated only when our troops adopted the same type of tactics. A lifetime may be spent in the study of the guerrilla wars of history.

Modern guerrilla warfare was conceived by a man who was not a soldier but an archeologist, Lawrence of Arabia. Up to his time guerrilla campaigns had been of a tactical nature. Success or failure of their operations were usually not decisive in effect. Lawrence utilized his guerrilla army strategically by protecting the flank of General Allenby's forces in the latter's spectacular World War I campaign. Since then most successful guerrilla operations have been coordinated with organized military forces. A few examples in the recent war are the Russian partisans, the French Maquis, the heroic Filipinos, and the Yugoslavs under Tito and Mihailovitch.

We can prepare for a guerrilla campaign by the most economical of all measures, the school system. The British included guerrilla tactics in their Home Guard Training, and we might well follow their example by setting up a school to train army and National Guard officers as instructors for national guard and civilian components. In time of war individuals and small units trained in guerrilla fighting would be available all over the country to organize resistance in the invaded areas. By being a part of the national defense plan, this guerrilla resistance would be coordinated with the action of the armed forces, a vital necessity if the efforts and sacrifices of the "minutemen" of the next war are not to be in vain.

Our country is the choice plum of World War III. Every possible means must be considered in our national security if we would keep our people and our nation from a fate worse than total annihilation. Guerrilla warfare has proven itself an effective means of staving off defeat until the armed forces and industry can get back in the scrap to drive the invaders into the sea.

\*ROTC instructor in Denver, Colo., high schools.



# A MUST—

# UNIVERSAL MILITARY

*by Colonel Henry E. Gardiner\**

**An experienced combat officer looks at Universal Military Training in this article. He draws the conclusion that it is necessary insurance against another war. His arguments are well taken and worth considering.**

UNCLE SAM is now busy studying the fine print on an insurance policy he is being urged to take out to cover his family. It is a health, accident and life policy in that internationally known mutual company which has its home office in Washington, D. C.

Twice in 25 years he has been victimized during two major crime waves. When the last one of these was crushed, Uncle Sam thought he was in for a period of peace and quiet and laid off most of his police force. Recent developments indicate that this action was premature and he is now seriously worried about reports of possible new underworld activity. If a mob should decide to move in it might be more than the present constabulary could handle.

This insurance policy Uncle Sam is considering doesn't guarantee his property from being trespassed upon. It would, however, materially reduce that probability and it does assure an easier job of throwing out any intruders if they force their way in.

The old gentleman has, of course, been an unusually economy-minded person lately. Even so, the annual premium rate doesn't seem high to him, particularly when compared to what he has had to pay for some short term insurance a few years ago.

This policy is offered under the name of "A Program for National Security" (Compton Commission Report). The complete program consists of the following six elements: 1. A strong, healthy, educated population; 2. A coordinated intelligence service; 3. Scientific research and development; 4. Industrial preparedness; 5. Balanced armed forces (Army, Navy, Air Force and their civilian components); and 6. Universal Military Training including civilian defense. As one of those whom

Uncle Sam called upon to help him put down the last crime wave, I am in favor of such insurance. This article will deal exclusively with one part of the six-point program—Universal Military Training.

During last August, I went to Fort Knox, along with a group of other reserve officers, to take a look at the Universal Military Training Experimental Unit that the Army has been operating there since January of 1947. This visit to Fort Knox was actually in the nature of an attendance at a course designed to show what the Army is doing in anticipation that it may be called upon to carry out a program of universal military training. A series of these courses were given to reserve officers throughout the late summer and early fall.

This unit at Fort Knox was not activated for the purpose of selling universal military training to the country. It was set up on the other hand as a sort of pilot model to test the program that the Department of the Army had prepared. Any bugs that were located were to be corrected and the whole plan perfected for adoption on U-Day, if Congress gives the green light.

The National Training Program would be the same as is being given to the Unit at Knox. The first eight weeks are devoted to basic training, the next 11 weeks to branch training and the final three weeks to unit training.

As now set up, the battalion of trainees consists of four composite companies. During the branch training, instruction is given at the platoon level in each of the arms and services. There are three platoons of Infantry, two of Artillery, one of Antiaircraft, two of Armor and one each of the Engineers and the other Services.

The companies, which consist of 160 trainees, have a cadre strength of six officers and 19 enlisted men to

\*Reserve Officer and former Tank Battalion Commander in the 1st Armored Division.



# TRAINING

handle the training and administration. Once UMT were in full swing, it would require a cadre of 80,000 men and officers to operate it. This training would be carried on in units up to the size of a division at 21 camps throughout the country which were used during the war.

So far as the military part of training is concerned, the Experimental Unit is trying few innovations since it is believed that the methods developed during the war years have proved their adequacy. Bayonet instruction and dirty fighting methods, however, have been eliminated, it being felt that they have no value during peacetime training.

Under the proposed program, the Umtees would not be in the Army nor governed by the Articles of War but rather civilians under military control for training.

They would be operating under a Code of Conduct such as the trainees in the Experimental Unit are now. This method provides for giving demerits for minor delinquencies similar to that used at West Point and in Officer Candidates Schools. After a trainee accumulates five demerits in one week, he has to work them off at the rate of one hour of extra fatigue duty for each demerit in excess of five, and this may also mean the loss of a week-end pass. As a reward for being "on the ball" at the end of each month, the three trainees in each company with the fewest demerits receive three-day passes and a letter of commendation from the commanding general.

When a man is charged with a minor offense, too serious to be handled by the demerit system, he is tried before a trainee court made up from trainees of another company. The court is organized and operates much the same as a special court-martial, although, in effect, it is just a means of handling company punishment. The court determines the guilt or innocence of the accused and then his company commander, who presides over the court, fixes the punishment, if any is to be given.

Profanity and obscenity are prohibited for both the cadre and the trainees. That, of course, is a major departure from what most of us used to consider a perfectly normal, if not necessary, way of doing business. Strangely enough, it seems to work, although it is doubtful if such a reform could have gotten far, regardless of the penalties, before the days of mechanization.

The approach to sex morality is not the old familiar one where the emphasis was on how to look after yourself but rather one of continence.

In the Experimental Unit, the Chaplain plays a very important role. He, in addition to his spiritual duties, has an important part in the training program where he instructs on the subjects of citizenship and morality. During the first four weeks of training, the Umtees are confined to the area and they have the choice on Sundays of attending Church or going to a lecture on morals. Only one man so far has preferred to listen to the talk on morals. When Church attendance becomes optional, simultaneous with the issuance of week-end passes, most of those remaining in camp, including cadremen, continue to go to Church.

Strong emphasis is placed on the off-duty program and ample facilities are made available. During the first cycle, nearly 50 per cent of the trainees participated in the off-duty educational program and some completed graduation from high school by this means.

The duty week is 44 hours, which includes 4 hours of Saturday morning instruction in courses other than military, such as auto mechanics and typing (the two most popular courses), bookkeeping, psychology, radio, concert band, glee club, drum and bugle corps, photography, gem cutting, plastics, metalcraft, woodwork, model airplanes, leathercraft, woodcarving, Spanish, German, shorthand, a course in athletic instructing, history, mathematics and English.

Athletic competition is at the platoon level, thus engaging the greatest number of men. Every man must learn to play at least one game. Much of the instruction is given on duty time, as part of the training, and by squads. All trainees are taught how to swim.

A lot of emphasis is given to raising the general tone and the cultural level of the Unit. No beer is sold at the PX, it having more the atmosphere of a corner drug store than a bar. Observance of fundamental dining room manners is required. Men are told how to behave in public or in a private home and are given an opportunity to learn how to dance. They are also taught the fundamentals of common courtesy, as well as military courtesy.

You say that this doesn't sound like the Army you used to know. Well, it isn't in many respects and where it isn't the change has certainly been for the better and at no loss of military effectiveness.

While many people have visited the UMT Unit at Knox since it was first established, it is too bad that more people can't see it and, particularly, those who oppose the enactment of the legislation that would be necessary to change this pilot model over to a full-sized production plant. It is really an eye opener and once you have watched it operating you just can't help but be 100 per cent for the program.

Some of the more widely circulated articles on the UMT Experimental Unit have given a very distorted and misleading picture of this project. The only artificiality about the present setup is that, of necessity, the men in the unit are enlisted men as against, in the future, being Umtees or whatever they may eventually be known as. They are, however, of an average of 17½ years of age, the plan being to give this initial six



months' period of training to a man after his eighteenth birthday. The training that is being given is primarily military and there is no coddling or pampering of the trainees as has been inferred.

Under the Department of the Army's plan, there will first be a six months' intensive training in camp. This is the phase of the UMT that is being experimented with at Fort Knox today. The unit consists of a battalion of 664 trainees. Originally, it was planned to only operate the unit for one period of six months. Subsequently, however, it was decided to continue on another six months with another group. Whether a third group is to be put through this course is unknown at the time this is being written.

On completion of the first six months' training, the UMT has several elections for working off the remainder of his special training. He may remain in camp under Army, Navy or Air Force jurisdiction and take an additional six months' training. He may enlist in the National Guard or he can enlist in the Reserve Corps for six years, subject to six months' additional active duty training in this period at not more than 30 days a year. He, of course, could also join the regular Army, Navy or Air Force. Other options that a trainee may accept after the completion of the first six months' training are: Enlist in the Enlisted Reserve Corps, enter a college or university that includes a course in ROTC. Under this option the trainee agrees to accept a reserve commission if offered at the completion of the course; enlist in the Enlisted Reserve Corps and pursue a specialist or technical course approved by the Department of the Army in a trade or vocational school, or a college or university.

As everyone knows, the Army today is fighting a losing battle to maintain its authorized strength of just over a million men through voluntary enlistments. However, an all-time record has been achieved since we now have the largest volunteer army in history. The National Guard, despite every promotional effort, has not been able to secure the number of recruits it needs, and the enlisted Organized Reserve is far below any really effective strength. That this is a truly serious situation is all too self-evident.

The average American is not interested in the Army as a career or on a part-time basis. Furthermore, most of those who were with the armed services during the last war got such a bellyful during their tour of duty that, despite the continued need for their services, they aren't interested in voluntarily keeping up that kind of activity even on a peacetime basis.

There has been only one practical solution advanced to fill up the Army and the National Guard to their proper strengths and to create a reserve which will truly amount to something. That solution is the enactment, as has been requested by the President, of the Universal Military Training Bill now pending in Congress.

The enactment of the Universal Military Training Bill would provide the same impetus to enlistments in the Army that the Selective Service Act did while it was

in existence. Not only would it enable the National Guard and the Organized Reserve Corps to maintain their M-Day strengths by funneling into them a continuous flow of trained men, but it would be supplying recruits who would have had one thousand hours of basic training. Anyone who has labored to instruct recruits in the National Guard in their preliminary training on the piecemeal basis of one two-hour drill period a week knows what a tremendous difference that would be. The result would be a raising of the training level of the Guard and the Reserve to a point that, under normal conditions would not be reached for five years.

Approximately 1,000,000 men of those reaching an age of eighteen each year will be physically fit to participate in this program; out of that number, it is estimated that 150,000 would enlist in the Armed Services. Of the balance, 50 per cent would be trained for the Army, 30 per cent for the Navy and 20 per cent for the Air Forces.

With the regular services and the National Guard at their full strength and the Organized Reserve building up at the rate of a million trained men each year, any potential aggressor would think more than twice before taking a crack at us. They might even get over their present habit of walking around with an incident on their shoulder.

If UMT does not prevent another war, it will certainly do as much as can be done in advance of hostilities of insuring that we will win. This country could have turned the tide of the last conflict long before it did if it had had the trained manpower reserve that UMT will provide.

After completing their military obligation under the Universal Military Training Program, UMT graduates will be a valuable asset to all civilian defense programs.

We are daily reminded of the cost of this last war by the return of those bodies that are being brought back home for final burial. While you can't fight a war without having people killed, you sometimes have needless casualties. Most of these come through inexperience and lack of training. This lack of experience and training is, of course, even more dangerous to the troops when it occurs as it often did in the various echelons of command. Altogether too many men were killed who might be alive today had they been more thoroughly trained and not rushed up to fill the call for replacements before they knew their jobs.

When the front-line units are clamoring for replacements, they get what is available. If it happens to be a group of men who may have been in for only a few months and yet haven't learned all the fundamentals of soldiering and haven't become thoroughly acquainted with their weapons, they go up anyway. Men aren't kept in replacement depots for further training when they are needed at the front. During wartime you never have sufficient time to thoroughly train or prepare.

In a country which is so accident-fire-cancer prevention conscious, it is difficult to understand why there isn't more of an awareness of the advantages of taking



out some preventive measure against war and needless casualties.

The opposition to UMT seems to come primarily from the parents of those whose sons would be affected, the educators, various religious groups and the labor unions. So far as the latter group is concerned, they seem to be agreeable only to their own particular type of regimentation.

Many parents, church leaders and educators, who have gone to visit the Experimental Unit admittedly opposed to the proposition that compulsory military training was desirable or necessary, have changed their minds and left saying that they hoped that the enabling legislation would be passed so that their sons and the young men of the country could participate in such a plan.

The interesting thing is that they were sold as much on the benefits that it would have for the individual as

they were on what it would do in increasing the country's military potential.

Twice in modern times this country has suffered the tragic and stupendous cost in lives and money that comes from unpreparedness. In each case, there proved to be time to overcome our failure to be ready and we were able to build up our strength while our Allies battled the enemy until we could throw our full weight into the conflict and defeat the powers that had forced a war upon us.

The signs are irrefutable that there will be no such opportunity again. We are the Number One target of any major aggressor today. Unless we make ourselves strong enough to defend this country and capable of striking back with effective force at anyone who dares to attack us, we haven't much time left to continue to debate the American way of life.



## New Regular Cavalry Officers

Forty Cavalry officers were given commissions in the Regular Army in October, 1947, integration program appointments. These were the last appointments to be given under the program.

Following is a list of those appointed:

### Majors:

Lyman D. Bothwell  
John L. Lee

### Captains:

John H. Huckins  
James W. Pumpelly  
James R. Dorman, Jr.  
Edwin L. Beauchamp  
Elbridge L. Brubaker  
Donald A. Sanders  
William F. Jackson  
Ralph W. Contrum  
Raymond B. Steiner

Roy Lassetter, Jr.  
Julian P. Fox, Jr.  
Barry F. Phillips  
John B. Routh

### First Lieutenants:

Francis Daugherty  
Charles W. Calvert  
Frank R. Pagnotta  
Thomas S. Jones  
Ernest Von Pawel  
Elmer B. Lagerman  
R. J. MacEachen  
Leo J. Nawn  
Walter J. Davies  
Harold H. Dyke, Jr.

John T. Eichnor  
John M. Wright  
Gerald G. Coady  
Robert E. Miller  
William E. Potts  
William C. Dysinger  
Neil M. Chapin  
George H. Gould

### Second Lieutenants:

Clinton E. Hearn  
Clark O. Irving  
John H. McAuliffe  
Charles C. Ross  
Stanley A. Durka  
Marshall D. McClure





# VISUAL EDUCATION IN ARMY INSTRUCTION

*by Major James W. Cocke\**

**As defined by the author, "A visual aid is any especially prepared device designed to facilitate learning through an appeal to the sense of sight." And this is one of the most thorough and best articles on Visual Education that the Armored Cavalry Journal has ever presented to its readers. This article will be of value to anyone engaged in teaching either in or out of the Army.**

**W**HAT is the principal task of the military instructor? I believe that the principal task of the military instructor is to present his subject in such a way that it will convey thought, arouse feeling or interest, and create or provoke action of the mind. All of these tasks lead to one ultimate objective, "Victory in the event of war."

Despite the fact that instruction is one of the principal duties of every officer and noncommissioned officer in the army there is still far too little use being made of the visual sense in everyday teaching assignments. Harold Benjamin says, "Education is a most important human agency, which, by its very nature, requires thorough understanding and utilization of all means of communication. It is often the last to employ new and improved methods for the transmission of thought." Every day we in the army see instructors droning forth their daily lessons of facts and theories from memory or merely from notes in complete disregard of economy of time and effort in accomplishing the mission. While good military instructors have for many years recognized the importance of visual aids as a means of motivating and vitalizing teaching and

learning, observation of the work of many officer instructors has convinced the writer that the average officer fails to make adequate use of visual aids at his command—to say nothing of those simple illustrations which could be prepared with little effort or imagination.

In this scientific age of atomic warfare, speedy communications systems, jet propulsion, and other modern developments are making unprecedented demands upon the military instructor, hence, he must employ teaching methods which are logical, reasonable and desirable. As we delve into the field of methods of instruction, we become concerned with the problem: how can I, the instructor, accomplish my teaching mission most efficiently and in the shortest possible time? In order to accomplish this teaching mission we must use direct methods of approach and supplement that approach by appropriate aids to instruction. In addition we must analyze the problem from the standpoint of the student and the instructor. Your success as an instructor will depend largely upon your understanding of the student and the way he learns. It behooves every officer to become a student of human behavior and of the psychology of learning. Becoming a good instructor is the first step toward successful leadership.

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\*Chairman, Methods of Instruction Committee, The Ground General School.



### HISTORY OF VISUAL AIDS

According to McKowan and Roberts, and certainly our own knowledge of history will tell us, that primitive man learned enough to convey his thoughts by signs, gestures, facial expressions and crude imitations long before he developed a vocabulary with which to express himself orally. Primitive youth was probably taught to protect himself, to hunt and construct shelter by observing and imitating other members of the tribe. This was the demonstration method or appeal to the student through the sense of sight; and, finally, the application stage of instruction in which the student "learned by doing" the things he had been taught. This developed through the years until blackboards, charts, books, photographs, and simple illustrations came into use. "Visual education" as we know it today, consists mainly of materials or objects which are used in classroom or in teaching situations to facilitate the understanding of the written or spoken word. The army has placed a great deal of importance on visual education in recent years and has devoted a full chapter in TM 21-250 to their use and also prepared FM 21-8, "Training Aids," which lists all aids which have been prepared and are available for use in War Department stocks.

### WHAT IS A VISUAL AID?

A visual aid is any especially prepared device designed to facilitate learning through an appeal to the sense of sight. The aid is usually of such nature and size that it can be used in carrying on group instruction—that is, large enough to be visible to the entire class. Text materials, reference books, and other printed matter make use of the visual sense; but, since these are not considered as being especially prepared devices that can be used before an entire class, I shall not consider them here. This discussion pertains only to devices which can be used before an entire class.

The instructor must take into consideration, that the backgrounds of our soldiers are as varied as the communities from which they come. Therefore, no instructor should take for granted that all students will learn equally well. In the first place, all learning is based primarily upon the sensory experience. As students of human behavior and of the psychology of learning we must realize that our concepts of various relationships are in terms of meanings applied to our various sensory experiences. The only way that you, the instructor, can reach and influence the student's mind is through the five physical senses. According to psychologists, there is no "secret back door" by which you can "sneak in" a little knowledge. In order for us to obtain a clearer concept of the realm of visual aids, let us review the five senses. They are: Sight, Hearing, Touch, Smell and Taste.

I like to think of these senses as the five highways to intellect because along these highways all knowledge travels on its way to the focal area of the mind and

finally into the vast reservoir of knowledge (the marginal area) where it is stored for future use. The intellect, memory and imagination are limited to the experiences and sensations which we have acquired through the physical senses. Cicero who lived in 44 B.C. thought the sense of sight was the keenest of our senses. Most educators agree today that a greater amount of learning is acquired through the sense of sight. In fact some say as much as 50 to 85 per cent of knowledge is gained through the visual sense. Do not confuse this statement with another theory that students "learn most by doing." This axiom refers to a stage of instruction known as the applicatory phase, while my first statement refers to a supplementary method of doing the job.

If the sense of sight is so important, let us study the construction of the eye and analyze the matter a little further. The back of the eye consists of a network of nerves which gather and convey information to the brain. The appeal to the brain through the eyes is much more significant than the appeal to the brain through the ears. The eye can be compared to a high grade camera. It records countless impressions or pictures. Some sales organizations, including the largest in America today, make every effort to appeal to the customer's ear through speech, but they usually attempt to accompany that appeal with an equally strong appeal to the eye. In other words, they try to "picture the idea," or "show a picture."

If we utilize visual aids in our instruction and appeal to the student through the sense of sight, we will probably make a stronger impression on his mind than by merely talking to him.

There is an old Chinese proverb which says, "a picture is equal to 10,000 words." From your own experience, recall how difficult it was to attempt to explain or describe the operation of working parts of a machine gun to a student who had never seen a machine gun merely by appealing to him through the sense of hearing. On the other hand, if the instructor had a working model showing the operating parts of the gun and provided the student with a machine gun so that he could follow the explanation manually wasn't the job much more simple? I think it was.

No verbal description will equal the effectiveness of a good picture as a means of creating visual imagery. We must make every effort to "show a picture" because certain students will form erroneous ideas, as to our true meaning if we merely present ideas verbally.

Much depends upon past experience and particularly the student's ability to see a mental image of what you are talking about. If we show him a picture of the object and how it works, our chances of creating a distorted impression will be reduced by 50 per cent. Not only are visual aids important in establishing a vivid and accurate picture, but they assist the instructor immeasurably in arousing interest, as well as focusing attention upon the desired relationships being studied. Everyone of us, whether aware of it or not, has ex-



perienced illusions of the senses. Our senses do not always tell us the truth. The eye and the ear deceive us, even the hand that we instinctively extend to test the evidence of our senses, has often played us false. It is the belief of many that it is really the mind that is at fault and not the senses. The eye merely communicates the thing it sees to the mind. Through association with past experiences the mind is able to draw conclusions and make decisions. By definition, based upon those experiences, a visual aid is a specially prepared device which is intended to focus the student's attention on the subject or object being studied for the purpose of imparting knowledge through the sense of sight.

One word of caution here! The act of simply providing a picture cannot be separated completely from explaining or describing it and, by this I mean that showing a picture does not necessarily accomplish the same purpose as a proper use of it would. We must describe the aid and show its relationship to the lesson. Assume that I showed you some strange weapon, or device; permitting you to view it for a few minutes without adding a verbal description or telling you how it works, or its limitations, uses or capabilities; likewise, assume that as soon as I had shown it to you, I dismissed the class. Would you consider this procedure sufficient for a complete understanding of the weapon? I don't believe you would. Remember! The average soldier probably doesn't have the benefit of as much extensive training and experience as you have had. We should use visual aids to appeal to the sense of sight; and we should use the voice to explain the aid and its relationship to the lesson.

A visual aid should be used only when it will assist the teacher in the furtherance of learning. If the aid is displayed before it is required for use, the students are prone to concentrate their attention on the chart or model or diagram rather than upon what the teacher is saying or doing. The aid should remain covered or out of view of the class until the point is reached in the lesson at which it will reinforce certain points being taught by the instructor.

#### USE OF COLOR IN VISUAL AIDS

W. H. Hepner, advertising authority, brings out the fact that advertisers have learned that colors and labels on cartons should be especially appropriate to the food contained in the package. Information to be presented in chart form by the instructor should also be packaged according to the character of the material to be presented. Bright colors are used by advertisers to catch the eye. The advertiser wants to attract your attention for a few seconds in order to deliver a mental picture of his product and he hopes to keep your attention long enough to read a few words describing the product and its merits. The use of color in visual aids can be just as valuable as an attention getter. In addition, you the instructor, can direct the attention of the class to the important points of the aid and ex-

plain and describe your product verbally to the class.

Bright colors are effective but they tend to hold attention only for a few brief minutes. Contrast is closely associated with bright colors and will be most valuable to you in constructing visual aids. Black on white is one of the oldest and most reliable contrasts. Other combinations used to effect are blue on yellow or red on green. Advertisers exert little effort to make color combinations pleasing to the eye. Instead, they rely on contrast and brightness of color since the real objective is to attract attention.

Have you noticed the increased use of color in our newspapers, films, and magazines today? Why do you suppose this has taken place? The reason is that color makes a stronger appeal to the eye. In construction of visual aids, consider that contrast of color or combinations of colors will increase the effect of your aid as an attention getter.

#### PURPOSE OF VISUAL AIDS

Visual aids are not considered here as methods or techniques of teaching, in themselves but as devices that can be employed effectively while presenting instruction by any of the usual methods. Among the important uses of visual aids are the following:

- a. They broaden the sensory experiences of the learner. This type of teaching device provides the student with additional experience and increases his knowledge of the subject.
- b. They strengthen vital images and important sensory impressions involved in learning will become stronger.
- c. They offer experiences not possible to receive in the shop or classroom. The student may acquire information through the use of films, models, charts, and maps that otherwise would be impossible.
- d. They add variety to student activities. The use of visual aids helps in developing interest and eliminating monotony in the classroom.
- e. They develop interest in some specific subject or activity. A film, slide, model or chart may be used to arouse interest in a subject and place the students in a state of readiness to learn.
- f. They reinforce learning. Instructional units already taught may be reinforced through the use of visual aids.
- g. They develop an understanding of the subject in the shortest possible time. The time necessary for students to learn a subject may be decreased by supplementing either method with effective visual aids.
- h. They assist the slower student in learning. The visual aid may remain before the student or may be referred to until he has mastered the subject. Spoken words fade away.
- i. They are aids to other methods of instruction. Visual aids do not replace other teaching methods,



but usually make them more effective. A visual aid is not to be used as a separate method of instruction.

- j. They show relationships between lessons, subjects, and other learning activities. Films and other visual aids may be used to tie lessons or subjects together and to give them unity. This assists the student to use past experiences in new situations which is an essential function to learning.

#### CHARACTERISTICS OF GOOD VISUAL AIDS

In planning, selecting or evaluating a visual aid, consideration should be given to the factors that make it valuable as a teaching device. The following are characteristics of good visual aids:

- a. The aid should be large enough to be seen by the entire class. Every student in the room should be able to see all parts of it from his location. A visual aid is of little value if the students do not see it.
- b. The important parts stand out. This is often done by using colors, cross-hatching or shading.
- c. Only the essentials are included. All unnecessary details are eliminated. They are both worthless and confusing.
- d. A visual aid is used for some specific instructional purpose. It should not be used to fill in time or to entertain students.
- e. All lettering and notes stand out. Use plain letters that can be read from the rear of the room. A visual aid is not the place for elaborate lettering or for decorative work. Two-inch letters are considered minimum.
- f. The vocabulary used in the notes is within the range of the student's understanding. The knowledge to be imparted must not be obscured by words that the average student does not understand.
- g. It is portable, easily moved or transported. An aid may be used for several years. It is often moved from one room to another.
- h. It is displayed before the class only when needed. All such devices distract attention if they are shown before needed. They should either be covered or removed when not in use.
- i. It is made to scale. Models or other aids which are not in proper proportion, tend to confuse the learner and give him false impressions of the true object.
- j. It is durable and strongly constructed. Most aids are used for a long time. They must be well constructed in order to withstand such use.
- k. It conforms to accepted technical practices in the field. All technical instruction must keep pace with developments in the field. The efficient instructor keeps abreast of the technical improvements in his subject, and is familiar with effective

instructional techniques and devices.

#### TYPES OF VISUAL AIDS

The first and best aid, in most instances (although it is not an "Especially prepared device") is the actual object of the training or instruction being given. All other forms of visual aids may be said to be substitutes for, or supplemental to, its use. Many other visual aids, however, used in combination with or entirely independent of the actual object, will frequently speed the student's understanding. There are many cases, however, in which visual aids are not entirely applicable. Therefore, a very careful study must be made by the instructor to determine whether or not this situation will apply. The mere fact that they are used is no guarantee that learning will be improved. A study of each teaching situation must be made before selecting visual aids, because there are some subjects which do not lend themselves to visual representation.

*Models.*—In using models, which will in most cases speed understanding, you may find that it is possible to reduce the principles involved to their simplest possible form, and still bring them within the realm of the student's previous field of knowledge. Scale models are more complex and may be used to advantage for certain types of ordnance training.

*Charts and Posters.*—Charts and posters are often used to present in miniature or in magnification the essential elements of a situation or of an object. In addition, charts help to present ideas and concepts. Posters are an excellent means for emphasizing outstanding points in previous instruction. They are great reminders. The chart and the poster differ in that the chart is intended to present several ideas whereas the poster is intended to present a single idea.

*Synthetic Devices* may often be used as substitutes for actual objects in certain phases of applicatory training. An excellent example of this is the sighting device which assists the soldier to learn the correct sight picture.

*Maps, Photographs and Mosaics* have widespread uses in military training.

In addition to the above-mentioned aids, there are a number of more general training aids which are not peculiar to any subject, but which may be used to implement its teaching. In this category are such aids as photographic aids (training films, film strips, opaque projectors and allied equipment), sand tables, terrain boards, and similar devices.

The discussion of this phase of visual aids is considered necessary because, although instructors know the value and importance of certain visual aids, they fail to utilize them to the fullest extent and do not always take the time to plan their use. I wish to show some of the possibilities inherent in certain aids with the view of helping to make instruction more effective.

You must select appropriate visual aids. In the selection of a visual aid, instructors should consider the following factors:



- (a) Will it fit into the plan of instruction?
- (b) Will it help attain the objective of the lesson?
- (c) Is it adapted to the group?

Prepare for the use of each visual aid. Remember, merely showing the aid is not enough. Its use must be planned in order to be effective. After the appropriate aid has been selected, the instructor must study it carefully before using it in a teaching situation. Each aid must be integrated with his plan of instruction. Make a note on the lesson plan exactly where and when the aid will appear in the lesson. The key points must be determined in advance. The manner in which it will be displayed and its relationship to other aids used in the lesson must be well planned and rehearsed. Timing is most important.

Present each aid to maximum advantage. It is also necessary to consider the specific use which each aid is to serve if it is to be presented to the best advantage. For example, posters will be displayed and used in a manner quite different from charts. When visual aids are used in group instruction, these factors must be considered:

- (a) The number of students who can observe the aid at any given time.
- (b) The distance from which each aid can be studied.
- (c) The supplementary equipment or materials required.
- (d) Seating arrangements.
- (e) Lighting requirements.

I want to emphasize again, "seeing is not necessarily learning." You must teach and direct students to observe visual aids properly for best results.

Let us discuss the technique of handling specific types of aids in teaching situations.

*Graphic Materials.*—Here are some points which should be helpful in using graphic materials:

- a. Display only one chart at a time; charts not in use should be reversed or covered.
- b. Do not present more material than can be absorbed readily during a single training period. Psychologists and experienced instructors agree that under most conditions only about four or five *major* points can be covered in one 50-minute period.
- c. Direct the attention of the student to the most important items in each chart. Stand to one side of the aid and use the pointer with the hand nearest the aid in order to insure eye contact and freedom of movement.
- d. Stress key points and check effectiveness of training or instruction by requiring individual or group answers to questions.
- e. Maintain further interest and attention by supplemental discussion, so far as time will allow, by integrating charts with practical exercises. Em-

ploy charts as a basis for tests and examinations.

*Note:* Posters afford excellent means of emphasizing outstanding points in instruction. Posters are NOT usually used for classroom training but should serve as a supplement to classroom instruction. Ordinarily they should be displayed at points where there is a continuous flow of traffic or where the students gather. The poster is intended as a reminder of important lessons.

*The Blackboard.*—The blackboard is one of the most important devices available to the military instructor as an aid to teaching. It will be found useful either indoors or outdoors. Not only do most instructors fail to make the best use of the blackboard, but in addition they also usually fail to observe good teaching practices when it is used. The blackboard is usually available when elaborate charts are not. The blackboard lends itself to the presentation of relationships between subjects by means of outlines, sketches, charts and diagrams. The blackboard is inexpensive and lends itself to quick revision of material because it can be corrected easily. Materials can be summarized quickly and left in view of the student long enough for him to obtain a mental picture of the point. In order to speed the use of the blackboard in class presentations, particularly if the instructor is speaking from an outline, he should either have the material on the board before the class enters or it should be sketched on the board very lightly so as to avoid the loss of time in aligning the material when he does place it on the board. Many times an ordinary lead pencil will make a line bold enough to permit the instructor, with the aid of properly reflected light, to follow the lines easily. Bold, heavy lines should be used, and sketches must be made large enough to be seen by the entire class. Colored chalks may be used to show contrast, to add variety, and to create interest in the diagram. Make your material on the blackboard mean something. If you have a sketch to draw, you should make a brief sketch on a piece of paper for ready reference when you go to the board. Meaningless scrawlings are confusing and distracting. They are evidences of lack of skill in the use of this particular aid. The instructor should draw or write rapidly (preferably print your work). Stand to the right of the work, and *do not talk* while facing the board. When not using material on the board step away from it and when it is no longer of value, either erase or cover the material. As in the case of other aids, if the blackboard is to be used successfully in the development and checking of correct mental images, it must be used wisely and efficiently.

*Opaque Projections.*—Here is a device which can be valuable in normal teaching situations. The opaque projector is an instrument designed to reflect flat pictures, photographs, maps and similar objects on a screen so that large groups will be able to see them. These materials are particularly useful and economical because they may be collected from books, magazines,



post cards, and catalogues. The chief value of the opaque projector is that it makes usable much material that is not otherwise available in films, film strips and glass slides because of the expense involved.

The still picture provides opportunities for obtaining the basic visual imagery which is essential to thinking and learning. The instructor can type or print certain key points which he wishes to stress on comparatively short notice. Again, unless the picture is well planned, thoroughly explained, and skillfully presented it may be totally worthless. Remember also, that a picture may leave much to the student's imagination.

*Training Films, Film Strips and Glass Slides.*—Let us discuss the training film first. It is a great training aid, particularly since most Americans are accustomed to attending the movies as a recreation. Its chief value lies in that it presents a lifelike portrayal of certain procedures. It is an *illustrated lecture* of the highest order. Psychologists say that students will remember materials presented in a motion picture for a long time. The student will unconsciously place himself in the role of the actors and actually live the situation with them. Considerable material can be presented in a relatively short time. For those of you who have not seen Training Film 7-295, "Military Training," I recommend that you do so. It is a reasonably good condensation of Army teaching methods based upon FM 21-5. TM 21-250 has superseded that manual in some instances, but the more important points remain the same.

Training films are aids to all methods of instruction and are a part of regularly scheduled instruction. They are not merely something devised for a rainy day. In the lecture method of instruction many of the training films provided are the best available aids for many difficult basic subjects. (See FM 21-7 and the "Film Bulletin Digest" published by the Signal Corps for complete lists of films available.) *Note:* The film bulletin digest contains the name of the film, synopsis of material in the film, running time, and the type of audience for which it is intended. In the conference method, films may be used to present and explain the subject or demonstrate a procedure.

In using motion pictures, it is necessary for the instructor to outline to the class at the beginning of the period exactly what is to be stressed in the film. If there are any discrepancies in the film, they should be pointed out prior to showing. A simple check on the class at the close of the period to determine what has been learned will tell you how effective the film has been. This can be accomplished by the use of a Film Quiz Card and a few simple true-false questions relating to the film itself. The film library is equipped to supply you with these cards whenever film is shown. The card will also serve as an attendance check since it is numbered serially.

*Note:* There is available a booklet entitled the "A B C's of Visual Aids and Projectionist's Manual," which has been prepared by Philip Mannino and pub-

lished by the Educational Film Library Association, New York, N. Y. This booklet contains instructions for the operation and maintenance of motion picture equipment. Remember this: Films have never improved instruction if they only remain on the shelf.

*Film Strips.*—A film strip is a strip of standard motion picture film (35mm) which consists of a series of single photographs, diagrams, charts, drawings, and similar representations. The wise use of these strips will save considerable time and labor in preparation of charts and will greatly simplify certain instruction. If you desire to use this material outside, the projector can be used to project the material on paper. The desired portions of the picture may then be enlarged by tracing for use out of doors. The opaque projector can also be used in the same manner.

*Lantern Slides.*—Lantern slides are valuable visual aids and may be used in much the same manner as training films, film strips and opaque projections. This type of slide, while more expensive, is more desirable than the opaque projection.

*Other Training Expedients.*—Every effort should be made, in both outdoor and indoor exercises, to promote realism and increase interest by employing training expedients. I will not go into a complete discussion of all these expedients since many of them are not classified wholly as visual aids but are classified under the general term, training aids. Some of these expedients might include sand tables, miniature ranges, landscape targets, terrain boards, smoke puffs, blank ammunition, and similar objects and devices. A lengthy discussion of these various means are covered in FM 21-5, paragraphs 85-87, TM 21-250, chapter 8, and FM 21-8.

I have covered many points during this discussion but there are a few salient points which demand special emphasis.

First, consider the learner in preparing visual aids. You must select carefully and become familiar with the aid in order to know how to use it most effectively.

Second, remember also, that the aid must be taught, *not merely displayed*. The aid should represent an economical use of the student's time as well as the instructor's time.

Third, psychologists say that very often things seen have a more direct appeal to the student than things merely heard. Consequently they enlist more interest and the impression lasts longer. This means that practically every *lecture* and *conference* will need a visual illustration.

One final thought. The instructor's primary objective in teaching is to translate his knowledge into the language of the student. In order to do this, he must "show a picture" so vividly that no one will fail to understand. An effective means and short cut to this objective is the use of *visual aids*. Do this by appealing to the student's *sense of sight*. The fact that prepared visual aids are not available is no excuse for the instructor. It is his responsibility to teach at maximum efficiency—he may often be forced to improvise.



# Exploitation Of Aerial Photography

## A One-Act Play

by Lieutenant Colonel David Radam\*

Time: 40 Minutes

### SCENE I

Aboard Army Transport

### SCENE II

In Regimental CP

### SCENE III

In Army Photo Center

### SCENE IV

In Interrogation Hut

### CAST

(In order of entrance)

REGIMENTAL CO . . . . .	Colonel
REGIMENTAL S-2 . . . . .	Captain
DIVISION PI OFFICER . . . . .	Captain
REGIMENTAL S-3 . . . . .	Major
PHOTO CENTER PI OFFICER . . . . .	Captain
PHOTO CENTER PI OFFICER . . . . .	Lieutenant
COUNTERBATTERY OFFICER . . . . .	Captain
ENGINEER PI OFFICER . . . . .	Lieutenant
IPW OFFICER . . . . .	Captain
PW . . . . .	Aggressor Private

### SCENE I

(Troop transports are convoying combat troops to an amphibious assault area. In mess room, officers of regimental combat team are being briefed by their commanding officer. The Regimental CO is pointing to a large situation map as he sums up his talk.)

REGTL CO: So to sum it up, gentlemen—this area on the beach is *our* baby. When we've secured it, and reorganization is complete, we'll move on to our main objective which is this wooded ridge right here, flanked to the right by this village.

Red and White battalions will be in assault with Blue in reserve. You men know what's expected of you and you have the time schedule.

Are there any questions? (Pause.)

All right, S-2, let's have the intelligence picture.

(S-2 comes up to large situation map and Regimental CO walks off to one side.)

REGTL S-2: First, I'd like to introduce Captain Warner, photo interpreter from Division G-2. He'll give us his interpretation of the beach area.

(Division PI Officer comes to front of group and speaks.)

DIV PI OFF: I'd like to show you some "blow-ups" of photographs taken two days ago. You'll see enemy

beach obstacles and then I'll locate them for you on a defense overprint together with defense positions and fortifications. All right, Sergeant!

(Sergeant slips photo in balopticon, turns on switch, and picture is projected on wall.)

DIV PI OFF: You'll find some concertina wire here . . . posts here . . . hedgehogs here . . . and this area is mined. Here's where you'll find . . . (Pause.)

(Sergeant changes photo and Division PI Officer continues.)

DIV PI OFF: Here are their antitank guns . . . dual-purpose guns . . . antiaircraft. The Navy has this information and is laying on a bombardment preceding our landing. Now let's locate these things on the defense overprint.

Distribute those copies now, Sergeant. (Pause.)

(Sergeant passes out several 1/25,000 scale overprinted maps and some copies of a photomap and "going report.")

DIV PI OFF: Gentlemen, I'm giving you each a copy of the defense overprint and also copies of a photomap and "going report." These were made from data extracted from the interpretation of photographs. Here's the concertina wire you just saw . . . here are your posts . . . hedgehogs . . . mine field . . . pillboxes . . . traps . . . machine-gun positions . . . antitank guns . . . dual-purpose guns . . . and anti-aircraft. Also, as you can see, the photomap gives you a pretty clear picture of what to expect on the beach.

(Holds up photograph.) This was made from a group of aerial photos of the area made first into a mosaic which in turn was lithographed.

(Puts down photomap and picks up "going report.") The "going report," of course, you're all familiar with. This should help you considerably both on the beach and when you're moving inland.

(Division PI Officer moves from the front of the room to the side, where a model is shown atop a table.)

DIV PI OFF: I have a terrain model over here which we made as a replica of the beach. Its scale is 1 to 2,000. The model isn't complete, but I'll build it up for you as I go along.

(Reaching into a box on a chair beside the table, the Division PI Officer picks up several miniature defenses and places each in its proper position on the model as he continues.)

DIV PI OFF: Here's that concertina wire again . . . the posts . . . hedgehogs . . . mine field . . . pillboxes . . . traps . . . machine guns . . . antitank guns . . . dual-

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purpose guns . . . antiaircraft.

Well, that's about it, gentlemen. Aerial photography, together with other intelligence agencies, is of prime importance over terrain where you have no control. It gives you the *current* dope. A river bed, for example, could change its bank and route. A map wouldn't show that—photographs would.

*(Division PI Officer returns to front of room and Regimental S-2 speaks.)*

REGTL S-2: Captain, I think you should let them know the limitations of aerial photography.

DIV PI OFF: Yes, sir. We can't *always* get the picture we want. Sometimes we're stopped by enemy fighters—sometimes it's flak—sometimes it's that old demon bad weather—or the terrain might be so skillfully camouflaged that we can't make heads or tails out of it. *(Pause.)*

Are there any questions?

MAJOR: How do we go about ordering aerial reconnaissance?

DIV PI OFF: Any unit, at any time, can request it and interpreters will accurately and quickly give you the information gained. Requests should be sent through intelligence channels by the fastest means of communication.

However, Army G-2 Air will very often anticipate lower unit needs and arrange to have coverage flown prior to the receipt of requests.

Any other questions?

*(After a pause, S-2 walks to the front and speaks.)*

REGTL S-2: Thanks, Captain. *(Pause.)*

Now, gentlemen, let's take another look at the situation map. We know that the enemy . . .

*(End Scene I)*

## SCENE II

*(Regimental CP. In middle of stage are two tents—one for Regimental CO and Executive, and the other for S-2 and S-3. Other tents are in background.)*

*In the Colonel's tent, the Regimental CO and the S-2 are talking and studying the situation map on the wall.)*

REGTL CO: For D plus 4, we are still doing OK.

*(Regimental S-3 rushes into the tent and speaks to the Colonel.)*

REGTL S-3: "A" Company of Red Battalion has been pinned down by small-arms and artillery fire and forced to dig in. Battalion requests artillery support.

REGTL CO *(To S-3)*: Phone division artillery and see what they can do for us. . . . *(To S-2)*: And you get hold of G-2 and ask him to locate those guns.

REGTL S-2 and REGTL S-3 *(Ad lib)*: Yes, sir . . . right.

*(Both S-2 and S-3 leave for their tent.)*

*(Upon arriving at the S-2-S-3 tent, S-2 calls the Division G-2.)*

REGTL S-2 *(On telephone)*: Football, please . . . "two" please. . . . Hello, Colonel, this is Fairfax "two." . . . I'd like to request a special air reconnaissance mission to pick up some enemy positions that have been

troubling some of our forward elements. The area is within the following coordinates: —————

*(S-2 returns to the Regimental CO's tent.)*

REGTL CO: You sure got that request through in a hurry. Just how will it clear all those channels?

REGTL S-2: Remember the photo interpreter on the boat saying that requests for aerial reconnaissance should be sent through intelligence channels? Well, Division G-2 upon hearing from me will immediately shoot through the request to Corps G-2 Air, who, in turn, will forward the request to Army G-2 Air. As most photo missions are preplanned, Army G-2 Air will request a special priority mission of the air staff reconnaissance officer. Usually, he presents coordinated and consolidated requests. The recon officer, after learning what aircraft are available, will immediately forward the request to the tactical reconnaissance group who will fly the sortie.

Meanwhile, Army G-2 Air, down through intelligence channels, is relaying the message that the photo mission is being flown. The pilot will be briefed by the ground liaison officer—and when he understands what is expected of him, he will take off to get his pictures.

REGTL CO: How long will that take?

REGTL S-2: That depends on the communications. If there is no delay, the Air Force should be taking action in about an hour.

REGTL CO: How long before we get some information on the enemy position?

REGTL S-2: If everything clears OK, and the Air Force gives it a high priority and has a plane available, we might hear from the Army Photo Center within four and a half hours.

*(End Scene II)*

## SCENE III

*(Army Photo Interpretation Center. PI personnel are at work interpreting photos, looking through stereoscopes at photo pairs, working at drafting board, marking photos for distribution, etc. Also present are Engineer interpreters, counterbattery officers of artillery, etc.)*

*(PI Captain looks up from stereoscope and speaks.)*

PI CAPT: Our photo interpreter team located the enemy artillery for that special mission. Things sure went smoothly. It is only 4 hours since the request came to the Recon Squadron.

PI LT: The photo also revealed what would be the best route of covered approach for "A" Company, and the tanks.

PI CAPT *(To Sergeant)*: Check on the distribution and see if 4 copies of the prints have been received here. Be sure that Corps gets one set; two sets go to the Division interested, so that Regiment can get a set; and keep one set here at the Photo Center.

COUNTERBATTERY OFFICER: I called the Division G-2 and gave him the coordinates of the enemy artillery positions. He must coordinate between Regimental



S-2 and Division artillery for front-line troop clearance. The enemy guns should be knocked out by now. This is almost as good as that Artillery spotting mission we had yesterday.

PI CAPT: Wasn't here yesterday. What happened?

COUNTERBATTERY OFFICER: The Aggressors were shelling 4 dumps and doing quite a bit of damage. Corps Artillery had located the suspected battery by flash and sound but they wanted aerial photos so pin-points of the battery could be made on the map.

We had a special mission flown and annotated the photo with the gun location on it. Two photos went to the Corps Artillery S-2, who gave one to the battalion in best position to fire on the enemy gun, and the other marked photo went to the artillery spotting plane squadron. Using high-frequency radio for talking between the spotting plane and battery, the enemy gun was silenced in about 30 minutes.

ENGR PI OFFICER: Did they use an oblique or a vertical?

COUNTERBATTERY OFFICER: In this case they used a vertical. But they can use either.

ENGR PI OFFICER: Guess I'd better get back to interpreting. The Army Engineer sure was sold on PI this morning when I gave them the information they wanted for building a bridge over the Dee River. That area is still in enemy hands, but our boys should be able to figure out what equipment to bring up without even seeing the river.

COUNTERBATTERY OFFICER: It's been raining hard for the past week. Your information might be too old when we get ready to cross.

ENGR PI OFFICER: I used some photos taken yesterday and the river was at the same stage as it was two days previously. A change in river level at the bridging site won't alter the present Engineer plans for at least two days, and we should be there by then.

(Phone rings. PI Captain answers. After pause PI Captain speaks.)

PI CAPT (On telephone): One moment, sir, while I look over the cover. (Turns to Lt who is interpreting.) (To Lt): It's G-2. Put those photos aside for awhile and help me find this enemy gun which is picking off our tanks up in the 2d Armored valley zone. See if we have any late coverage.

(Pause.)

PI LT: We have some cover of that flown yesterday afternoon.

PI CAPT: See if you can find any AT guns on the edge of the woods.

PI LT: I looked over this entire area on these photos this morning for that same purpose and couldn't find anything specific.

PI CAPT: Well—(Going back to phone): Sorry, sir, we can't help you out on that at the moment, but at 1600 we are going over to the IPW cage with some photos of the same area, and I'll have the IPW boys question PW's who were in that area yesterday. Regiment just sent some PW's there.

PI LT (To Captain): Don't hang up.

PI CAPT (On telephone): One second, sir. (Turns to Lt): What is it?

PI LT: I've found a mine field in that armored zone. It's at: —————

PI CAPT (On telephone): We have a mine field in your zone. Do you want its location? (Pause.) It's at —————. On the gun—we will call you from the IPW cage. (Hangs up.) (To Lt): Get those photos over to the interrogator at the PW cage. Maybe he can use them. Those prisoners who just came up from regiment might know the whereabouts of that antitank gun.

(On telephone gives IPW code No.): Lt Hamilton, please. (Pause.) Hello, Lieutenant. This is photo center (PC). See if you can locate an antitank gun for G-2 which is operating in the 2d Armored area. I'm sending over some aerial photos and they might help. (Pause) Right.

(End Scene III)

#### SCENE IV

(Interior of interrogation hut. Division Interrogation Officer is seated at a desk on which he has a map and some photos. A T/3 escorts a PW wearing Aggressor uniform into the room and leaves. PW salutes stiffly and the Division IO returns the salute. PW sits down, a little uneasy. IO offers PW cigarette which he readily accepts and IO lights it for him with lighter.)

IO: Have a seat. (Pause.) Cigarette?

My men told me that you are well informed and are anxious to cooperate. Is that right?

PW: Yes, sir. For me the war is over and I must make the best of a bad bargain.

IO: You're being very smart. (Pause.) I have some photographs here and I'd like you to look them over.

(IO hands photographs to PW who starts to look at them. He seems to recognize something.)

IO: That town look familiar?

PW: Yes, sir—and this woods . . .

(PW catches himself and stops what he was going to say.)

IO: What about that woods?

PW: Well, sir, I'm not sure but it looks like my battery position.

IO: Let's take a look at the map and get oriented. Now that woods you just saw would be located about here. In this area, I suppose we'd find a mine field?

PW (Startled): That's right! How did you know that?

IO (On telephone, calls G-2): Sir, Lt Hamilton, IPW. About that antitank gun in 2d Armored zone that PC called us about. Here's the location: —————

—————. (Pause.) Yes, sir—75 yards NE of —————.

(Pause.) That's all I have. By the way, the PC sure is a big help being near by. Photos are a big help in getting tactical information. I think consideration should always be given to locating PC and IPW cages close together.

(The End)



# ARCTIC FLYING

by Oliver H. Townsend\*

**With the establishment of emergency bases and long-range navigational facilities in the Far North, flights over the Arctic should become as routine as a sleeper hop from New York to Los Angeles. The author of this article discusses the problems encountered today in Arctic flying.**

**A**RCTIC FLYING? It's great, except for the fuel lines that break, the compass that spins, the rivets that pop, the tires that freeze to the runway, the oil that solidifies, the ice fog that forms, the weather that changes, plus a few other things like the cold—always the cold."

That is the typical reaction of a pilot who has been attempting to fly with standard techniques and equipment in the Far North. It is a tough job. But the fact remains that the shortest aerial route between the geographical centers of the Eurasian and North American continents passes almost directly over the North Pole. The strategic and commercial significance of this fact is inescapable. The airman has had to look to the North.

Although engineers at the Climatic Hangar of the Air Proving Ground Command at Eglin Field, Florida, can duplicate artificially the weather conditions of any part of the world, including the Arctic, "the North," as far as United States Air Force outdoor cold weather experimentation is concerned, means Alaska. As the only natural icebox under the control of this country, it serves as the testing and training locale for the development of efficient cold weather operating techniques. There are three large USAF airfields in Alaska. Ladd Field, where a special cold weather detachment of test planes is stationed, is located near Fairbanks. To the southeast and in the same vicinity is Mile Twenty Six, a former fighter strip that is being developed to handle the heaviest of our bombers. Further west, near Anchorage, is Elmendorf Field where similar developmental work is in progress. In addition to these major bases, a number of emergency fields are located in Alaska proper, and occupy strategic points along the Aleutian chain.

It takes no more than a glance to show that the Arctic is vast, empty, cold, and remote. It is a land of frequent fogs, unusual lighting effects, and weird mirages. It is

a land where a barking dog can be heard five miles away, where you can see the sun when it is still below the horizon, and where a man's gloveless hands will freeze in two minutes. It is a land where an aircraft can be buffeted by 100-miles-per-hour williwaws one minute and obscured by lazily drifting mist the next. It is also a land that can be deceptively mild and luxuriant during summer months, giving the midyear visitor an entirely erroneous impression of its climate.

The progress the Air Force is making in its battle against the northern elements can best be understood by taking an imaginary journey to a USAF air field in Alaska. Imagine yourself in the operations office on a typical winter day. You are waiting to board a bomber for a routine test flight out over the Arctic Ocean. Outside it is clear and cold. During the past few hours you have watched it snow, sleet and blow. The fog has swept in, curled, swirled and swept back out again.

**A C-54, giant Air Force transport, flies over the snow covered mountains of Alaska.**

Air Force Photo



\*Headquarters, U. S. Air Force, Washington, D. C.



The sun has shone. The thermometer now rests at minus 30° Fahrenheit.

Someone hands you your flight clothing. There is a parka, an intermediate jacket, fur-lined trousers, mukluk boots, three pairs of woolen socks and a pair of fleece-lined mittens. You ask why you do not merely use an electrically heated flying suit.

"In case of a crash landing," an aircrewman observes dryly, "there aren't many places to plug it in."

Someone else tells you not to put on your heavy clothing until you go outside. "Might perspire," they say, "and perspiration freezes out there." You are also warned against taking your mittens off for more than two minutes at a time, and especially against touching any metal while they are off. Flesh freezes to metal at Arctic temperatures.

You can see your airplane on the flight line. Its engines, wings, tail surfaces, windshields, turrets and carburetor air scoops are covered by a specially designed, waterproof material. These covers are pulled skin-tight to protect against snow, ice and frost. A layer of fabric has been placed under each tire to prevent it from freezing to the surface. To prevent frost from forming inside the cabin, the emergency escape hatch has been left open, but covered sufficiently to protect the plane's interior from blowing snow.

As you look over your airplane, you can see that Arctic operations have at least one advantage: the ground ends of the mooring ropes are merely lying on the ice. But water has been poured over them so they are frozen solidly to the surface. They are as secure as though they had been tied to permanent mooring bitts.

Since the field at which you are located is equipped with mobile heating and auxiliary power devices, the oil has not been drained from your airplane. Instead, it has been diluted with gasoline, which permits oil to retain its viscosity down to minus 60° Fahrenheit. The battery, however, has been removed and must be replaced before flight preparations are made.

About 45 minutes before take-off time the ground crew goes to work. After replacing the battery, their first job is to warm the engines and instruments with mobile gasoline-engine heaters. These are used on both jet and conventional types of aircraft. An interesting commentary on Arctic conditions is the fact that before these mobile heaters can be started, they, in turn, must be warmed by other, smaller, heaters operated by hand.

This heating process goes on for about a half-hour. Meanwhile two ground crewmen go over the whole airplane carefully to remove accumulated snow and ice. This is done with a stiff broom, and with ropes thrown over the wings and sawed back and forth. Hot air is applied to stubborn ice particles to loosen them. Hot water is not used, for it freezes and aggravates the difficulty. Chipping is not resorted to for it frequently results in damage to vital surfaces.

Ground crewmen look for ice in such unlikely places as inside the wings and fuselage, because sharp changes in temperature cause it to form there as well as on the

outside. They also apply anti-freezing oil liberally to the landing gear mechanism. Otherwise loose snow tends to blow into the wheel wells on take-off and then freeze on retraction, making it difficult or impossible to lower the landing gear.

Finally the engine covers and special heaters are removed. The propeller is rotated by hand through four or five complete revolutions, then the starter is engaged. An external power cart is used as the energy source, since the chances of starting without one are remote, and may result in serious damage to the battery.

The wing and tail covers are left on the airplane until it is taxied to take-off position. Without this precaution, frost would form before the plane had a chance to get off the ground. Even a layer of hoarfrost an eighth of an inch thick might alter flight characteristics enough to prevent take-off. Accidents have resulted when proper precautions were not taken.

During engine warm-up you put on your flight gear and go outside. The cold air hits you solidly in the face and bites into your lungs. Already your breath begins to form an ice coating around the fur fringes of your parka hood. Frost congeals in your nostrils.

As you walk toward the plane you can see fog forming around the engine exhausts. This is "ice" or "town fog." It is caused when warm, moisture-laden air from engines, buildings and people meets the cold, dry air of the Arctic. Sometimes it hangs over entire air installations like an inverted teacup, bringing operations to a standstill. On certain occasions, two or more aircraft taxiing out to a runway have been known to generate enough ice fog to prevent other take-offs. While it often blacks out horizontal and downward vertical visibility, it curiously does not seem to affect upward vertical visibility at all.

Before you approach your airplane you are warned to stay clear of the prop-wash. This icy blast can cause severe frostbite. If it hits other airplanes it can undo hours of painstaking maintenance work.

During take-off the pilot must resort to a number of special techniques designed for Arctic conditions. He uses the lift of his plane's wing as early as possible during his take-off run to reduce the weight on the landing gear and cut down the ground friction caused by snow. He will keep the plane's tail somewhat lower than for normal take-off from a hard surface. He will remain prepared to fly by his instruments at any moment during the take-off run because windshield ice or frost can form in a matter of seconds.

Carburetor ice is a potent source of trouble during take-off and immediately afterwards. The initial rush of air through the carburetor causes its temperature to go down rapidly before either the exhaust or oil heat have time to build up. Ice often forms within 30 seconds after the take-off run starts. For this reason the pilot sees that the engine is thoroughly warm, then opens it to maximum power gradually, utilizing his carburetor heater to insure fuel distribution.

Once you are in the air you can see a whole new set



of operating problems begin to take shape. These have to do with such things as instruments, icing, visibility, weather, and navigation.

Most Air Force instruments, such as automatic pilots, gyros, and electric equipment, have been winterized to operate properly at low temperatures. However, because of the many peculiar effects of frost and cold, the pilot exercises considerable judgment before accepting readings.

Icing conditions in the Far North are similar to icing conditions everywhere, although they are more prevalent, being present during all seasons of the year. They are most likely to be encountered along weather fronts, over mountains, and below temperature inversions. Temperature inversions, typical of polar regions, are caused by a relatively warm air mass riding above the sub-freezing surface atmosphere. Moisture falling from the upper warm air through the colder low altitudes cools to sleet, snow or freezing rain, and forms ice. Even though very prevalent, icing can be successfully combatted in the Arctic, as it is elsewhere, by de-icing equipment and the avoidance of ice-producing areas.

After you have been airborne a short time in the Arctic, you find that visibility is adversely affected by a number of factors. One of these is fog. Besides "town fogs," mentioned before, there are also "coastal fogs." These lie in a belt close to the shore, and are formed by the differential temperature between the sea and the land. They are particularly annoying in the Aleutians, where they are so frequent that inhabitants rarely see the sun, even in midsummer when there is almost continuous daylight.

Another type of Arctic fog, composed of extremely fine ice crystals, forms over polar ice caps. It results from the condensation of moisture during cloudless periods of low temperature, high humidity and light winds. At times it completely obscures the ground, and has been known to extend as high as a thousand feet.

Drifting snow also reduces visibility. Winds of nine to 12 miles per hour raise snow off the ground sufficiently high to obscure such surface objects as rocks and runway markers. Winds of 15 miles per hour raise snow high enough to obscure buildings. Gusts of greater velocity sometimes whirl snow to a height of three thousand feet. Under these conditions vertical visibility remains generally good, but horizontal visibility is reduced to near zero.

Even when there is no fog or drifting snow, the physical characteristics of the frigid North combine to play dangerous tricks upon the senses of the airman. The effect of polar lighting and clear, dry air on depth perception, for instance, is responsible for one of the greatest hazards of Arctic flying. Distances are difficult to estimate; objects seem closer than they really are. On newly formed snow, or on a dull day, shadows are not visible. This has an effect somewhat similar to that of glassy water and gives pilots the impression they are in a vast world of nothingness, with no depth and no third dimension. Under these conditions air crews have

thought themselves at a safe height only to find their planes ploughing into the snow.

The bending of light rays is another trick the Arctic plays on the aviator. The appearance, well up in the sky, of objects normally hidden below the horizon is a common occurrence in the Far North. To add to the general otherworldliness these objects sometimes are upside down.

As though the cold, the fog, the snow and the perception tricks are not enough, the Arctic is also able to produce a particularly hazardous type of windstorm known as the williwaw. These winds, which occur very frequently in the rugged Aleutians, are caused by air piling up on the windward side of a mountain, then boiling over onto the leeward side. The turbulence is not unlike that of a tornado rolling on its side. Gusts often exceed 100 miles per hour, and have been known to throw airplanes about so roughly that crew members have been knocked unconscious. Moored aircraft have been completely demolished; small boats have disappeared.

Fortunately, the pilot on your imaginary Arctic flight is an experienced one, and the weather conditions are generally good. This gives you a chance to examine some of the special problems of the navigator. To understand his chief worry all you have to do is look out of the window. There are very few identifiable landmarks, and those that do exist are either completely covered or hopelessly distorted by the snow blanket. What is more, most maps of areas above 60° north latitude are inaccurate as far as minor features are concerned. These factors make navigation by visual reference to the ground exceedingly difficult for even the most experienced Arctic flyers.

But these are not the only problems to confront the navigator. Added to his other difficulties is the fact that the earth's meridians converge at the North Pole, making the conventional method of maintaining true course impractical. For this reason, a specially designed polar "grid chart" has been developed. This chart is composed of artificial vertical and horizontal lines used in lieu of the latitudes and longitudes of conventional maps.

Other Arctic navigational problems arise from the fact that isogonic lines (lines of equal magnetic variation) can be plotted on a theoretical basis only, and are so closely spaced that a slight error in dead reckoning may assume very large proportions. In addition, the horizontal pull of the magnetic pole is so weak that the magnetic compass spins uselessly and the flux-gate compass may hold the same heading even when the plane is turned. On the other hand, the vertical pull of the magnetic pole is so strong that it induces magnetism in the soft iron of the airplane, further affecting the compasses.

The use of directional gyros, immune to magnetic influences, is also complicated because of the unusual amount of precession (a growing directional error) encountered in very high latitudes.



A further hindrance to navigation is the effect of polar conditions on radio and radar reception. Both auroral disturbances and solar activity, such as sun spots, interrupt signals for considerable lengths of time. Also, celestial navigation during the long periods of twilight is very difficult except on those rare occasions when the moon or other celestial objects are "shootable."

It is expected that Arctic flying in the future will become increasingly less difficult by the installation of additional emergency landing fields and long-range navigational facilities such as Loran.

On your imaginary flight, you, as a passenger, are not particularly conscious of many of the problems confronting your pilot and navigator. But there is one hazard of which you cannot help but be acutely aware. This is the problem of survival in case of forced landing. As you contemplate the vast, bleak landscape below, two facts stick firmly in your mind: without warmth, your average life expectancy on land is about 24 to 48 hours; without special protection, your average life expectancy in water is between 20 and 40 minutes.

The Air Force has taken every step possible to increase your chances of survival. Your plane carries many different kinds of emergency gear. There are life rafts, anti-exposure suits, emergency food kits, "Gibson Girl" radio transmitters, first aid equipment, goggles, special signal devices and extra cold weather clothing and sleeping bags. In addition, your crew has been thoroughly trained in survival technique, including an actual indoctrination test in an isolated area.

If anything goes wrong with your plane you will be told not to bail out except as a last resort. Your chief hope for survival is in making yourself easy to find. For this reason the pilot would skid the plane in, tie it down

**An L-5 at Fort Richardson, Alaska, lands and picks up an accident victim. The victim has been given first aid before being put aboard the plane.**

Air Force Photo



and keep it free from camouflaging snow. As soon as possible the crew would start a fire, using gasoline, oil, tires and everything else that could be scavenged from the plane. This would serve the dual purpose of keeping the crew warm and attracting the rescuers' attention. If the pilot were on course at the time of the crash, and had a chance to get out a radio flash, the chances of rescue would be excellent.

Everything goes well, however, and upon returning from your imaginary Arctic flight your pilot is careful to keep the engines warm while letting down. He descends with considerable power, for otherwise the throttle, carburetor, and cylinder head temperatures would fall rapidly. He pumps the brake pedal several times while lowering the landing gear to insure circulation of sluggish oil. If the airplane's wing is iced-up he will bring the ship in fast and level, stalling it a few feet off the ground. Once down, he uses the brakes sparingly to prevent wheel locking on the icy runway.

Immediately after landing the ground crew takes over the airplane and continues the battle against the cold by diluting the engine oil, cleaning the shock struts, removing the battery and draining the oil tank pumps before the accumulated moisture can freeze.

As a result of your imaginary flight, you might form the impression that you have learned all there is to know about Arctic flying. You haven't. Your trip was made under ideal polar conditions. When it gets really cold even winterized equipment and hardy, experienced personnel must give up the fight. Typical of the unique type of problem encountered at lowest temperatures is that presented by the varying coefficients of expansion of different metals. According to one popular story circulated among Arctic flyers, a C-54 transport laid over in a minus 65° F temperature shrunk fourteen inches in length, leaving control cables so slack they could not be manipulated.

In summary, it might be said that air operations with conventional modified equipment can be carried on from Arctic bases at temperatures down to 35° below zero. Beyond that, additional winterization of aircraft and equipment is required.

In evaluating the progress made in Arctic air operations it should be remembered that the problems encountered in flying *from* the Arctic regions are vastly more complicated than those encountered in flying *over* the Arctic regions from temperate zone bases. Once an airplane is airborne, cold becomes much less of an obstacle than it is on the ground. Through Air Force training programs, better weather forecasting facilities and improved navigational procedures, the problems of flying *over* the Arctic have been virtually solved. Illustrative of this is the 10,000-mile flight of the Pacusan Dreamboat from Hawaii over the Arctic regions to Cairo in October, 1946.

With the establishment of emergency bases and long-range navigational facilities in the Far North, flights over the Arctic should become as routine as a sleeper hop from New York to Los Angeles.



# 2d Armored Division Combat Loading Normandy

## CONCLUSION

*by Lieutenant Colonel F. M. Muller*

IN the invasion of France through Normandy, known then as Operation Neptune, the role of the 2d Armored Division was the exploitation of the established beachhead; the Division was a part of the "follow-up" units of this gigantic undertaking.

This treatise will cover that phase of the operation that pertained to the combat loading and unloading of the 2d Armored Division.

### PREPARATION

In late November 1943 the 2d Armored Division departed from Palermo, Sicily and moved to the United Kingdom disembarking at the ports of Liverpool, England and Glasgow, Scotland, then moving to an assembly area at Tidworth, England. This water movement was merely an administrative move; all vehicles remained in Sicily; new vehicles awaited the Division at Tidworth, England.

During the period December 1943 to May 1944 the Division engaged in vigorous training of all types in preparation for the coming invasion. In May 1944 elements of the Division participated in operation Fabius, a landing exercise conducted by First U. S. Army off the southern English coast. This exercise had considerable training value, however the majority of the personnel involved did not actually participate in the landing maneuvers.

### LOADING

On June 6-7, 1944 the Division (less the rear echelon) moved to the marshalling areas in the vicinity of Southampton-Portsmouth, and Weymouth, England. The Division, minus Combat Command A assembled in the Southampton area while Combat Command A assembled in the Weymouth area. Composition of these elements was as follows:

#### *2d Armored Division:*

##### *Combat Command "A"*

Hdqs CC "A"  
66 AR  
14 AFA Bn.  
41 A1B (-)  
Co. "A," 17th Armored Engineer Bn.  
Co. "A," 48th Armored Medical Bn.  
Co. "A" Maintenance Bn.

Det. Co. "B" Supply Bn.

##### *Combat Command "B"*

Hdqs CC "B"  
67th AR  
78th AFA Bn.  
1st Bn. 41st A1B  
Co. "B," 17th Armored Engineer Bn.  
Co. "B," 48th Armored Medical Bn.  
Co. "B," Maintenance Bn.  
Det. Co. "A" Supply Bn.

##### *Division Control*

Headquarters Co., 2d Armored Division  
Headquarters Division Artillery  
142d Armored Signal Co.  
MP Platoon, Service Co.  
195 AAA (AW) Bn. (SP)  
702 TD Bn. (SP)  
Det. D-9 Co. "B," 6901 ECAD  
Det. F-165 Sig. Photo Co.  
1 Plat. 608th QM Co.  
Maint, Medical, Engineer and Supply Bn's (-)  
92 AFA Bn. (-)  
82 Recon. Bn.

Two Division TQM's were appointed and reported to their respective loading areas about one month in advance of the Division. There these TQM's worked directly with Sector to insure correct planning of stowage in accordance with the Division's plan.

The over-all functioning of the Marshalling Area Headquarters, Sector Headquarters, and Movco and Buco is rather complex; it is not the purpose herein to describe this system, however, see Annex No. 6 for a cursory explanation of the command and movement channels.

The Transportation Section of Sector actually was responsible for the pre-stowage plans of all units embarking at that port. The Division TQM actually templet loaded his own ships and craft at Southampton in conjunction with the requirements of Sector. This proved highly advantageous in regard to the allocation of units to ships and craft, especially from a tactical aspect. Although Sector was furnished with complete loading plans from Buco, which in turn received the plans from the combat units, frequent changes in regard to the type and number of vehicles, proved that a



TQM permanently functioning at Sector was quite beneficial, especially when considering the channels involved to make changes.

One major principle involved in this operation was that for the first time the Division did not have to completely embark themselves; here Transportation Corps and allied Services of Supply took over this function. This was somewhat new to the 2d Armored Division which was quite accustomed to doing it themselves.

Templet stowage plans were completed about June 1, 1944 and on June 6-7, 1944 the Division moved to its respective marshalling areas. The Marshalling Area Headquarters and Sector then took over the reins of loading and moved units of the Division to the "hards" (docks) and proceeded to load the Division in accordance with the templet plans.

No major difficulty was encountered in loading the LST's and LCT's of the Division. Minor difficulties such as racks on vehicles, unknown obstructions, necessitated minor revisions in the over-all plan. A clean-up pool was established for any vehicles which could not be loaded on their designated ship or craft due to unforeseen eventualities; these vehicles were shipped across very soon after the Division sailed.

Even though the Division was part of the "follow-up" phase of this operation, all vehicles were still waterproofed and were combat loaded. This of course was done to insure the landing in any circumstance.

The forward elements of the Division sailed on D+3 or June 9, 1944; the bulk of the Division departed from the loading areas on D+4 or June 10, 1944.

#### UNLOADING

The Division landed on Omaha Beach east of Carentan, France. By the time the Division landed (D+4, D+5, D+6) this beachhead was a well-established and organized locality. Landing was relatively easy: the LST's and LCT's beached themselves at high tide, waiting until low tide then unloaded their contents. In most cases vehicles drove onto dry sand, in others, it was necessary to go through a small amount of water. No difficulty of any magnitude was experienced.

Vehicles quickly were routed to dewaterproofing areas where all vehicles were made ready for combat, then they moved to an assembly area in the vicinity of the Cerisy Forest. The whole Division was closed in this area by June 16, 1944.

#### RECOMMENDATIONS AND CONCLUSIONS

##### a. General

The vastness of this operation and the fact that the combat loading and unloading involved the over-all operation prohibits the author from making any recommendations of vital content. In brief, the Division's role was a small one in a large undertaking, consequently, the recommendations and conclusions will be similarly limited.

##### b. Recommendations:

- (1) That a Division TQM be present with Sector

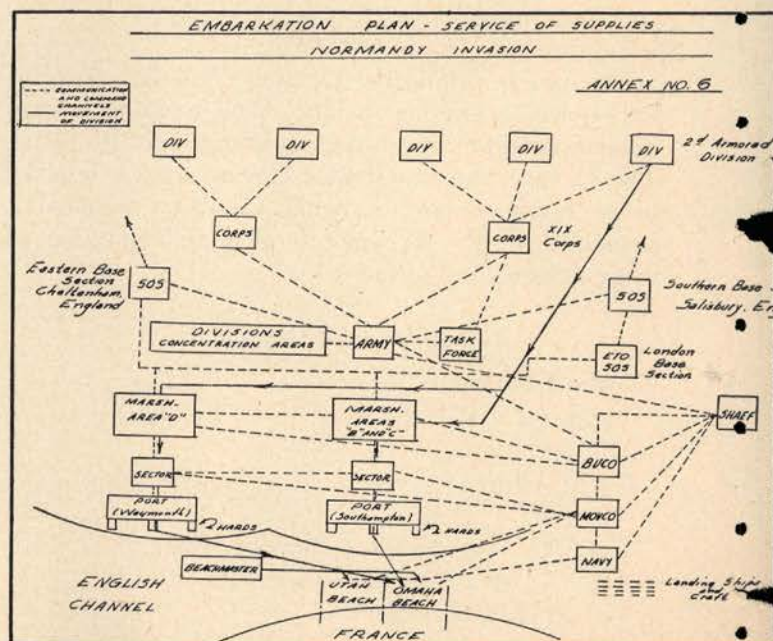
Headquarters during the templet loading.

- (2) That a more centralized control of units in the Marshalling Areas be given the Division Commander.
- (3) The units be thoroughly trained in the loading and unloading of LST's prior to any operation.
- (4) That some system of control be furnished the Division Commander while at sea in order to insure his complete knowledge of the whereabouts of any of the ships or craft transporting his units.
- (5) That a more adequate system of guides be established to insure rapid assembly of units in the dewaterproofing assembly areas.
- (6) That all personnel charged with the templet loading of units be extremely well trained personnel.

##### c. Conclusions

The summation of this operation can be stated as quite successful, especially when considering the Sicilian and Moroccan campaigns, yet the operations are quite different, especially in scope.

Here as in the former amphibious operations control is the criterion—this is mandatory. All personnel must be thoroughly trained in the loading and unloading of ships and craft, especially drivers. Constant liaison must be maintained with the Service Troops charged with the loading, preferably by an officer of the Division Staff (A.C. of G-4 Section) who is thoroughly familiar with amphibious operations and the tactical plan of the Division Commander. In brief, the success of such an endeavor can be assured before the ships and craft leave their ports of embarkation—this assurance is accomplished by meticulous planning and thorough training to develop teamwork.





# ARMORED DIVISION MILITARY POLICE

*by Major Joseph W. Jagl*

THE Army recently announced a change in the Tables of Organization for the armored division military police unit, increasing its size from a platoon of three officers and 84 men to a company of seven officers and 167 men. In so doing, the Army has recognized the almost unanimous request from the various division provost marshals for a unit of company strength and organization. Most divisions found it necessary to reinforce their platoons to at least this strength. The question might be brought up as to the necessity for that many MPs.

The division military police has one major mission: to serve the command. This is accomplished by providing traffic control on marches, establishing and supervising the traffic circulation net in the division zone, operating prisoner of war collection points, controlling the circulation of civilians behind the lines, apprehending and detaining violators of army regulations and rules of conduct, protecting the soldiers in the rest areas from trouble emanating from various sources, as well as a number of odd duties pertaining to police and security.

The type of person required to actually perform these duties has obsoleted the practice of bestowing a man with an armband and expecting him to carry out the duties of an MP as impractical. The modern military policeman is a specialist as highly trained as a radio operator, gunner or mechanic. His place on the division team is as important as that of the tanker or the infantryman, and after he has mastered his individual specialist training, every effort must be made to train him as part of the entire team. He must have intimate knowledge of the division organization, its style of marching, its commanders and individuals, and the manner in which it can be employed so that in the event that he is lacking full and complete orders, he can evaluate the situation from the information he has, to take appropriate action without depending on receipt of orders through channels. This requires a man of better than average intelligence, besides one physically capable of working long hours under any kind of strain or circumstance. Obviously, such selection and training take time, but the mastery of this knowledge can result in great value to the division when he is used in that capacity for which he was trained.

One daily service the military police perform for an armored division is the control of its traffic. With attachments and overstrength, a division has nearly 3,000 vehicles. Broken down roughly, there are about 1,000 combat vehicles, 1,000 two-and-one-half-ton trucks with trailers, with the balance including all types from a quarter-ton truck to a 40-ton tank recovery tractor semi-trailer. It requires from 150 to 240 miles of road space to move the division; moving at the rate of 15 miles per hour, the length of time past any given point extends from 10 to 16 hours. The size and weight of the vehicles make every narrow spot in the route, every weak bridge, every poorly surfaced road an obstacle that must be considered in the traffic control plan. When the division is not on the road, but in a bivouac or assembly area, the constant flow of administrative and supply traffic requires close and constant supervision of the traffic net. Besides the stationary traffic posts and march column control, it is necessary to take steps to control reckless driving that will endanger other traffic, to restrict the movement of sightseers and others needlessly consuming gasoline on non-essential trips. Control of civilian traffic in the combat zone also comes under the traffic section.

Keeping in mind this background of the size and special characteristics of the armored division, let us consider how the traffic control plan for a road march is formulated with the provost marshal's employment of his military police in its execution. Normally, any movement of the division, other than a tactical one in its own zone, is ordered by a higher command. The G-3 and G-4 work together, and with technical advice from the engineer and provost marshal concerning roads, bridges and traffic conditions, issue the division march order. According to the field manuals, the engineers and the MPs should make a personal reconnaissance of the route before the order is issued. Actually, there are very few moves made where there is an opportunity for them to physically check more than the first few hours' march. They have to depend upon their knowledge of the route and a map study to formulate the plan for traffic control; then leaving enough in advance of the column to make a detailed survey of the route, they can revise the original control plan as they go.



An example based on an actual situation will demonstrate some of the problems with which an armored division provost marshal is faced.

In the fall and winter of 1944 the armored divisions arriving in France were moved from the beach to the front by road over a distance of about 500 miles. The route one of these divisions used started on the Normandy peninsula, crossed through the Falaise gap area, ran through Paris, Chalons and Verdun and into position in corps reserve north of Luxembourg City. It passed from the jurisdictional area of the Normandy Base Section into the British zone, through several base sections, ADSEC, two Army areas, a corps zone, ending in two divisional areas. The movement was coordinated through theater headquarters who informed all of these organizations. However, contact with the Normandy Base Section traffic control unit indicated their information in regard to the size and movement of the division was not complete; the provost marshal was instructed to contact all traffic control agencies along the route of march to give them information concerning column arrival and clearance times in their areas as well as the column make-up. The Provost Marshal also used the opportunity of this contact to obtain road information and to determine what control would be furnished by the local detachments. By this means arrangements were made in Paris with that base section unit to provide a motorcycle escort for each company through the city; the success of this led to similar procedures through other large towns.

The march was made over one route with the division divided into two columns, each taking six days to complete it with the second column starting one day after the first. The daily march averaged about 75 miles, each column occupying about 110 miles of road space; which meant that the head of the column had finished its day's march before the tail of the column had left bivouac, while the head of the second day's column was arriving in the bivouac before the first day's had cleared the area. Time prevented a full route reconnaissance, so traffic control plans had to be made from a map study which showed such a variation in the number of contemplated traffic control posts for each day's march that it was decided to use the platoon, less 12 men detailed to headquarters, as a unit. The platoon was to precede the first day's column by one hour to post the road. Each crew was to remain at its post until the platoon maintenance and supply section, which were the last vehicles in the second day's column, released it after refueling its vehicles and performing required maintenance. The released crews then proceeded to the head of the first column to be available for the next day's march. With the platoon employed in this manner, the Provost Marshal had available the maximum number of men at the head of the column for use in emergencies, and still was able to insure uniform control over the road for both columns. A road reconnaissance covering at least the first three hours'

march for the following day was accomplished the day before. The daily I.P. times were before daybreak so this was essential for an intelligent posting of the first few posts each morning, as well as to gain time and get ahead of the column to properly survey the remainder of the day's march.

The accuracy of the Michelin road map was such that the actual execution of the plan worked almost as laid out in the original study. There were several places in the Bocage country where battle damage to towns and roads required adjustments in the plan. Near Paris the civilian traffic required more control than originally planned; this was particularly true on hills where it was necessary to prevent head-on collisions when division vehicles were passing the civilian charcoal-burning trucks. A small reserve was maintained to meet these unexpected obstacles. It was impossible to post every crossroad, or road fork, so if a unit commander desired, he could use his own personnel to supplement the road control placed by the MPs.

To aid the movement into bivouac areas, a release point was designated where the MP column control ended and the billeting officers were assigned to meet their units to guide them into their bivouacs. The MP operating the point obtained detailed information concerning the location of the units, in order to be able to direct stragglers to their units; this post remained in operation 24 hours a day. The MP road patrol reported the location of all disabled vehicles and stragglers along the route of march. In this manner the battalion commander could determine the status of his stragglers and they in turn could receive directions to their bivouacs.

To undertake the task of controlling a movement of this magnitude was a challenge to the small platoon. Fortunately, the liaison established with the various traffic control agencies along the route of march assured the provost marshal enough aid to cover the route with only one exception—the city of Paris. The roads into Paris were so congested with civilian traffic that the platoon reserve was exhausted before the route through the city could be posted. The motorcycle escort provided by the city MP detachment did an excellent job, but the thrill of going through Paris and the opportunity to sightsee led a few vehicle drivers astray so additional guide posts were necessary. The men from the division who were detailed to help in this case actually were more of a hindrance than assistance. Unaccustomed to working alone, they found their lack of training for the job resulted in little confidence in themselves and the ability to do what they were asked, so all it meant to them was a chance to spend a few days in Paris. It is literally impossible to detail men to do traffic control duty on the spur of the moment and to expect satisfactory results. That is one of the reasons for trained MPs.

From Paris to Luxembourg the road was straight and well travelled; all the large towns were staffed with MP detachments with whose help the division MPs



were able to give adequate coverage to the column. In Luxembourg proper, the infantry division MPs responsible for the city at the time had already efficiently signed the route and provided escorts for the column through the town.

This being the division's first march, the experience gained on it formed the basis for the procedure followed during the balance of its stay in the theater. On each march the provost marshal contacted all traffic control units along the route to fully inform them of the details of the division march order up to the release point which was therein designated. Until a means to reinforce the MP platoon with permanent personnel was found, the platoon was given additional men mounted in quarter-ton trucks to help control the column; also, individual unit commanders were informed of certain "rules of the thumb" regarding location of MPs: namely, if there was no MP at the intersection, the route lay straight ahead.

To illustrate the impracticability of using untrained personnel for traffic control duty to supplement the platoon-sized unit let us consider what happened when one division was being employed in making a penetration. As it gained momentum the number of prisoners captured each day grew, the supply lines lengthened and the platoon, operating with only 38 of its 84 men due to attachments to combat commands and division headquarters, could manage its simple traffic and prisoner collections and evacuations only by doubling up on duties. When calls came from G-2 and G-5 for security missions or special tactical movements, there were no men available; to provide for these, the division band was attached to the military police platoon.

But on the same day that this attachment became effective, the division accomplished a break-through, capturing a vital objective so important that four infantry divisions were passed through the division zone in the following five days. Units moved into the area from all directions with no regard to march unity; the road net was limited; destruction in the towns and to the roads restricted the movement of the traffic and made almost all roads open to one-way traffic only. This situation required well-trained clearheaded MPs. Working the entire day with no relief, there were still not enough men to fully handle the road net. The bandmen were placed at the secondary posts and for a while they were able to hold their own; but as soon as the officer or noncom would move down the road, the lack of confidence in themselves and their judgment began to show and the traffic at their posts became tangled. Even though their willingness was unequalled, the fact that they were not trained for the job prevented them from giving adequate assistance. They were finally used in this operation to handle prisoners where supervision by seasoned MPs could be held to a minimum so that the balance of the police section might be available for traffic duty. Traffic was moved with but few minor disruptions in this operation only because the

officers and the handful of men left for the operation of the platoon worked unrelieved and untiringly for the entire period.

Following this operation the division received a rest of almost two weeks during which time 12 of the best prospects from the band were given intensive training in traffic control; by the end of the war, two months later, these men were performing traffic duties in a highly satisfactory manner. The remainder of the band was trained to process prisoners of war, thus relieving the trained MPs for traffic control work.

So far, the traffic control considered has been typically administrative and confined to the division area behind the combat command. Control of tactical movements within the combat command zone was quite another problem. The infantry divisions were able to organize small detachments of men whom they trained for use as Regimental Combat Team military police platoons. These were a part of regimental headquarters and provided both traffic control and prisoner of war processing personnel at that level. The armored combat command was not as well supplied with infantry personnel as the regular foot infantry and due to the flexibility of the combat command organization, it was not practical to organize these detachments. This resulted in the division MP platoon being called upon to send their men to the combat commands for these duties. There were not enough available to make this more than a token force, so other than minor traffic control around the combat command CP and in the near-by areas, they were of little help except at the supply point or in facilitating the trains in and out of bivouac. The provost marshal could do little to aid the combat commander beyond sending this detail.

In a wide open exploitation, the problem of traffic control was greatly simplified. Because the rate of movement was fast and the infantry had been left behind, there was no conflicting traffic on the road. Only critical turns and the narrow town streets needed supervision. The biggest obstacle was the congestion formed by the civilians and displaced persons who had to be kept off the road. The axis of supply was marked with a distinctive sign so that liaison officers and supply vehicles could readily and easily follow the division.

A withdrawal presented still another problem. Constant road reconnaissance to the rear was necessary so that the traffic officer would be fully familiar with the road net. Tight control of all traffic up to the battalion areas had to be maintained to insure rapid movement of maneuvering forces and unimpeded advance of reinforcements. The MPs remained at their post until the last units of the covering force appeared.

The collection and evacuation of prisoners of war comprise one of the problems of the armored division which remained unsolved. The very nature of an armored team is such that each man is a cog in the machine; his absence reduces the efficiency of that team to the extent that the armored commander is reluctant



to take prisoners. Yet the employment of armor results in the opportunity to capture far more prisoners in a shorter length of time than any other type of unit.

In a stable situation, it is possible to utilize the supply trains from the combat command area to the division and from the division to army to evacuate the prisoners. This system was used to good advantage in the ETO.

The evacuation from the division back to army was primarily the concern of the division military police platoon, the procedure for which followed a set pattern. Both the army and division collecting points were adjacent to or near the respective Class I dumps, making it possible to utilize the daily ration train to evacuate the prisoners without loss of time or needless travel. The normal number of trucks available was 12, with a capacity of about 900 men if well packed! This was sufficient to take care of normal operations. But once the armor had forced a penetration and begun to move and expand the break-through, the system began to break down, as there were increased numbers of prisoners and the Army Class I supply points did not keep up with the rapidly moving columns. Emergency rations were used so the normal ration supply vehicles were loaded with gasoline and ammunition, the only items on which there was a resupply. The dumps for these were established well ahead of the Army prisoner of war cages and too much time would have been lost had these convoys been used to evacuate prisoners.

The trail of an armored division could be traced by its prisoner of war collecting points until the momentum of the drive was halted. Then, with close cooperation from the G-4 and the quartermaster who provided transportation, these cages were closed out. The MP platoon in one division had five two-and-one-half-ton trucks in excess of the normal number of authorized vehicles to carry the additional bandsmen who had been assigned to them; using this pool of trucks, they managed to evacuate a large portion of their prisoners. Whenever army established a new collecting point within a day's march of a division cage, the prisoners were marched in.

The movement from the combat command to the division collecting points was far more difficult. The MP detachments working with the combat commands ran the collecting points there evacuating those prisoners. Frequently, in rapid movements, they needed help. The S-4 had to give full cooperation in furnishing transportation to the detachment as they had no vehicles suitable for moving large numbers of men. When the division column followed one of the combat commands, the latter's problem was negligible; there was plenty of supply traffic on the road and little trouble was encountered in closing out its cages. As long as the other combat commands were operating in contact with the one the division was following, the prisoners did not present too much difficulty. It was on the exploitations and independent actions that the situa-

tion became acute; the most practical solution was to make arrangements with the infantry division in the rear to take over their prisoners.

Any plan for handling prisoners must include rapid collection from combat troops and expeditious evacuation from the division collecting point. If the time that is lost by battalion or combat command staffs begging for help is used to determine a means of evacuation instead, many of these problems will never arise. To set up a basic plan until the load becomes too heavy for it, when it will become necessary to employ a little ingenuity to keep the situation under control, is the only system at the present time that has been devised.

Civilian circulation is one other problem which requires special handling by the MPs. Those of us who were in Europe can remember the constant shifting of the peoples. As the Allied Armies rolled across France and gave every indication of going on into Germany, the French population started a movement to return home. Every road was crowded with every type of transportation imaginable; this constituted a serious threat to army movement; it was countered in the rear areas by designating certain roads for military use only.

The MPs duty was to keep military thoroughfares free from civilian traffic. In the divisional area there were more troops so it was possible to better control this civilian movement when the situation was normal.

Towns along the front were evacuated by cooperation with the division G-5. Civilians had to be controlled; and if it became apparent that there was to be a mass civilian exodus or influx or if the military situation required a mass evacuation, a definite plan had to be formulated to handle this, a collection or assembly point set up and an orderly evacuation accomplished, using secondary routes or empty transportation returning to rear areas.

During the Bulge the problem of refugees was extremely serious; they came from the Bulge area on every road pushing carts, baby carriages, in wagons drawn by oxen and in motor vehicles. Every one had two things in common: first, each was overlaid with his dearest possession; and second, each was utterly terror-stricken and anxious to hasten as far away from the Germans as possible. It required cool, calm and firm action by the MPs to channel these people into the evacuation routes designated for their movement. The success of the reinforcement of the battle lines to counter the German threat depended upon open roads as that was the means by which the reinforcements arrived. The plan for handling the refugees worked nicely and the unfortunate circumstances of May and June of 1940 was not repeated.

The function of the armored division military police mentioned herein are those which are most affected by the characteristics of that type of division; in addition, they must operate town patrols, perform other normal police duties and activities. There are no special aspects to these that are not common to all military police units;



these are well covered in the manuals.

There was one serious oversight in the equipment allotted to the military police platoon in the ETO. There was no radio or wire communication authorized. An outstanding example of the necessity to provide the MPs with a means of communication other than messengers is pointed up by an incident which occurred immediately following the capture of the Remagen Bridge.

Traffic control headquarters, located at Stadt Meckenheim, was to allot all road priorities. Troops of all types were moved in as fast as the roads could take them. Bombing had made the route through Rheinbach and Stadt Meckenheim open to one-way traffic only, while the rubble and bomb holes made the road extremely rough, necessitating traffic to move slowly; coupled with air attacks, there were periods when the bridge had to be closed for traffic.

A regulating post was established, and a man with a pair of field glasses could observe the bridge and determine whether it was opened to traffic. If it was closed, he could hold the column under cover of the heavy woods until he saw traffic moving over the bridge again. This was done to prevent a concentration of men and vehicles in the town.

The only drawback was that the rest of the posts in the chain could not be notified to hold up their traffic accordingly. This resulted in considerable confusion: double banking and long queues of vehicles lined up bumper to bumper.

On the second day, a 399 Radio was sent into Re-

magen to work with a similar set in Stadt Meckenheim; enough vehicles were detailed from the reconnaissance squadron to place one at Arzdorf, Berkum, Birresdorf, the near side of the Remagen Bridge and at the two 399s. With this communication net, traffic on the north road was effectively controlled.

The difference between traffic flow with radio control and without it was such that it enabled the platoon to procure 510 radios as soon as it was relieved from its traffic duties at Remagen.

Despite the handicaps of too few men handling too many duties, the lack of communication and other deficiencies in equipment and organization, the armored division MP platoon as constituted in the ETO rendered excellent service. It was guided by the principles outlined in this article and the examples cited really did work. There is no doubt that better solutions to the problems encountered can be found, especially with the newly authorized strength of organization, and in many future conflict, we should find the division military police unit ready and able to give its parent organization all the service it might require. Every member of the unit should be well acquainted with the goal of the military policeman and the manner in which he can be of service to his division; also every commander and staff officer in the division should recognize the limitations of the MP unit so that it can be used to the best advantage for the division as a whole. With this unity of spirit and purpose the value of the military police unit can be unsurpassed.

## JUST PUBLISHED

# RIDING AND SCHOOLING HORSES

*By the late*

*Brigadier General Harry D. Chamberlin*

Written primarily for the novice, *Riding and Schooling Horses* can be read and studied advantageously by the most experienced horseman. The ARMORED CAVALRY JOURNAL has just published a limited edition of this famous horse book. The supply isn't expected to last too long. To make certain that you get your copy it is suggested that you place your order immediately. ORDER TODAY.

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# Editorial Comment

## Christmas Greetings from General Devers

*To All Members of the  
Army Ground Forces:*

*Once again it is my happy privilege to extend to you every good wish for joy and prosperity during the holiday season and throughout the year to come. On this, the third Christmas since the cessation of hostilities of World War II, it is my fervent prayer that the peace which we are striving to maintain be a just and lasting one. I ask of you men in the Armed Forces, particularly the Ground Soldiers, scattered as you are throughout the world, that you do your utmost to perform your duties in a manner that will reflect only credit upon yourselves and the nation you represent. Let our hope be that our country will remain as strong as it is just, and that through its desire for justice for all mankind it will contribute to an everlasting peace throughout the world. During this Christmastide, and during all those to come, free men must have the right to exclaim, "Merry Christmas and a Happy New Year."*

**JACOB L. DEVERS**  
General, USA

## 1948 Olympic Equestrian Trials

The 1948 Olympic Equestrian Trials which were held the first week in October at The Ground General School Center, Fort Riley, Kansas, came to a lusty end when wind and rain combined to wash out the jumping events and dressage Exhibition. These trials were held to assist the United States Olympic Equestrian Committee in their selection of the horses and riders to compose the equestrian training squad for the Olympiad scheduled to be held at London, England, in August, 1948.

The equestrian events for the Olympic games consist of three separate competitions, The Three Day Event, the Individual Dressage Test, and the Prix des Nations jumping competition. The Three Day Event comprises three separate tests that were to be held on successive days. The same horse and rider had to successfully complete each test in order to qualify for a

place in this event. The first day was a schooling test designed to prove the lightness and suppleness of the horse. The second day was an endurance, speed and cross-country test aimed to show the endurance of a good hunter when well trained and brought to its best condition. The test covered about 21 miles that had to be completed without pause. The third day, which was cancelled due to weather, was a jumping test designed to demonstrate that on a day after a great effort the horse retains that energy required for a hunter to continue in service. A scoring system of credits and penalties for each test was used to determine the final order of the contestants.

The winners of the schooling test of this event were: In first place, Swing Low, age 14, with Lieutenant Colonel Charles Anderson up; second place, Reno Palisade, age 7, Colonel Earl F. Thomson, Captain of the Army Equestrian Team; third, Major Vix, age 6, Captain J. Burton; and fourth Reno Rythm, age 6, Lieutenant Colonel Frank Henry.

The endurance phase of the three-day event was won by Swing Low, Lieutenant Colonel Charles Anderson up; second place to Reno Rythm, Lieutenant Colonel Frank Henry up; third, Reno Rocket, age 6, First Lieutenant Henry Burnett up; fourth, Sightseer, age 14, Lieutenant Colonel Charles Symroski up.

All riders were able to complete this test without the imposition of any time penalties. Since this was the objective of each contestant, no one necessarily attempted to obtain a maximum bonus for undertime as all were interested in conserving their mounts as much as possible for future competitions.

Although the jumping test was cancelled because of rain after three horses had completed the course, there was every reason to believe that all horses would have successfully completed the third and final phase. The cumulative standing at the end of the second day of competition was as follows: First, Swing Low, ridden by Lieutenant Colonel Charles H. Anderson, plus 7 points; second, Reno Rythm, ridden by Lieutenant Colonel Frank S. Henry, minus 10 points; Third, Major Vix, ridden by Captain Jonathan R. Burton, minus 52 points; Fourth, Reno Palisade, ridden by Colonel Earl F. Thomson, minus 58 points.

The individual Dressage test was one which required the ultimate in lightness, suppleness and complete absence of resistance in the horse. Because of the extreme difficulty of the test, very few horses and riders can compete successfully in this event. The winner of this event was Reno Overdo, ridden by First Lieutenant Robert Borg; second place was taken by Olympic, ridden by Colonel Hiram Tuttle, retired; third by Peter Brown, ridden by Colonel Tuttle; and fourth, Goranda, ridden by Lieutenant Alfred R. Kitts.



The Prize of Nations jumping Competition was held over a course of jumps varying from approximately 4 feet 3 inches to 5 feet 3 inches in height and with a water jump of 13 feet in width. All jumping was governed by the rules of the International Equestrian Federation.

The competition was originally scheduled to be held on two separate days, but rain forced the cancellation of the second day's jumping. Results of the first day ended in a four-way tie for first place between Roll On, ridden by Lieutenant Henry Burnett; Nipper, ridden by Lieutenant Colonel Charles Symroski; Brown Bubbles, ridden by Captain John Russell; and Air Mail, ridden by Captain Jonathan Burton. All of these horses had clean performances over the sixteen-obstacle course.

Judges for the trials were Major General Guy V. Henry, U. S. Representative of Olympic Equestrian Events and former Commandant of The Cavalry School; Colonel John T. Cole, former captain of the Army Equestrian Team; Colonel J. W. Wofford, retired, and Colonel Franklin F. Wing, member of the Army Equestrian Team who was unable to participate because of a broken collarbone.

### Equestrian Team to Europe

In preparation for the equestrian events of the 1948 Olympic Games at Aldershot, England, next August 9-14, the United States Army Equestrian Team of nine officer-riders, all of Fort Riley, Kansas, and 28 horses were shipped to the Army Remount Depot at Bergstetten, Bavaria, this month, for winter training there and at the Munich-Reims Race Track, the Chief of Special Services, Department of the Army, has announced.

Twenty horses, accompanied by Lieutenant Colonel Harvie S. Ellis, Army Veterinarian, and First Lieutenant Robert J. Borg, one of the riders, were shipped from New York, Friday, October 17. Two other riders, Lieutenant Colonel Charles H. Anderson and Captain John W. Russell, departed soon thereafter. Eight horses and four riders were to depart by boat after November 28. The latter group remained to participate in the National Horse Show at Madison Square Gardens, New York, November 4-13, and in the Royal Winter Fair at Toronto, Canada, November 18-26.

The four riders who remained until after the National and Toronto horse shows in which they will participate included Lieutenant Colonel Franklin F. Wing, Jr., Lieutenant Colonel Frank S. Henry, Lieutenant Colonel Charles A. Symroski, and Captain Jonathan R. Burton. Colonel Earl F. Thomson, Captain of the Army Equestrian Team, departed for Europe Monday, October 20.

### 26th Cavalry (PS) Monument

A monument to the heroic members of the now-famous 26th Cavalry, Philippine Scouts, was dedicated

at Fort Stotsenberg on September 7, 1947, on the very spot where the regiment was activated. Many of the former officers and men of the regiment were on hand to witness the dedication.

Colonel Marcus Jones, formerly the Adjutant of the 26th Cavalry Regiment, and now with Hqs. U. S. Military Advisory Group, was the principal speaker for the ceremony. He was introduced, fittingly, by Captain Masclat, who had been the Sergeant Major of the Regiment.

In his speech, Colonel Jones gave a brief history of the organization, listed its former commanding officers, and told of the fine record the organization had made in its gallant defense of the Philippines at the time of the Japanese invasion in 1942. Colonel Jones stated that the regimental motto was "Our strength is in Loyalty" and stated that "I am proud to say that every man practiced and lined up to its fullest meaning." He further stated that "Its exploits in Bataan will go down in history and be likened to those of the famous U. S. 7th Cavalry 'Custer's Last Stand.'"

The monument, cut from marble in the state of Georgia, is a replica of the one erected at Fort Riley, Kansas, with money provided by the 26th Cavalry Memorial Fund. The Fort Riley memorial was dedicated in 1942 after funds had been raised for the monument among officers of the 26th Cavalry, many of whom had been on tours of duty at that post, then the main U. S. Army Cavalry post.

Not to be outdone by the members of the famous Cavalry Regiment, military personnel at Fort Riley also contributed to the extent that in the final accounting of funds it was found that much more had been contributed than was needed for the Fort Riley monument. It was then that the authorities in charge of the fund de-

26th Cavalry (PS) Monument.





cided that a replica of the Fort Riley monument should be erected at Fort Stotsenberg, the home of the Regiment, following the close of the war. It was this monument, the second to be erected in honor of the famous Philippine Scout organization, that was dedicated Sunday at Fort Stotsenberg.

The 26th Cavalry Regiment (PS) was activated October 1st, 1922 at Fort Stotsenberg, with officers from the 9th U. S. Cavalry and the 25th Field Artillery (PS). The enlisted personnel were transferred to the Cavalry regiment from the 25th Field Artillery Regiment (PS), which had been inactivated the day previous. Colonel Edward Anderson was the first Commanding Officer of the Regiment.

### Annual Meeting

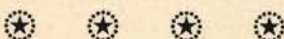
The annual meeting of the United States Armored Cavalry Association will be held at the Army and Navy Club, Washington, D. C., at 8 P.M., Monday, January 26, 1948.

This meeting is held for the purpose of electing officers and transacting of such other business as may properly come before the meeting.

There are a number of very important matters to be taken up at this meeting. It is desired that all members of the Association be present.

## 1st Cavalry Division History

All former members of the 1st Cavalry Division are requested by Major General William C. Chase, Commanding General of the Division, to send their present addresses to the: Historian, 1st Cavalry Division, APO 201, c/o Postmaster, San Francisco, California, so that they can be placed on the list of those to receive a free copy of the 1st Cavalry Division History when it is ready for distribution. Extra copies and copies to persons other than ex-members of the Division will be sold through the Book Department of the Armored Cavalry Journal. The History, which contains hundreds of excellent photographs, is scheduled to be distributed in the near future. It is being published in Japan.



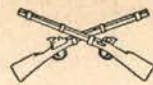
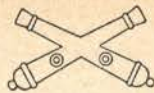
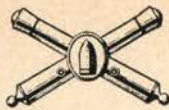
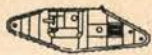
## BOOKS FOR THE HORSEMAN

Horsemanship and Horsemastership, Vol. I ..\$ .85	A Horseman's Handbook on Practical Breeding, by Colonel John F. Wall, U.S.A., Retired (3d edition) ..... 4.00
Horsemanship and Horsemastership, Vol. II .. 1.10	Thoroughbred Bloodlines, Wall ..... 25.00
Horsemanship and Horsemastership, Vol. III .. .65	Breeding Thoroughbreds, Wall ..... 3.75
Horseshoeing ..... .45	The Horseman's Encyclopedia, Self ..... 5.00
Gaits and the Horseman ..... .60	Fun on Horseback, Self ..... 3.00
Seats, Gaits and Reactions ..... .85	More About Riding Forward, Littauer ..... 3.00
The Military Seat ..... .15	Position and Team Play, Devereaux ..... 1.50
Care of Leather ..... .25	Horses, Self ..... 3.00
FEL Rules (International Equestrian Federation) .45	The Western Horse, Gorman ..... 3.00
Thoroughbreds ..... 2.05	Training and Gaiting, Scharf, 2 volumes ..... 4.00
Deep Through the Heart ..... 2.45	Heads Up—Heels Down, Anderson ..... 2.50
Black, Bay and Chestnut ..... 2.45	Riding and Training, Farshler ..... 5.00
Riding and Schooling Horses ..... 4.00	Light Horses, Rooks ..... 2.00
Trail Dust and Saddle Leather, Jo Mora ..... 3.00	

*Armored Cavalry Journal*

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# OTHER BRANCHES



Major General R. W. Bliss

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(Editor's Note: All members of "Other Branches" are encouraged to contribute to this section of the ARMORED CAVALRY JOURNAL. The "Other Branches" section in the next issue will feature a statement by the Chief, Chemical Corps and a full-length article on the Chemical Corps and its activities.)

The Army Medical Department is the guardian of the health of the soldier. Its services extend from those of the "Medics" with the familiar red cross arm bands who accompany combat troops into battle to those scientists surrounded by an array of retorts and test tubes in far away laboratories. It includes in its ranks, physicians, surgeons, dentists, veterinarians, men versed in the allied medical science, nurses, and women medical specialists.

The Department considers as its most important job not the care of men after they have become ill, but the prevention of illness itself. To this end it strives through its research to keep pace with the constantly changing times by coordinating its program with that of the

medical research of the nation and to insure superior medical service by maintaining the highest professional standards among its personnel.

The Army Medical Department welcomes the opportunity given by the Armored Cavalry Journal to have its personnel become acquainted with the activities of other branches of the Army and also welcomes the opportunity to present its views so that other branches will become acquainted with the Medical Department.

*R. W. Bliss*

Major General, U. S. Army,  
The Surgeon General





# Atomic Warfare Confronts Army Medical Department

*by Major General Raymond W. Bliss\**

THE Medical Department of the Army, like every other branch of the national defense, is shouldered with the gravest responsibilities in the present unsettled and threatening world situation.

Our problem is solely one of defense—to protect the health and lives of soldiers with the most advanced and effective means medical science can provide for us under conditions and against weapons and diseases at present unpredictable. This word “unpredictable” is most significant. We often feel that we are in a quite different situation than we ever have experienced before.

In the past we always have known, to some extent, our major enemies. Battle wounds, combat neuroses, epidemic diseases have not changed greatly from war to war. It has been possible to predict what they would be like, and constantly to encourage and take advantage of research into ways of protecting our soldiers against them.

But there are some special problems today which we never have faced before and in respect to which, it seems, our responsibilities are particularly great. We only can say that we are doing our utmost to meet these responsibilities as we see them.

First: The medical problem of atomic warfare. It is reasonable to suppose that in any future major war the enemy, as well as ourselves, will make use of atomic explosives at least as effective as the atomic bombs dropped over Japan in the closing days of the last war. In our preparations we cannot have any assurance that there will be any practical outlawry of such weapons. Such a bomb kills and disables by heat over a small radius, by shock waves, and by invisible radiations of various sorts moving with essentially the speed of light. Concerning this third, and most serious, effect medical science stands only at the threshold of exact knowledge. Radiation injury of any kind never has been a problem for the medical profession at large or the army before. It hardly has been a serious problem anywhere, except for workers with powerful x-ray apparatus in laboratories and hospitals. The exploding atomic bomb disperses gamma radiation of the same sort as comes

from the x-ray, but far more powerful. Here there is a little guidance to be had from the experience of the past. It also disperses radiations concerning which there is no guidance at all—invisible showers of countless millions of alpha and beta particles, and neutrons. A little information of the effects of these has been obtained from studies of the population of Hiroshima and Nagasaki.

Naturally the Medical Department is carrying on studies of its own—especially through the Army Institute of Pathology. It is vitally interested in studies under the auspices of the National Research Council and the Atomic Energy Commission and those which are in progress in various universities. But quite frankly, at present very little can be offered in the way of medical defense against the most sensational weapon in the history of warfare. The responsibility is fully recognized and accepted. It may well become the gravest of all our responsibilities. But there is no magic nostrum—nor any great likelihood of any—which will offset the effects of radiation and soldiers cannot be immunized against ionizing radiations. There is little enough that we can offer at present—but to vigorously investigate any lead that promises increased protection or better therapy and the promise to keep fully abreast of the medical science of the world, insofar as its reports are available to us, in this field and to have ready the best defense possible in the light of advancing knowledge. We have the fullest confidence that the medical profession of the United States will be at least abreast of any potential enemy.

For the first time in history there is serious talk of diseases occurring under unexpected conditions. Against such diseases the major defense would be medical. It is encouraging to know that our own Army and Navy have given great consideration to defense measures against all types of diseases that may arise through natural or unnatural means. We are probably in as good a position as anybody to protect our soldiers and our people. But the possibilities of unexpected disease outbreaks are beyond prediction. At least we are on fairly familiar ground, so far as general methodology is concerned the prevention and stopping of epidemics

\*The Surgeon General, U.S. Army.



long has been a major function of the Medical Department.

But it is realized fully that these shadowy and terrible ogres of future warfare cannot be allowed to distract our attention too much from the ancient enemies which are certain to be encountered in any conflict. Wherever great numbers of men are thrown in close contact, as is inevitable in military operations, there is the threat of epidemic diseases—of typhus, typhoid, cholera, plague, the various forms of dysentery—which have been far more prolific killers than any enemy weapons known in the past. These are set loose by no human enemy. They are evils of Nature itself and are as much a threat to one side as to the other. The last war came fortunately after a period of enormous progress in the field of preventive medicines when fairly effective prevention and control measures had been produced against the majority of these scourges. The results are shown clearly in the army's health record. We were in the fortunate position of seldom being obliged to treat typhus or cholera because we could prevent them.

But we cannot allow ourselves to rest on our accomplishments. The protective measures are far from perfect. We realize only too clearly that statistics are deceptive. Some medical men whose opinions are entitled to respect are somewhat skeptical as to the importance of some of the protective measures in achieving the Army's remarkable health record. They feel that immunity conditioning of the population also was an important factor. Constant efforts are under way, both in the Army itself and in civilian institutions co-operating with us, to improve protective measures. Eternal vigilance is necessary. Bacteria and viruses have a remarkable facility for undergoing "changes" and appearing in deadlier forms against which present methods of protection are of unpredictable value.

In the past the areas of war have been circumscribed to areas with a limited number of deadly diseases. The first world war, for example, was fought largely in Europe where the armies did not have to worry about outbreaks of cholera or yellow fever. The second world war was essentially world wide. There was no disease known to man to which some soldiers were not in danger of exposure. This will be even more the case, it is likely, in any future major conflict. Military medicine, more than ever before, must be universal medicine.

It is freely predicted, for example, that polar regions will be important war theaters. Thus the Medical Department must be prepared to deal effectively with all pathological conditions peculiar to intense and prolonged cold. It must develop new standards of nutrition, clothing and shelter to protect the health of troops.

At the start of the last war we were blessed with various new and extremely potent antiseptic agents—the sulfa drugs—and soon developed the greatest lifesaver of all, penicillin. This exploitation of a research finding was probably the most significant achievement of American science under Medical Department auspices. But here again too great reliance cannot be placed on

what has been accomplished. There are ominous indications of the development of resistance to these agents on the part of disease organisms. The germ killers must constantly be improved, their effects watched from day to day, and new agents developed.

Our present job is primarily "preparedness." So far as scientific preparedness is concerned we must lean heavily on medical and allied science as a whole. The Medical Department of the Army can do much to advance the general science of medicine, especially in certain fields. It must keep abreast of present amazing medical progress and undertake or support fields of research likely to prove of special value in case of another war. Certainly, of course, it will contribute to and co-operate with every worth while endeavor along these lines to the utmost extent possible with its personnel and resources.

It clearly has the responsibility of seeing that the best medical science has to offer is available to our soldiers in the hands of thoroughly competent physicians. The medical officer must be professionally competent. It is the desire and intention that he be superior. This can be achieved only if the Army offers to the brilliant, enterprising, ambitious young medical graduate the opportunity for as successful career in the service as he could hope to achieve in civilian practice. Moreover he must be assured full opportunity to undertake essential medical research and to practice his profession at bedside with sick men and women. There has been some criticism in the past to the effect that the army doctor soon becomes overwhelmed with administrative duties, such as require no particular knowledge of medicine or surgery, and with "paper work" such as could be done as well or better by a competent warrant officer. So, it has been charged, he finally falls behind his profession and loses interest in medicine, *per se*.

There may have been some grain of justice in these criticisms. Under the present reorganization of the Department, however, they will not be valid in the future. Exceptional encouragement is being offered the young doctor to enter the army and remain there in a progressive medical practice either as a research worker or a clinician. He will have an assured and adequate income. Of even more importance to the ambitious doctor, he will be given facilities for study and research which he hardly could hope to enjoy in civilian practice. Above all, he can rest assured that he will function purely as a physician—not as a clerk or drill sergeant.

When the next war comes, the Medical Department feels, the best medical defense that can be offered will be an alert corps of highly competent and progressive doctors who with the medical and allied professions have already solved many of the problems that will be encountered and who are capable of meeting any new situation that may arise. This will be the case whether the major enemy weapon is nuclear radiation or germ bombs, whether the major disease is typhus or some invisible horror which is not yet known in the world.



# CLIMATIC HANGAR

## —USAF Freezes Airplanes In Florida

*by James A. Niland\**

THE Florida travel brochures probably will never mention it, but there's a place in the Peninsula State where the temperature has been down to  $-65^{\circ}\text{F}$ . And in the same place the temperature can rise sufficiently to embarrass a Florida press agent.

All this variation in climate is available at the Air Force's Climatic Hangar, Eglin Field, Florida, headquarters of the USAF's Proving Ground Command.

The purpose of the Hangar is to provide climatic testing for planes and equipment, identical to climatic conditions found anywhere in the world.

The idea for this facility was conceived during the war years by former Lieutenant Colonel Ashley T. McKinley, to obviate the necessity of transporting men and equipment to all parts of the world for proof testing.

Air Force specifications require that all aircraft must function perfectly within a temperature range of  $-65^{\circ}\text{F}$ . to  $165^{\circ}\text{F}$ . In pre-Hangar days, the AF, to meet these test requirements, transported men and equipment to Alaska, Panama and elsewhere, by an expensive and time wasting process. Day-to-day natural temperatures are rarely constant. Tests had to be made rapidly and if not completed one season had to be held over to the next. Because of the distant locations required for this type of testing, close contact was lost between designers, manufacturers, and the testing organization. Much time was lost in hauling equipment found unsatisfactory, from testing site to manufacturing plant.

These wastes of time and money are eliminated by the Hangar. Under one giant roof, all types of equipment and matériel can be tested simultaneously or individually in the many small test rooms.

The Main Test Room is 250 feet wide and 200 feet long, with ceiling heights varying from 35 feet at the sides to 70 feet at the center. This area is large enough

to house four B-29s, a few B-25s, some smaller planes and equipment all at the same time. In fact, the Air Force's giant B-36 bomber can be rolled into the Hangar for testing, with space to spare.

Nowhere else in the world is there a facility so large and so complete where climatic conditions of all kinds can be produced. The refrigeration equipment needed to chill the 3,000,000 cubic feet of air to a  $-65^{\circ}\text{F}$ . is an unprecedented engineering feat. Three stories high, capable of delivering 9,000 horsepower, it is one of the

Alaskan Huskies held at bay by Lieutenant Henry Watters seem perfectly contented in the minus 70 degrees F. weather offered by the Climatic Hangar at Eglin Field.





latest engineering wonders of the world.

To produce tropic heat there are two 125-pound steam water tube boilers. Special construction features have been incorporated to insure perfect operation under extremes of temperature and pressure. The walls are insulated with thirteen inches of glass wall board, and the ceiling is slung in place by chains to compensate for extremes of pressure that may develop inside. The doors, through which planes pass, weigh 200 tons each and are operated on miniature railways by built-in motors.

Under the Hangar roof surrounding the main test room are many smaller rooms: an Engine and Equipment Test Room, a Tropic Marine Test Room, a Desert Test Room, Jungle Test Room, Arctic Test Room, All-Weather Test Room, and an Altitude Chamber.

The Tropic Desert, Jungle and Arctic Test Rooms are comparatively small and maintain constant climatic conditions consistent with their titles. Into these are placed matériel and equipment for long range testing. For example, packaging equipment might be left in any of these rooms for six months to a year to determine its protective qualities.

The Engine Test Room and the All-Weather Test Room, like the Main Testing Room, are equipped to provide world-wide climatic conditions. Installed in both rooms is equipment capable of providing raging windstorms, and into these winds other machines can inject sand, rain, sleet or snow.

The All-Weather Test Room is lined with stainless steel, welded at all joints. A typical test for this room would be the inflation and launching of a rubber life raft and the maintenance of a plane crew under varied weather conditions.

In addition to these rooms, there is a strato-chamber capable of providing pressures and temperatures corresponding to those encountered at an altitude of 80,000 feet.

The Main Test Room is so equipped that a plane being tested can do everything but take-off. Engines roar, bomb-bay doors open, dummy bombs drop into pits and guns are fired through fiber target panels out to a gunnery range beyond the walls of the Hangar.

To keep pace with aviation's new jet power, a jet engine air unit can supply up to 103,000 cubic feet of air per minute for jet intake.

Started in 1943 the Hangar was officially completed in the spring of 1947. The first major test was conducted in June of this year. It was a cold test in the Main Testing Room during which a B-29, P-80 jet fighter plane, C-82, P-51, P-47, an R-5 Helicopter and an M25 Light Tank and M5 tractor were tested.

Tests were started at 0°F. and conducted at ten-degree increments down to -65°F. At each 10-degree drop, motors were run; in fact every movable part was operated through a complete cycle. Even the Helicopter was put through tests which necessitated sand bags being lashed to the wheels to prevent it from ram-

ming against the ceiling.

As a complete test was made of every item on the floor at each decimation, detailed records were made. These records were checked against the decimated rises in temperature after the low of -65°F. was reached and the temperature was brought up to zero where the tests started. The "down" and "up" comparative checks provided contrasting data which had never before been compiled.

When the low of -65°F. was achieved, planes and matériel were covered with a heavy layer of frost. The corners of the Hangar were piled high with snow formed from condensation of warm air caused by entrance of personnel through the air lock entrances. Each time the air lock door opened a veritable snow-storm ensued. Yet while test personnel plodded around the Hangar floor dressed in heavy arctic clothing, a hundred or so feet away other personnel of the Air Proving Ground Command sweltered in the hot Florida sun which had the outdoor thermometers pushing past the ninety degree mark.

We were able to observe the tests at the -65°F. mark. In a room near the air lock entrance to the Hangar we perspired our way into the boots, heavy trousers, coat and hood, then managed to make it to the small air lock entrance. Once inside the Hangar, the warmth of Florida soon gave way to frosted eyelashes and numbed fingers, made numb perhaps by the novelty of running our hands through snow in Florida.

The value of the Hangar to all branches of the armed services is inestimable. According to Brigadier General Carl A. Brandt, who heads the Air Proving Ground Command, the facilities of the Hangar will be made available to all branches of the National Military Establishment of the United States.

**A Boeing B-29 Superfort is shown here undergoing tests in the Climatic Hangar.**





# New ORC Program

*by Major General Edward S. Bres\**

**This article, written by the Executive for Reserve and ROTC Affairs in the Department of the Army, discusses at length the new affiliation plan of the Organized Reserve Corps. General Bres, the author, also writes about other missions of the ORC and what it offers each Reservist. This is another special article published by the Armored Cavalry Journal to keep Reservists posted.**

A NEW PHASE of the Organized Reserve Corps program is in its first stages of implementation. This is the affiliation plan, which provides for various type units to be sponsored by, and affiliated with, industry.

World War II brought out the necessity for having sufficient and adequately trained service personnel. While the principle of affiliation is not new, the scope of the present program will greatly exceed anything that has been done in the past. Units of this type have been proven to be the most economical way to increase the military potential of the nation.

Affiliated units, because their personnel is already proficient in a civilian specialty, offer a tremendous saving in the time that would be required for training in a comparable unit with no previous experience. During World War II, 54 units were sponsored by the railroad industry. They came into active service not only as experienced individuals but as highly competent teams. If it had not been for these units an extensive training program would have been necessary which would have delayed our supply and transportation system at an extremely critical time.

Some example of the type of civilian concerns suitable for the affiliation program are:

Potential Sponsor	Type Affiliated Unit
Chemical Mfg Companies	Chemical Laboratory Units

Gen Contractors & State Depts of Public Works or Highways	Engineer Construction Units and Engr Gen Service Units
Municipal Fire Depts	Engr Fire Fighting Units
Municipal Depts of Public Works	Engr Utility Detachments
State and Municipal Police Departments	Military Police Units
Colleges and Universities	Military Govt Units, Strategic Research and Analysis Units, etc.
Hospitals and Medical Schools	General & Evacuation Hospitals
Mail Order Houses and Large Retail Distributors	Depot Units
Automotive Industries	Ordnance Maintenance Units
Laundries	Quartermaster Laundry Detachments
Baking Companies	Quartermaster Bakery Units
Mortuary Concerns	Quartermaster Graves Registration Units
Telephone Companies	Signal Construction, Operation & Maintenance Units
United States Post Offices	Army Postal Units
Railroads	Railway Operating & Maintenance Units

\*Executive for Reserve and ROTC Affairs, Department of the Army.



Aircraft, Automotive and Air Service Groups, Air Allied Industries Depot Groups, Air Repair Squadrons, Air Engineer Squadrons, Air Matériel Squadrons and Air Supply Squadrons.

December 7, 1941 demonstrated the fact that we were far more unprepared for an enemy attack than had generally been supposed. This in spite of the fact that for approximately one year previous we had been operating the Selective Service System. It also established the fact that mere training is in itself not sufficient. Units must be organized, equipped and trained during times of peace instead of waiting until the clouds of war have gathered.

Developments in both science and in the practical aspects of warfare have also reduced time, distance and natural barriers to the extent that they can no longer be relied upon as initial protective forces.

As in the case of Pearl Harbor, it can be assumed that any future conflict will be undeclared and will initiate with a sudden surprise attack. While no prediction can be made as to where such an attack would center, it is reasonable to assume that such an attack would be directed at our centers of industrial production and transportation systems.

Should such an attack occur, a great portion of the work necessary for a quick recovery could be undertaken by affiliated units. These units would be available to the army commander concerned for his use in the restoration of industrial and other facilities, such as transportation, signal communications, power lines, medical, police, fire, etc. Other units could perform routine supply problems, move into unharmed areas to aid in the reconversion of plants to war production or be assigned to tactical units.

Should affiliated units be called to active duty, individuals in these units would perform those military functions for which they are best qualified. In most cases these duties will be the same or closely allied with their civilian employment. In addition, other members of his unit would be people with whom he had been working in industry.

The sponsor of an affiliated unit will be required to furnish the maximum number of officers and key enlisted personnel required under the appropriate Table of Organization. In the event a sponsor's personnel is limited, other available members of the Reserve Corps not employed by the sponsor may be utilized with the consent of the sponsor. Either the sponsor or the War Department may terminate an affiliation agreement by written notice at any time.

The training of affiliated units is a special problem due to the fact that no rigid schedule is applicable to all types of units. Training will of necessity vary depending upon the type of units, local facilities, personnel strength, interest and cooperation of the sponsor, availability of funds, etc. To make training as flexible

as possible a sponsor may make a choice of various combinations of armory type training or summer field training. He may select:

1. Weekly armory type training periods plus 15 days of summer field training for Class "A" units.
2. Twice monthly training periods plus 15 days' summer field training for "A" and "B" units.
3. Monthly training periods plus 15 days' summer field training for "A," "B" and "C" units.
4. Monthly training periods with no summer field training for "A," "B" and "C" units.
5. Quarterly training periods and no summer field training for "A," "B" and "C" units.

The quantity and type of home training equipment issued to affiliated units will depend upon the type of unit and its status (A, B, C). Field training equipment will be made available to a unit only upon its arrival at a training area.

In addition to the affiliated portion of the Organized Reserve Corps program, the Organized Reserve Corps has several other missions.

By tradition and our concept of government, the responsibility for our national security cannot be borne in its entirety by our Regular Army. The major responsibility for the national security must be delegated to the civilian components. This type of system has several advantages:

1. Its efficiency depends primarily on expert professional control without having its leadership concentrated exclusively in a professional soldier class.
2. Organized Reserve Corps personnel are encouraged to develop their capacity for leadership.
3. Intelligent and widespread public opinion is provided as a basis for the determination of all public questions pertaining to military affairs.
4. The Regular Army is not required to maintain units to perform duties which can be undertaken by Organized Reserve units and National Guard. Thus, reducing the size and the cost of the regular peacetime establishment.

The Organized Reserve Corps includes both officers and enlisted personnel. In the event of an emergency the Active Reserve must be capable of supplementing the Regular Army and National Guard forces by furnishing:

1. Units that have been effectively trained and organized in time of peace for rapid mobilization, expansion and deployment. These units in the required types and numbers, together with the Regular Army and National Guard, constitute forces for the Army of the United States.
2. Additional trained personnel, both commissioned and enlisted, which will be required to bring the Regular Army and National Guard forces to full war strength, and also provide for the expansion of the Army of the United States.



3. A reserve or pool of officers with military experience who will be eligible for such assignments as their past experience and current capabilities qualify them. These officers can therefore, be called for special types of duty permitting the organized units to remain intact and not cannibalized as was done prior to World War II.

The organization of the Organized Reserve Corps is a departure from the type of Reserve forces which existed prior to World War II. What we had then was an Officers Reserve Corps organized into units of officers only and these were essentially paper units. There were approximately 3,000 Enlisted Reservists who enlisted primarily as a means to secure commissions. No enlisted personnel were assigned to units nor was any equipment provided for training.

In 1940 the Officers Reserve Corps approximated a strength of 100,000. Of this number about 6,000 were all that remained of the 200,000 officers who served in World War I. The decrease from 200,000 to 6,000 in a period of 21 years is of value to note when we measure our present Reserve officer strength of 503,000 with 20 years in the future. Of the remaining Reserve officers approximately 94,000 were secured principally from the Reserve Officer Training Corps units of our educational institutions. Immediate need for many of these officers arose when a state of emergency was declared in August 1940, and by Pearl Harbor Day over 80,000 had been called to duty, individually, to augment the officer personnel of the Regular Army and National Guard forces.

With this dispersion prior to, and the continued great need of these officers on, December 7, 1941, even the paper officer units had been entirely dissipated and not one of the units as such was called to duty. Again, many of the officers on duty had been promoted and no appropriate vacancies existed in the units to absorb them had they been returned to their former reserve unit assignment. Our planning for officer personnel strength had been too conservative. We had provided in all components an approximate strength of 135,000 officers, when 800,000 were actually required. However, to prevent a recurrence of this condition, in our postwar army, the Organized Reserve Corps will contain full strength units fully trained and with unit equipment ready to be mobilized on M-Day. Units in the Organized Reserve Corps are divided into three classes—A, B, and C.

1. Class A units are full war strength units consisting of a full complement of officers and enlisted men, plus all required equipment for training and initial mobilization.
2. Class B units are organized with a full complement of officers and at least a minimum strength cadre of key enlisted personnel and essential training equipment.
3. Class C units will have a full complement of officers only. In addition to the Reserve personnel

assigned to units, there will, of course, be a large pool of both officer and enlisted personnel who will be available as fillers and replacements for the Regular Army, Organized Reserve Corps and National Guard.

At the present time, on purely a voluntary basis, the Organized Reserve Corps numbers approximately 503,000 officers and 630,000 enlisted men.

The organization, administration, and training of Organized Reserve Corps units is the responsibility of each Army and Air Force Commander within his respective area. Generally, within each state a Military District Office has been established which is directly responsible for the administration of the civilian components. Exceptions to this are where the density of population is not sufficiently great to warrant a district for each state. In cases such as this, one office may handle two or more states.

Activation of Organized Reserve Corps units did not start until late in 1946. By August 1, 1947, over 5,000 units had been activated. Included in this total are 24 divisions. Under the Organized Reserve Corps troop basis, ground units are allocated in conformity with the density of population, geographical location, etc. In general, it is broken down to each of the six Army Areas and consists of the following types and numbers of units:

Units	Numbers
Divisions .....	25
AAA .....	40
Armored .....	37
Cavalry .....	27
CAC .....	104
FA .....	223
Tank Destroyer .....	3
Military Police .....	194
AG .....	1,062
Chem W. S. ....	130
Engr .....	1,007
Misc (Intell, Photo, Band) ..	1,089
Ord .....	826
QMC .....	1,514
Signal .....	428
MC .....	1,068
Transp .....	547
Total .....	8,324
	40
	8,364

Within each Army Area a further breakdown to each state is made by each army commander.

Various types of training are presently offered members of the Reserve Corps, some of which are:

1. Attendance of Reserve Officers at Regular Courses and at Associate Basic and Advanced Courses at all Army Ground Forces and Technical and Administrative Service Schools.



2. Fifteen days' indoctrination courses conducted by the Army Ground Forces Service Schools during the summer months.
3. Detail for not more than ninety days of specially qualified Reserve Officers, to higher headquarters to include the War Department, Headquarters Army Ground Forces, Offices of the Chiefs of Technical and Administrative Services, Army Headquarters, Corps Headquarters, Service Schools and RTC's.
4. Year-round training of company-grade officers at RTC's for a minimum of twelve days exclusive of travel time, and a maximum of thirty days including travel time.
5. Fifteen days' detail to Combat Teams or larger size (Battalion or Company size Technical units) Regular Army Units, and with National Guard Units during field periods.
6. Detail as instructors at ROTC institutions and summer camps, of highly specialized Reserve Officers for not less than fifteen days or more than ninety days.

In addition to the training that is being offered to help each Reservist maintain his proficiency, various other procedures have been established, some of which are:

1. A recent War Department circular authorizes the granting of Reserve commissions to non-regular officers now on active duty. It is anticipated that about 75,000 Reserve officers will be obtained in this manner, increasing the total Reserve officer strength to approximately 580,000 and permitting for the first time a complete survey of the Officers Reserve Corps.

2. Procedures have been established recently which permit the direct appointment in the Officers Reserve Corps of warrant and flight officers and the first three grades of enlisted men. Boards to screen applicants are now or soon will be appointed, and it is expected many valuable junior officers will be obtained. Enlisted men below the first three grades, if eligible, may now qualify for a commission through attendance at Officer Candidate Schools.

3. An inactive duty training pay bill for the Organized Reserve Corps was presented to the Congress in the form of two Bills, S 1174 and HR 3227. The Senate passed without amendment S 1174, however, the House did not act on either of the bills prior to adjournment.

4. Active duty training for both officers and enlisted men of the Organized Reserve Corps was initiated in January of this year. This program will be considerably expanded during the coming fiscal year.

5. The majority of the postwar policies of the Organized Reserve Corps have been implemented by the publication of War Department Circulars. Only a few policies remain to be published and implemented in the field.

6. To assist the active program of the Organized Reserve Corps, commanding officers of Reserve units may be ordered to active duty to assist in the organization and development of their own units.

7. The deadline for application for commission or enlistment in the Organized Reserve Corps has been extended from June 30, 1947 to the date of termination of the present emergency.

8. Transfers between branches of the Organized Reserve Corps are authorized.

9. The Honorary Reserve has been established to provide a permanent military status for many categories of personnel who cannot remain in the Active Reserve.

10. Procedures have been established whereby army commanders may retain for Reserve use facilities or parts of facilities declared surplus to the needs of the Army. Many such surplus installations have been retained and are now in use by the Organized Reserve Corps.

11. Over 600 instructors have already been assigned to Reserve duty, and this number is being increased as rapidly as qualified personnel can be made available.

12. Open hearings on the non-disability retirement bill for the Reserve components, HR 2744, have been completed. The bill has been approved and is being actively supported by the War Department, the Navy Department, and all civilian components.

13. The modern postwar series of extension courses are being completed as rapidly as possible and made available to the Reserves.

14. Forty-one Air Reserve Bases are now in operation and over 310,000 hours have been flown by Reserve pilots to date. One thousand two hundred eighty-seven aircraft of various types have already been delivered to Reserve Bases.

15. Active duty for Air Reserve officers has been initiated with the attendance of numerous officers at the Air University and Command and General Staff College.

Personnel of the Organized Reserve Corps assume certain duties and obligations. Officer and enlisted personnel voluntarily obligate themselves to serve the nation in a military capacity after Congress has declared the existence of a national emergency. In time of peace, an officer is appointed for five years, an enlisted man enlists for three years. Both officer and enlisted personnel are required by regulations by the Secretary of War to maintain certain standards of efficiency and professional knowledge in order to retain their Reserve status.

The plans for the organization, training, and administration of the Organized Reserve Corps are established and the organization and development of units is well under way. The successful support and development of the civilian components, both the Organized Reserve Corps and National Guard, in conjunction with the regular establishment will afford this country adequate national security.



# Postwar Army Extension Courses

**A**RMED EXTENSION COURSE postwar program, one of the most far-reaching and comprehensive programs of military education ever undertaken by the Army, is now well under way with nearly 150 courses currently available to qualified personnel, Army Ground Forces has revealed.

In addition to those now available, new courses are now in the process of preparation by the various arms and services, and it is anticipated that approximately 1,000 will be completed within the next three years.

Established in March, 1946, the postwar program is primarily designed to provide a systematic course of home study for members of the Organized Reserve Corps and the National Guard.

An important step in the implementation of the program was taken this past August when Army Ground Forces held a service-wide Extension Course conference at Fort Belvoir. Leading result of the conference, at which matters of general policy were discussed, was to effect a closer coordination between the ground arms and technical and administrative services in the administration of the program.

The courses, which are being administered by the various ground and administrative and technical schools in the six Army areas, are arranged in six series of subcourses for each of the arms and services, and are adapted according to the military grades of the enrollees. They are designated as follows:

10-series—for basic instruction of enlisted men and Warrant Officers; 20-series—second lieutenants; 30-series—first lieutenants; 40-series—captains; 50-series—majors; and 60-series—lieutenant colonels.

Each complete series consists of approximately 15 subcourses, numbered serially in the order in which they are normally studied. A subcourse consists of at least three and not more than nine lessons and an examination or review lesson. To maintain an active enrollment, a student is required to complete at least 10 lessons in one or more subcourses annually.

The following is an example of a subcourse broken down:

## Subcourse 40-10 "Joint Air Ground Operations."

Lesson 1. Joint Operations of Tactical Aviation.

Lesson 2. Planning of an Attack Against an Organized Defensive Position.

Lesson 3. Conduct of the Attack Against an Organized Defensive Position.

Lesson 4. Coordination and Control During a Pursuit.

A development in the program, recently approved by the Department of the Army, concerns the granting of extension course credit for resident courses previously taken at branch schools. Officers and enlisted men who successfully completed courses at any branch

school during the war, and who enroll for extension courses, are now given credit for those subcourses which parallel the material already taken, and are exempt from repeating them.

Applicants for enrollment who are assigned to Reserve or National Guard units should apply to unit commanders or instructors who forward applications for students of the ground arms in courses of the 10-series to the Ground General School, Fort Riley, Kansas; for students of the ground arms in courses of the 20-series or higher to the school of the appropriate branch; and for students of the administrative and technical services in any series to the school of the appropriate branch. Applicants not assigned to units should apply directly to the Army commander in the local Army area.

Following is a list of the schools and available courses:

	<i>Originating School</i>
<b>THE GROUND GENERAL SCHOOL</b>	
10-2 Leadership, Discipline, Courtesy, and Customs of the Service	Ground General School
10-3 Drill and Physical Training	Ground General School
10-4 Map and Aerial Photograph Reading I	Engineer School
10-5 Interior Guard Duty	Ground General School
10-6 Military Sanitation	Medical Field Service School
10-13 Military Law—The Law of Military Offenses	Judge Advocate General
10-15 Individual Weapons	Ground General School
20-2 Methods of Instruction	Infantry School
20-3 Military Law—Courts Martial	Judge Advocate General
<b>ARMORED SCHOOL</b>	
20-2 Methods of Instruction	Infantry School
20-3 Military Law—Courts Martial	Judge Advocate General
20-4 Tank Gunnery—Direct Fire	Armored School
30-1 Administration II	Adjutant General's School
30-2 Training Management	Armored School
30-3 Terrain Evaluation	Armored School
30-5 Estimate of the Situation and Combat Orders	Armored School
40-1 Map and Aerial Photograph Reading III	Engineer School
40-2 Rules of Land Warfare	Judge Advocate General
40-7 Staff Functions Tank Battalion	Armored School
50-1 Staff Functions Combat Command	Armored School
50-3 Combat Command in Attack	Armored School
<b>ARTILLERY SCHOOL</b>	
20-2 Methods of Instruction	Infantry School
20-3 Military Law—Courts Martial	Judge Advocate General
20-4 (FA) Field Artillery Materiel	Artillery School
30-1 Administration II	Adjutant General's School
30-3 (FA) Terrain Evaluation	Artillery School
30-3 (AAA) Electronics	Artillery School
30-6 (FA) Combat Supply, Field Artillery Battalion	Artillery School
30-7 (FA) Meteorology for Light Aviation (for pilots only)	Artillery School
40-2 Rules of Land Warfare	Judge Advocate General
40-7 (FA) Staff Functions	Artillery School
40-7 (SC) Tactics of Seacoast Artillery	Artillery School
40-9 (FA) Supply in Combat	Artillery School
50-2 (FA) Division Artillery in Defensive Action	Artillery School
50-3 (FA) Corps and Army Artillery	Artillery School
<b>INFANTRY SCHOOL</b>	
20-2 Methods of Instruction	Infantry School
20-3 Military Law—Courts Martial	Judge Advocate General
20-4 Crew Served Infantry Weapons Not Self-Propelled	Infantry School
30-1 Administration II	Adjutant General's School
30-2 Training Management	Infantry School
30-3 Terrain Evaluation I	Infantry School
30-4 Preparation of a Field Exercise	Infantry School
40-1 Map and Aerial Photograph Reading III	Engineer School
40-2 Rules of Land Warfare	Judge Advocate General
40-10 Joint Air Ground Operations	Infantry School
50-1 Terrain Evaluation II	Infantry School
60-1 Tactical Use of Motor Vehicles	Infantry School
60-2 Development and Security of an Infantry Regiment in Defensive Combat	Infantry School
<b>CHAPLAIN SCHOOL</b>	
30-2 Leadership, Discipline, Courtesy and Customs of the Service	Ground General School
30-3 The Chaplain	Chaplain School
30-4 Administration I	Adjutant General's School
30-5 Organization and Administration of the Unit Chaplains Office	Chaplain School
30-6 Military Sanitation	Medical Field Service School
30-7 First Aid	Medical Field Service School



30-8 Map and Aerial Photograph Reading I	Engineer School	30-5 Military Law—Courts Martial	Judge Advocate General
30-9 Burial, Graves Registration and Related Subjects	Chaplain School	40-1 The Legal Assistance Program	Judge Advocate General
30-10 Military Law—The Law of Military Offenses	Judge Advocate General	40-2 Rules of Land Warfare	Judge Advocate General
40-1 Administration II	Adjutant General's School		<i>Originating School</i>
40-3 Rules of Land Warfare	Judge Advocate General		Ground General School
40-5 Counseling	Chaplain School		Adjutant General's School
40-6 Signal Communications for all Arms and Services	Signal School		Judge Advocate General
40-7 Military Law—Courts Martial	Judge Advocate General		Engineer School
40-8 Methods of Instruction	Infantry School		Medical Field Service School
	<i>Originating School</i>		Ground General School
CHEMICAL CORPS SCHOOL	Medical Field Service School		Medical Field Service School
10-3 Leadership, Discipline, Courtesy and Customs of the Service	Judge Advocate General		Ground General School
10-4 Military Sanitation	Ground General School		Judge Advocate General
10-6 Military Law—The Law of Military Offenses	Ground General School		Adjutant General's School
10-7 Drill and Physical Training	Engineer School		Medical Field Service School
10-8 Map and Aerial Photograph Reading I	Ground General School		Medical Field Service School
10-9 Interior Guard Duty	Ground General School		Adjutant General's School
10-11 Individual Weapons	Adjutant General's School		Engineer School
10-13 Administration I	Chemical Corps School		Judge Advocate General
20-1 Chemical Agents	Chemical Corps School		Ground General School
20-2 Chemical Material	Infantry School		Judge Advocate General
20-3 Methods of Instruction	Judge Advocate General		Adjutant General's School
20-6 Military Law—Courts Martial	Chemical Corps School		Medical Field Service School
20-7 Matériel—4.2 inch Chemical Mortar	Chemical Corps School		Medical Field Service School
20-17 M2 Mechanical Smoke Generators	Chemical Corps School		Ground General School
30-1 Administration II	Chemical Corps School		Engineer School
30-4 Chemical Mortar Company	Chemical Corps School		Judge Advocate General
30-5 Chemical Corps Service Units	Signal School		Infantry School
30-25 Signal Communications for all Arms and Services	Engineer School		Judge Advocate General
40-1 Map and Aerial Photograph Reading III	Judge Advocate General		Signal School
40-4 Rules of Land Warfare	Chemical Corps School		Ordnance School
40-6 Chemical Mortar Battalion I	<i>Originating School</i>		Ordnance School
	Ground General School		Engineer School
ENGINEER SCHOOL	Judge Advocate General		Judge Advocate General
10-3 Leadership, Discipline, Courtesy and Customs of the Service	Medical Field Service School		Signal School
10-4 Military Law—The Law of Military Offenses	Medical Field Service School		Ordnance School
10-5 Military Sanitation	Adjutant General's School		Ordnance School
10-6 First Aid	Ground General School		Engineer School
10-7 Administration I	Engineer School		Judge Advocate General
10-10 Interior Guard Duty	Engineer School		<i>Originating School</i>
10-11 Map and Aerial Photograph Reading I	Judge Advocate General		Ground General School
10-17 Water Supply I	Engineer School		Ground General School
10-20 Explosives and Demolitions I	Engineer School		Engineer School
20-1 Military Law—Courts Martial	Engineer School		Medical Field Service School
20-2 Methods of Instruction	Judge Advocate General		Medical Field Service School
20-5 Engineer Reconnaissance I	Infantry School		Adjutant General's School
20-6 Combat Principles for Engineer Units I	Engineer School		Judge Advocate General
20-26 Signal Communications for all Arms and Services	Signal School		Ground General School
30-1 Administration II	Adjutant General's School		Ground General School
30-3 Map and Aerial Photograph Reading III	Engineer School		Engineer School
30-5 Engineer Staff Functions I	Engineer School		Medical Field Service School
30-6 Water Supply II	Engineer School		Medical Field Service School
40-1 Rules of Land Warfare	Judge Advocate General		Adjutant General's School
40-3 Water Supply III	Engineer School		Judge Advocate General
	<i>Originating School</i>		Ground General School
FINANCE SCHOOL	Ground General School		Ground General School
10-2 Leadership, Discipline, Courtesy and Customs of the Service	Engineer School		Engineer School
10-3 Map and Aerial Photograph Reading I	Ground General School		Medical Field Service School
10-4 Interior Guard Duty	Medical Field Service School		Medical Field Service School
10-5 Military Sanitation	Medical Field Service School		Infantry School
10-6 First Aid	Ground General School		Judge Advocate General
10-8 Drill and Physical Training	Judge Advocate General		Military Police School
10-9 Military Law—The Law of Military Offenses	Adjutant General's School		Military Police School
10-10 Administration I	Infantry School		Military Police School
20-1 Methods of Instruction	Judge Advocate General		Engineer School
20-2 Military Law—Courts Martial	Finance School		Judge Advocate General
20-3 Organization of the Finance Department	Finance School		Military Police School
20-4 Introduction to Receipts and Disbursements of WD Funds	Finance School		<i>Originating School</i>
20-5 Pay of Enlisted Personnel	Finance School		Ground General School
20-6 Pay of Officers	Finance School		Judge Advocate General
20-7 Travel Allowance for Officers	Finance School		Adjutant General's School
20-8 Travel Allowance for Enlisted and Civilian Personnel	Finance School		Ground General School
20-9 Processing Commercial Bills for Payment	Finance School		Engineer School
30-1 Public Funds	Finance School		Medical Field Service School
30-2 Agent Officers	Finance School		Medical Field Service School
30-3 Disbursing Officers Accounting Procedure	Finance School		Infantry School
30-4 Organizations and Functions of a Disbursing Office	Finance School		Quartermaster School
30-6 Administration II	Finance School		Judge Advocate General
30-17 Signal Communication for all Arms and Services	Adjutant General's School		Adjutant General's School
40-1 Fiscal Organization Responsibility	Signal School		Quartermaster School
40-2 Budgetary System of the War Dept.	Finance School		Judge Advocate General
40-3 Army Banking Arrangements	Finance School		Engineer School
40-4 War Department Fiscal Code and its application	Finance School		<i>Originating School</i>
40-5 Rules of Land Warfare	Judge Advocate General		Ground General School
40-6 Fiscal Accounting for Field Installations	Finance School		Engineer School
	(Not accepting Students this School Year)		Medical Field Service School
JUDGE ADVOCATE GENERAL	Judge Advocate General		Medical Field Service School
30-4 Military Law—The Law of Military Offenses			Judge Advocate General
			Signal School
			Adjutant General's School
			Ground General School
			Infantry School
			Signal School
			Adjutant General's School
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20-9 Field Wire Communication Matériel	Signal School		Originating School
20-10 Field Radio Communication Matériel	Signal School	TRANSPORTATION SCHOOL	Ground General School
20-14 Basic Radar	Signal School	10-2 Leadership, Discipline, Courtesy and Customs of the Service	Engineer School
30-1 Administration II	Adjutant General's School	10-3 Man and Aerial Photograph Reading I	Ground General School
30-4 Signal Orders	Signal School	10-4 Interior Guard Duty	Medical Field Service School
30-5 Technical Wire Communications—Principles of Field Equipment	Signal School	10-5 Military Sanitation	Medical Field Service School
30-8 Organization and Signal Communication of the Corps	Signal School	10-6 First Aid	Judge Advocate General
30-10 Technical Radio Communication—Principles of Field Equipment	Signal School	10-10 Military Law—The Law of Military Offenses	Adjutant General's School
30-14 Radio Relay Equipment FM	Signal School	10-11 Administration I	Ground General School
30-15 Radio Relay Equipment Pulse Modulated	Signal School	10-13 Drill and Physical Training	Infantry School
30-50 Radar System Survey I	Signal School	20-2 Methods of Instruction	Judge Advocate General
40-1 Rules of Land Warfare	Judge Advocate General	20-3 Military Law—Courts Martial	Transportation School
40-3 Map and Aerial Photograph Reading III	Engineer School	20-5 Depot Storage Operations	Transportation School
40-12 Signal Corps Staff Duties	Signal School	20-6 Port Company Stevedoring and Operations	Signal School
	Originating School	20-7 Signal Communications for all Arms and Services	Transportation School
THE ADJUTANT GENERAL'S SCHOOL	Ground General School	20-8 Truck Driver Selection, Training and Discipline	Transportation School
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10-3 Military Law—The Law of Military Offenses	Adjutant General's School	20-16 Troop Train Commander	Transportation School
10-4 Administration I	Engineer School	30-1 Administration II	Adjutant General's School
10-5 Map and Aerial Photograph Reading I	Medical Field Service School	30-3 Troop Movement Through Port of Embarkation	Transportation School
10-6 Military Sanitation	Ground General School	30-5 Transportation Services ZI	Transportation School
10-7 Interior Guard Duty	Signal School	30-6 Stevedore Operations	Transportation School
10-11 Signal Communications for all Arms and Services	Medical Field Service School	30-8 Organizations and Operation of Staging Areas	Transportation School
10-12 First Aid	Ground General School	30-9 Administration of Transports	Transportation School
10-15 Drill and Physical Training	Infantry School	30-19 Military Freight Movements	Transportation School
20-1 Methods of Instruction	Judge Advocate General	30-21 Vehicle Characteristics	Transportation School
20-2 Military Law—Courts Martial	Infantry School	30-26 Ship Administration	Transportation School
20-11 Individual Weapons	Infantry School	30-45 Yard Operations I	Transportation School
20-12 Crew Served Infantry Weapons Not Self-Propelled	Infantry School	40-1 Prevention of Sabotage	Transportation School
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30-3 Administration II	Adjutant General's School	40-3 Rules of Land Warfare	Engineer School
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# THE POWER BEHIND THE ROCKET

*by Ivor B. N. Evans\**

**A British writer here discusses rockets and their possibilities from the British point-of-view. The British Government's Rocket Propulsion Department is taking shape on a former Royal Air Force airfield near the village of Westcott in Buckinghamshire, England. This Department is the center for research and development on every type of rocket propulsion system and unit, for Britain and the Commonwealth. The progress at Westcott, according to the author, is promising and the constructional work is going ahead very rapidly.**

ON a former Royal Air Force airfield, situated in the midst of quiet green pleasant fields near the village of Westcott in Buckinghamshire, England, buildings are rising and work is being done, which will have a decisive influence on not only British aviation, but the world's. The British Government's Rocket Propulsion Department is taking definite shape.

The Department is the center for research and development on every type of rocket propulsion system and unit, for Britain and the Commonwealth. The testing is done statically on test beds; the actual flying tests being done at various ranges in isolated parts of Britain, particularly Aberporth, in Wales, and on the new range in Australia.

Recently visitors were allowed to see over the station for the first time since it was founded in April 1946. Naturally a certain amount of secrecy is being kept regarding British lines of development; but, I was told, cordial relations exist between the American and British authorities concerned. In some aspects the U.S.A. is ahead, while in other methods Britain leads.

Westcott Rocket Propulsion Department is designed for studying the power behind the rocket only; the aerodynamic, electrical and other work is done at other

research stations.

One of the possible useful applications for rockets is the assisted take-off of aircraft and the motor unit of the German rocket interceptor aircraft, the Me.163 is being carefully studied. This unit, weighing only 400 lbs, develops up to 8,000 H.P. or more than twice the capacity of the Merlin engine. It shoots the interceptor aircraft through the air, at an angle of 45° to a height of 30,000 feet in three minutes. During its four-minute run it burns three tons of fuel; but the aircraft by gliding, remains in the air for another fifteen minutes or so.

The unit is clamped to its test bed, with its blast walls, observers watch from behind a concrete barrier; there is a flabby flag or flame from the combustion chamber opening, which suddenly develops into a terrific roar. The earth shakes, one's head is almost numbed and the fierce jet of flaming, rushing gases mows down the grass a hundred yards away.

The gases issue at a speed of several thousand miles an hour and the jet, less than a foot in diameter, has a thrust of two tons. The fearsome jet is controllable and the supersonic shock waves can be seen as dark bands in the flame. The temperature inside the combustion chamber is between 2,000° and 3,000°C. In the air the unit is specially cooled; on the test beds it is cooled

\*Author of *Rutherford of Nelson* and other books; Member of the Association of British Science Writers.



with water circulating at high pressure.

The greatest problems are those concerning heat transfer; they are the barriers hindering the development of more efficient units.

Dr. Johannes Schmidt, who was formerly in charge of the rocket works at the Walterwerke, Kiel, and was largely responsible for the development of the Me.163 unit, heads the German team working in conjunction with the British chemists, engineers, mathematicians, physicists, draughtsmen and mechanics. I was told that if the Germans had devoted one-tenth of their effort used on projectiles like the V-2, to the development of rocket-propelled aircraft, then they might have had a good chance of winning the war.

The fuels considered include cordite, gasoline, kerosene, various hydrocarbons such as hydrazine hydrate and their oxidants, such as liquid oxygen, nitric acid and hydrogen peroxide. Combustion kinetics, fuel supply methods—by compressed gases, pumps or turbines—heat transfer problems and special materials, comprise the main fields for investigation.

In a large building called "the Museum" is an almost complete range of the German rockets developed during the war. Many only reached the experimental stage because of inherent faults and difficulties encountered; but a few were out into production particularly the V-2. Yet, when the V-2 is seen in section, with its huge fuel tanks, great casing, turbines, pumps and control compartment, one behind the other, necessary to transport a comparatively insignificant amount of explosive in the warhead, it appears obvious that later German efforts were directed toward very much smaller, less costly and more effective projectiles. Fortunately the war ended before these went into production.

The Germans used a mixture of methyl alcohol and hydrazine hydrate, with a little potassium cuprocyanide as a catalyst, as the basis of their "C-Stoff" and "T-Stoff" fuels, and hydrogen peroxide as the oxidant. The peroxide is pure hydrogen peroxide, on contact with many organic materials, such as, for example, newspaper, it bursts into flame. The drawback of the present type of motor unit is that the whole system must be thoroughly washed out after every operation, because stray drops of hydrogen peroxide may wander and meet drops of fuel, thus causing an explosion.

"We must expect an explosion now and again," said one of the staff. The new test beds, which will be finished by the autumn, have been planned very carefully. The ducts for the exhaust gases have been constructed so that they may be flooded, immediately from high-pressure water mains, in an emergency. Control and observation chambers are of reinforced concrete, with narrow windows glazed with armor glass. High-pressure nitrogen, at one thousand to one hundred pounds per square inch, is on tap for feeding fuels. Consumption is at the rate of two or more gallons per second.

When the propulsion unit is clamped down, the recording instruments will be attached. Some will be

recorded in the Control room and others will be electronic measurements recorded in a central building far enough away not to be disturbed by vibrations. More than thirty measurements of thrusts, pressures, temperatures, rates of flow and so forth, will be recorded at one time, while high-speed cinematograph records, at the rate of 3,000 frames per second, will also be made.

All this is necessary because what goes wrong in perhaps only one-thousandth of a second may be the cause of an explosion. In that almost incomprehensibly short space of time the gases will have moved seven feet on their journey from the combustion chamber.

One of the completed units is the supersonic wind tunnel for observation of the behavior of bodies, such as parts of a combustion chamber, in air moving at one thousand miles an hour. On one side of a wall is a large "powerhouse" with the whirling pumps screaming at ear-shattering pitch. On the other is the long wind tunnel, just about six inches by four and a half in section. When air rushes through at supersonic speeds all is quiet, because the scream of the pumps is no longer transmitted along the tunnel. The air is too fast for the sound waves and sweeps them back. The tunnel has been specially designed and constructed by the Westcott staff.

One of the possible uses for rockets would be transporting mail across, say the Atlantic. However, as yet, there are two great obstacles. The accuracy of control in flight makes the problem of landing difficult at ranges of thousands of miles, while the landing ground, or target, must be very large. There are also the problems of rise in skin temperature. The casing of the V-2 became red hot during its travel from Germany.

These problems are comparatively easier with regard to the more important meteorological applications such as have been made in New Mexico, where the rocket travels straight up and down. The limiting factor for profitable use is the cost of running, because the fuels are more expensive than gasoline, and the consumption rate enormous.

In spite of the German work, rocket propulsion is still in its infancy and one of the limiting problems is the question of discovering the right alloys that can stand the terrific temperatures, and the best all-round and safe fuel.

The crew of an aircraft assisted into the air by a take-off rocket unit are not going to feel happy if there is danger of an explosion.

Mathematicians apparently find that supersonic conditions are more amenable to mathematics than the subsonic, so that, from the development engineer's point of view, the behaviors calculated will be very near the behavior to be experienced in practice. This, as test pilots well know, is not so with ordinary aircraft.

The progress at Westcott is promising and the constructional work is going ahead rapidly. Shortly Britain will be well equipped to maintain development in this new form of propulsion, which has yet to yield up its major secrets.



# Exercise Longstop

*by Charles Gardner\**

**A veteran British newspaperman describes in this article the biggest airborne exercise held in Britain since the end of the war.**

**Some 2,400 men with arms, and 170 tons of equipment and supplies were given airlift in the operation. The operation, which used several American aircraft, came off a complete success.**

EXERCISE LONGSTOP" was the biggest airborne exercise held in Britain since the war—and by far the most spectacular. It lasted over most of two days (September 22 and 23) and altogether it employed 68 Dakotas (C-47's), 10 Halifax bombers, 20 York transports, 12 Horsa gliders and nine Hamilcar gliders. The troops used were the 2nd Parachute Brigade Group of which two battalions were dropped (or supposed to be) and one was landed. Altogether 2,400 men with arms, and 170 tons of equipment and supplies were given airlift.

All the aircraft were supplied by Nos. 4, 38 and 46 Groups of RAF Transport Command, under Air Vice-Marshal A. L. Fiddament, and the airborne troops were commanded by Brigadier R. H. Bellamy.

The large and expansive audience included the Chief Imperial General Staff (Lord Montgomery), the Chief of the Air Staff (Lord Tedder), the retiring A.O.C. in C. Transport Command (Air Marshal Sir Ralph Cochrane, who has now taken over the RAF's Technical Training) and the full military and Air Attache strength of the diplomatic corps.

So much for the preliminaries—now for the action.

The "plot" was that Netheravon airfield on Salisbury Plain, England, was supposed to be a grass airfield some 200 miles inside enemy territory. It was held by a garrison of two companies of infantry, and some light Ack-Ack. Forty miles away were two infantry battalions, one squadron of armored cars and one composite squadron of obsolete light and medium tanks.

\*Air Correspondent to the British Broadcasting Corporation, who served with the RAF during the war.

Communications were poor and the country undeveloped.

All these, I think, were fair assumptions of conditions which one could well expect to find 200 miles back from the lines—especially when the initiative of choice of target is in the hands of the attacking force—as must always be with an airborne swoop.

The attack was due to start at 1730 hours on September 22. One C-47 left Abingdon near Oxford with a stick of pathfinder parachute troops, equipped with Dropping Zone homing aids, mainly radar, but with smoke signals and white D.Z. markers. They were to drop half-an-hour before the main force and home the leaders to the D.Z. In actual fact a 20/28-mile-an-hour wind was blowing on the evening of September 22 and when the Dakota arrived over the D.Z. at 1730 precisely—it was warned off by red Very lights as the men might have been dangerously dragged by the wind.

## HALF-HOUR LOADING

Meanwhile the main Dakota force of 48 aircraft (4 Squadrons) carrying a battalion Group of 850 men and equipment—plus two 350-pound containers of equipment per aircraft had already taken off from Abingdon and were out on a 200-mile circular approach to Netheravon to simulate the penetration of enemy territory. There was an assumed escort of fighters and ground strafing aircraft, plus a diversion by medium and heavy bombers on communications in the target area.

The loading of the 48 Dakotas was concisely organized, the Army providing one numbered truck to each of the numbered aircraft. The trucks contained



exact loads, and drove round the perimeter track and along the lines of aircraft until they were opposite the appropriately numbered C-47. The loading then took place and lasted, all told, about 30 minutes.

Each aircraft carried between 15 to 18 equipped troops, and two supply containers, plus an RAF jump-assistant, or despatcher.

The take-off was all done from one runway, and all 48 aircraft were airborne in five minutes. The system used was that of bringing the aircraft to the mouth of the runway in two converging streams forming an inverted Y. I was flying in the leading aircraft and we had 18 troops under a "stick" Commander, a major. He had done 12 previous jumps and his men averaged about 15 jumps. Many of them were volunteers from the age-group call-up, and appeared unworried at the prospect of "going through the hole" in a seemingly strong wind. All the men had been tactically briefed on the D.Z. and the subsequent dispositions and company rallying points. The vital equipment loads and the senior officers were dispersed and, in the case of equipment, duplicated, at scattered points in the formation.

We, in the leading aircraft, had the main navigational work—although each machine was, in fact, keeping its own nav-plot going "just in case." Split-second timing was called for, and was achieved throughout and the run up to the D.Z., which was a field four miles from the actual airfield, was made within 15 seconds of E.T.A. The Dakotas formation was a simple one of four V's of three per squadron, with an interval of 15 seconds between V's and 30 seconds between squadrons—the whole stream extending over several miles of sky.

Unfortunately the expected evening drop of wind velocity didn't materialize, and so, like the pathfinder force, our main body was unable to drop, and the whole gaggle had to return to Abingdon, landing back at last light in a total of about 18 minutes.

This meant that the whole D-1 program had failed to take place, but the motto was "The exercise goes on," and on D-Day it was assumed that the first drop had taken place, and that the troops had overwhelmed the two defense companies and now held the perimeter of Netheravon. This was also a reasonable assumption, as the D.Z. was lonely farm land, and the drop would have been unlikely to meet any more rugged immediate opposition than a farmer and a shotgun.

#### THE DROP TAKES PLACE

D-Day therefore was really a re-inforcement and consolidation operation while the offensive air arm was denying reinforcement to the enemy. I note here a basic assumption of air supremacy which is the obvious prerequisite of an airborne attack. Either that, or, as in the actual and similar Wingate operations in Burma—lack of enemy air activity in the area at all.

On D-Day the wind was still high (15 m.p.h. gusting to 18 m.p.h.), but the drop took place. The same 48 Dakotas again arrived dead on the second, and cascaded

on to the now "British" airfield, some 900 troops and supplies. The drop was from 650 feet at a constant airspeed of 90 knots, and the men marched through the doorways hands at sides, right foot first—literally stepping into space by numbers. The jump-assistants (RAF NCO's, some of whom had anything up to 200 jumps) were in charge of the actual exit arrangements.

By my watch the elapsed time from first man out to last man out was nine minutes and by 13½ minutes the supply canisters, with their pastel colored parachutes, had been rounded up, and the men were being deployed. Overlapping this deployment (in fact 1 minute after the last man had jumped), 10 Halifaxes came over and pushed out two troops of guns and jeeps with gun crews and ammunition. Incidentally I should have mentioned that the original D-1 drop, had it taken place, would have been followed by four jeeps and two trailers dropped from three Halifaxes.

So far—so good. Two battalions were now holding the airfield, plus two guns and an assortment of jeeps.

Next reinforcement was 20 minutes later, when 12 Horsa and six Hamilcar gliders arrived on Halifax and Dakota tow.

They made for a cleared area of the field, and were landed with precision by Officers and NCO pilots of the Glider Pilot Regiment. They were all down in 15 minutes—and they all finished their landing runs in perfect "unloading" formation. The gliders brought heavy airfield construction equipment on the assumption that the airfield had been "demolished" by its defenders. One of the gliders, a C.G.4A, was, incidentally, promptly filled with "important prisoners" and snatched off by a Dakota, and an assortment of Sikorsky helicopters arrived carrying staff officers.

After this there followed a "theoretical" elapse of eight to 12 hours while the construction troops repaired a landing strip suitable for Dakotas, and while the two battalions (plus any further airborne reinforcements) still held the area against an air-harassed enemy.

At the end of this time six Dakotas arrived; landed, and disgorged the heavy equipment of the third battalion, which followed on five minutes later, carried in the ubiquitous 48 Dakotas. The streaming and landing of these troops took 30 minutes, and they were really a "token" of almost unlimited reinforcements which could now be flown in and de-planed.

That virtually ended the exercise, except for a demonstration of an RAF Mobile Staging Post and an Army Forward Air Supply Organization Unit in "action" at another airfield, Brize Norton in Oxfordshire. Unfortunately the USAF radio-controlled Skymaster (C-54) had also just landed at Brize Norton.

Those who watched the RAF demonstration saw 20 Yorks arrive with equipment which covered everything from Army workshops to a medical setup and troops' mail.

Of the 900 men actually dropped in a comparatively high wind only six sustained any injuries at all and none of them were any more serious than sprains.



# What Of The Cavalry?\*

by Captain Fergus N. Fitz Gerald

THERE exists here (Ireland) no manual of cavalry tactics and as a result many people who would otherwise have the interest to discover at least what are the basic roles of this corps are compelled to remain in ignorance. It is true that in other countries where manuals have been duly approved and issued there is almost as much ignorance on the subject, for it is found that not alone infantrymen, but even cavalymen themselves, frequently misunderstand the duties and capabilities of the service.

Cavalry missions are unchanging; what was true of Hannibal's horse at *Cannae* was true of Montgomery's armor at *Alamein* more than 21 centuries later. In other arms new weapons bring new methods, but cavalry tactics remain unaltered, even though the horse has been replaced today in most armies by the tank, the armored car and the scout car.

Cavalry missions fall into two main groups—*battle roles* and *auxiliary roles*. Curiously, the auxiliary roles are more important than the battle roles. There is a considerable amount of disagreement in most armies concerning the amalgamation of the groups of roles, some experts holding that the same units can fulfill both and others insisting that they cannot. F/M Montgomery, for instance, adheres strongly to the former belief (as do most American commanders), whereas General Martel, late commander of the Royal Armored Corps, argues that Montgomery's method resulted in delays, large casualty lists and frequent reverses for the British during the years 1942-45. The attitude of cavalry officers in this country is rather in support of Martel than of Montgomery, but no definite theory has as yet been formulated.

The *battle roles* are less important than the auxiliary roles, but nevertheless they require some explanation. These battle roles are based upon the characteristics of cavalry—the ability to maneuver and charge. The

"charge" is known as *shock action*.

An attacking army advances until it is halted by the defender. To continue the advance it must remove the obstructing defense. If it cannot do this by mere weight of numbers (which in any event is an uneconomical method) it must do it by maneuver and shock. The cavalry can maneuver, and on account of its armor it can advance into fire. Furthermore, it can sustain its advance longer than the infantry, who must halt and reorganize after each short gain.

However, a frontal attack, even by armored cavalry, is far less effective than a flank attack, and if the enemy is prepared the frontal attack may be easily dispersed.

For this reason the cavalry attack is always applied to a flank. In position warfare, where the defender has had time to establish himself and extend his wings, it is often impossible to find an open flank; continuous lines, such as on the Western Front in 1914-18, are the infantry answer to the threat of the cavalry. Where there are no open flanks for the cavalry to turn, and therefore where maneuver is impossible, one of two alternatives remains—either to make a series of frontal drives, each having a limited objective (these were the tactics on the Western Front in World War I) or else flanks must be created forcibly by concentrated frontal attack, by ruse, or by some other method.

In 1940 there appeared to be no open flank on the "Maginot" Front, but the Germans detected that the Ardennes were not defended and made their main effort through this region. In 1941 the defenses of Crete were extended indefinitely by the British Navy in the Mediterranean; the Germans found an unguarded flank in the air and by airborne landings captured the island. At *Alamein* in 1942 Montgomery was obliged to create a gap in a flankless line by skillful use of artillery and hard slogging by the infantry; only when the gap was secured did the armor go into action. In Normandy in 1944 the British feint against Falaise drew



the Germans from the St. Lô sector, opening the way for Patton's Third U.S. Army to break out and turn the flank of the defenders. These examples are drawn from the "big picture," but in a smaller way lesser formations and individual units employ the same methods for creating flanks which the cavalry then turn and roll up.

The actual tactics of shock—that is, of the cavalry "charge"—are similar to the infantry tactics (the bayonet charge, for instance) but are carried out on a far grander scale. The charge is brought about, individually, by spurring the horse or revving the engine; time has not altered the means. The same rules apply to a cavalry charge as to an infantry assault, alignment must be kept, reorganization conducted, and so on. But cavalry can both cover a wider area and penetrate to a greater depth than infantry because of its mobility. However, cavalry has a number of limitations. It can win ground but cannot hold it or take prisoners. Nor can it exert pressure once its momentum is exhausted or halted. For these reasons cavalry cannot operate for long without infantry support.

The auxiliary roles of cavalry are various. First comes *security*. A force advancing toward an objective automatically assumes the form of a column, and accordingly has open flanks which can be threatened by the enemy. Cavalry is given the mission of covering these flanks. This is done by moving on parallel routes to the main body, remaining always sufficiently near to avoid the danger of the enemy infiltrating between the cavalry and the column, and yet keeping far enough away from the infantry to insure that a clash with a hostile force will not spread to include and hamper those who are being protected. The flank guard usually advances in bounds from objective to objective. Being mobile, cavalry flank guards can halt and deploy as required without falling behind the main force.

A frequently neglected rule with regard to flank protection is that the cavalry command must not under any circumstances be split; that is, one formation cannot cover both flanks at once. The commander must be responsible only for the troops he can control, and he has no control of subunits separated from him by the infantry column.

In defense, cavalry is often given a similar security role of defending the open flank. Mobility permits the cavalry to cover a wider front than infantry and observe any threat to the defender's wing.

A third security role is that of screening infantry, either on the march or in defense. On the march the cavalry advances before the infantry, much in the same method as when on flank guard, clearing away small parties of enemy and preventing attack upon the main body. If the hostile elements become too strong for the cavalry it must call upon the infantry for support, and battle develops.

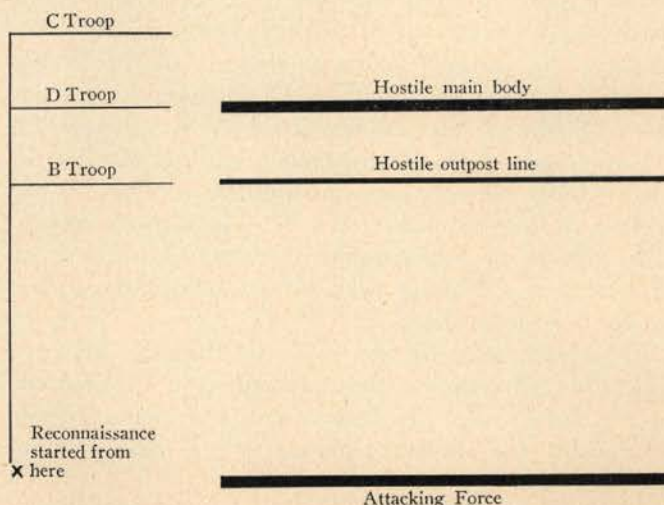
Before a defending or halted force cavalry forms an outpost line, its mission being to delay the enemy and cover and warn the defending infantry. Again the

mobility of the cavalry serves as an advantage, for it can fall back with rapidity. Similarly, cavalry acts as a rear guard for retiring troops, or fights a delaying action.

Another mission given to cavalry is that of *exploitation and pursuit*. When the enemy is defeated and is falling back the victorious infantry cannot maintain contact, for retreat is more rapid than even a victorious advance. It is the cavalry, therefore, which exploits the breach made in the hostile line by the withdrawal of the defeated elements and pursues them. Pursuit in practice generally takes the form of a number of small actions with the hostile rear guard, but under ideal conditions it may be possible to by-pass the rear guard and hit the main forces. In 1941 the Italians, driven from Sidi Barrani, fell back along the Libyan coast. Elements of the British 7th Armored Division cut across the desert to *Beda Fomm*, outmaneuvering the Italian rear guards, and caught the head of the retreating army in ambush. The disorganization thus created was so great that within a few hours 26,000 Italians surrendered and General Bergonzoli's army was virtually annihilated.

The most difficult cavalry task is that of *reconnaissance*. The commander issuing the orders for reconnaissance (that is, the brigadier, divisional or army commander) in practice rarely gives clear and precise instructions about the type of information required, with the result that the cavalry commander is left uncertain as to his exact mission and fails to accomplish it. Reconnaissance orders should be simple, brief and clear and should include not only "what is to be found out," but also "by what time must the mission be completed." General orders requesting the cavalry leader to search broad areas or "reconnoiter to the front" are quite worthless.

Reconnaissance and security missions cannot under any circumstances be combined. A cavalry force on flank guard or screen duties should never be given a secondary task of reconnoitering, for the two roles are contrary. A security mission implies that the cavalry carrying it out is tied to the body which it protects, whereas reconnaissance must be conducted with com-





parative independence from all other formations. Nor should two separate reconnaissance tasks be given to the same cavalry formation.

Reconnaissance missions may vary considerably, so that no general rules regarding the methods of their conduct can be laid down. However, once the mission and time limit are given, the means of accomplishing the task are usually fairly clear. An example of such a mission, which occurred in actual combat, was a request to a cavalry commander to locate the flank of a strong hostile rear guard. The cavalry leader was told the approximate position of the enemy front, and given the information (obtained from earlier patrols) that the hostile line reached as far as a certain point but definitely did not extend to another point. Clearly, the flank which was sought lay between these two points. The cavalry commander issued orders to his subunits to advance on the point where the enemy was *not*, and then instructed them at intervals to turn in toward the enemy. The result was that B Troop took the hostile outpost line in flank, D Troop turned the wing of the main defenses, and C Troop came in the rear of the enemy. The flank was located and surrounded. The cavalry lacked the weapon power to do more than hold isolated defensive positions, but by maintaining contact with the enemy for the whole period the cavalry commander was able to direct the infantry units into the attack. The hostile flank was rolled up by the infantry and the position captured.

It is unnecessary to add that information from reconnaissance must be complete, prompt and continuous, and that contact with the enemy must not be lost.

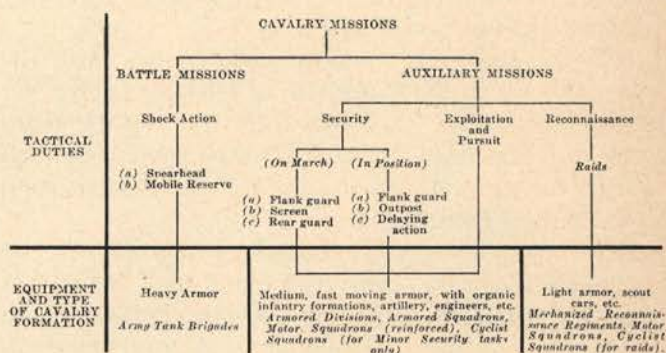
*Raiding* missions are also given to cavalry units chiefly for the purpose of harassing the enemy and gaining information about him. The conduct of raids is mainly similar to the conduct of normal reconnaissance tasks, but where the raiders have to penetrate into hostile territory they must naturally be given complete independence of action. A typical example of a raid—as typical today as when it was carried out—is Sarsfield's attack upon the Williamite artillery train at *Ballineety* in 1690.

At the outset of this article it was mentioned that there is considerable disagreement on the subject of the types of mechanized cavalry units required for the various missions. The battle roles demand heavy armor, the auxiliary roles lighter and more mobile forces. The British organization, developed by General Martel and nominally maintained during the greater part of World War II, provided Armored Divisions of cruiser tanks (British *Crusaders* and *Cromwells* and U.S. *Shermans*), together with an infantry brigade, self-propelled artillery, and engineer and supply services, for auxiliary roles; the battle roles were given to Army Tank Brigades equipped with *Matilda* and *Churchill* "Infantry" tanks. Experience showed, however, that it was almost impossible in actual operations to make available the type of formation designed for the mission in hands; in battle often only Armored Divisions were ready to go into

action, for pursuit the Army Tank Brigades frequently had to be employed. As a result, F/M Montgomery abandoned the idea of maintaining separate establishments, but Martel and his supporters are severely critical of Montgomery's method, holding that a few Army Tank Brigades properly employed would have prevented the heavy losses of armor in the battles of *Alamein* and *Caen*.

For security roles flank and rear guards, screening and outposts, and for exploitation, mobile armor with mechanized infantry support is generally used, while for reconnaissance armored cars and scout cars, with light and medium tanks to add weight and fire power, are most effective. Raiding operations require very light forces—the Cyclist Squadrons which we raised during the years 1940-45 were ideal for such tasks.

A "genealogy" of cavalry missions and the types of formations best suited to accomplish them would read something as follows:



That the missions of cavalry are not clearly understood, even by commanders experienced in action, is shown by Major Hal D. Steward in an article in the May-June, 1946, number of the *ARMORED CAVALRY JOURNAL*. He analyzes the types of missions assigned to 12 U.S. light mechanized cavalry formations (not including Armored Divisions, which during World War II were not treated as "cavalry" in the U.S. Army) with the following results:

Defensive Combat	33%
Special Operations	29%
Security	25%
Offensive Combat	10%
Reconnaissance	3%

For defensive and offensive combat, and no doubt also for many of the "special operations," infantry formations would have been far more effective than cavalry. Accordingly, the U.S. cavalry was wasted in at least 50 per cent of the operations in which it took part.

It is told of machine-gun officers during World War I that whenever they asked the battalion commanders to whom they were attached what they should do with their guns, the reply was, "Go out on a flank and lose them." In less than 20 years, however, commanders learned how to employ machine guns, but after 20 centuries they have still to discover the capabilities of cavalry.



# Polish Armored Cavalry In Germany\*

Translated and digested by the *Military Review* from an article by Major T. A. Wysocki in *Bellona* (Publication of Polish General Staff, London), July, 1946.

AFTER a five-month period of static operations on the Meuse in Holland, the Polish 1st Armored Division crossed into Germany and began operations in the direction of the Frisian Peninsula. The 10th Brigade of Armored Cavalry, a part of this division, covered 240 kilometers in a forced march on the 8th and 9th of April. The Rhine was crossed on a ponton bridge midway between Arnhem and the Ruhr basin. After the crossing, the Division moved northward along the German-Dutch frontier, going into action in the flat, marshy terrain north of the main highway connecting Arnhem, Lingen and Bremen.

On the 10th, the Division made contact with the enemy, between the Canadian 2d Division on the left and the Canadian 4th Armored Division on the right. The 10th Brigade of Armored Cavalry, passing through Enter, Rijssen and Almelo, reached the concentration area north of Balderhaar.

The composition of the brigade was as follows: 1st Armored Regiment; 24th Regiment of Uhlans (an armored regiment); the 9th Infantry Battalion; the 1st Battalion of the 1st Regiment of Antiaircraft Artillery; 10th Light Medical Company (less three detachments), and an armored repair detachment.

The brigade was operating without the 10th Regiment of Dragoons, which was already in action under the division as a detached unit and likewise without the 2d Armored Regiment which was operating with the 3d Rifle Brigade.

On April 10, the brigade received its mission to cross the river Ems on April 12, and go into action in the direction of Papenburg and Leer. The mission of forcing the river fell to the 9th Rifle Battalion. Enemy resistance proved so weak that this formation easily fulfilled its mission with but a part of its forces. On April 13, the 10th Company of Engineers constructed a bridge at Haren. The following day the brigade crossed the river without combat and continued northward on the highway along the river.

## FORCING THE KÜSTEN CANAL

The bridge across the Küsten Canal on the highway leading to Papenburg had been destroyed. It became obvious that the enemy was consolidating his positions on the northern bank over the whole of the brigade's zone of action. All attempts at crossing by reconnaissance patrols were decisively repulsed by enemy fire.

The brigade halted in the concentration area on both

sides of the highway, north of Becklusen, and remained there till April 20.

The brigade had now reached a barrier which blocked entrance to the Frisian Peninsula and two important sea bases, Emden and Wilhelmshaven. This barrier included the Küsten Canal and the belt of marshy terrain and peat bogs lying on the north and south sides of it.

The brigade commander decided to conduct the attack along the highway. The zone of attack was bounded on the east by an unnamed canal running in a north-south direction, and on the west by the Ems river, which flowed along the border of the zone. The width of the sector was three kilometers, increasing gradually until it attained four kilometers at a point opposite the city of Aschendorf. The water obstacle, at the point of crossing, was twenty-five to thirty meters wide. The terrain in the immediate vicinity of the highway and the railroad was suitable for use by tanks, but some roads proved to be too soft, in many places, for Sherman tanks.

The enemy detachments fighting against the brigade were composed of various elements hurriedly combined into combat groups. They showed a decided resistance, although they were not properly equipped with weapons. They effectively demolished roads and bridges, using air bombs buried in the ground. A 500-pound bomb produced a crater 15 meters wide which soon filled with water. This proved to be an obstacle which could not be avoided, owing to the marshy terrain.

The brigade was opposed by the "Gericke" combat group, operating in conjunction with the 7th Parachute Division. Numerically, this group corresponded to one weak regiment (of three battalions), but it was extremely valiant and stubborn in defense. There had been a scarcity of information concerning the enemy because the terrain in the direction of the brigade's attack was a natural fortress, surrounded by water, which had not yielded a single prisoner.

Fighting was still going on on the west side of the river, and on the day the brigade arrived in the concentration area, enemy elements were still to be found south of the brigade's point of debarkation.

On April 14, at 4:30 p.m., a rifle battalion attempted to cross the canal, but failed. The brigade commander decided to repeat the attempt during the night April 14-15, but this also failed.

During the next few days the brigade was reinforced, and on April 18, the day before the attack was to be

\**Military Review*, October, 1947.



renewed, it was composed of the following: 1st Armored Regiment; 24th Regiment of Uhlans; 1st Tatra Rifle Battalion; 9th Rifle Battalion; 4.2-inch Mortar Platoon; 10th Company of Engineers; one platoon of the 11th Company of Engineers; 10th Medical Company; Advanced Repair Detachment from the repair company of the Armored Brigade; one squadron of "Crocodile" flame throwers (British); mortar combat section.

In direct support was the 1st Regiment of Motorized Artillery, and in addition, air support adequate to insure air superiority at the time of crossing and the following day.

The mission remained unchanged; the crossing of the Küsten Canal and the taking of Papenburg.

The main plan of operation included three phases:

1. The crossing, executed by the rifle battalion.
2. An attack by one armored regiment to seize an assembly area for the general attack.
3. An attack by two armored regiments, operating alongside each other.

The fire preparation, air bombing, crossing and seizure of the bridgehead took place exactly according to plan, and almost without losses. The effect of the fire from the flame throwers, the artillery and aviation, was so great that the enemy was positively paralyzed, and at the time of crossing offered practically no resistance.

The crossing began at 10:30 a.m., and by 1:15 p.m. the bridge was ready and the armored squadron crossed over. The construction of this bridge represented an unusual accomplishment since in 55 minutes time a 50-foot bridge with a capacity of 40 tons was built under fire. The enemy twice attempted counterattacks with infantry which were repulsed. In another unsuccessful counterattack, the resistance of the enemy was completely broken and a total of 380 prisoners, including the commander of the battalion, were taken.

Our own losses were seven killed and 14 wounded.

The 1st Armored Regiment set out at 4 p.m., crossed the bridgehead and engaged the enemy. The antitank guns were brought into action and the attack of this regiment became a slow methodical fire fight as the enemy moved on to the north. During the night the engineers constructed a crossing of the Dever.

#### BATTLE FOR ASCHENDORF

The 1st Armored Regiment resumed the attack on April 20, and at midday headed in the direction of Aschendorf. The terrain was suitable for tanks, and squadrons were able to deploy. Movement was not easy, however, owing to increased antitank defense. The fighting became a typical tank battle, with the adversary well equipped with antitank guns and artillery which were delivering an incessant and fairly dense fire from somewhere in the area northeast of Aschendorf. The air force, however, eliminated the artillery.

The "Konstanty" formation (24th Uhlan Regiment with other detachments) operating alongside the 1st Armored Regiment, encountered only weak resistance,

but bad terrain slowed the rate of advance. The boggy roads gave way under the weight of the tanks. The columns were broken up, and two or three enemy antitank guns completely paralyzed movement. About noon, however, the canal was reached and two crossings suitable for use by tanks were seized.

Meanwhile, the action of the left wing was developing very well. At 11:30 a.m. the attack on Aschendorf began, and at 1:30 p.m. the 1st Armored Regiment reached a point even with the city. About this time, the "Konstanty" group arrived and engaged the enemy on the highway. This action cancelled the plans of the enemy to withdraw to the northeast under the protection of his antitank guns. The "Konstanty" group advanced, reached the Aschendorf-Papenburg highway and seized the undamaged crossing over the canal, almost within the suburbs of Papenburg.

This action sealed the fate of Papenburg which the enemy was now unable to defend, and the following day he surrendered the city almost without fighting.

The 1st Armored Regiment continued the battle of Aschendorf under difficult conditions. The city was on fire, and the enemy's routes of retreat having been cut, he now defended himself in the buildings. But resistance was gradually liquidated, and the regiment moved on to the final phase of action assigned for that day, the capture of the Tunxdorf woods in the bend of the Ems river northwest of Aschendorf. This action aimed at securing the left flank of the brigade for action against Papenburg the following day.

By evening of April 20, it was plain that the brigade had completed its mission. The Küsten canal, as an obstacle, had lost its value over its entire length and the forces fighting to the right of the brigade now needed only to construct a bridge and then cross over for further action in the Frisian Peninsula.

The entire operation, including the crossing of the canal and the capture of Aschendorf, was carried out in accordance with plans and with efficient cooperation between the armored brigade and supporting weapons.

Among the more important features of this action were the following:

1. Attempts at crossing by brute force did not succeed, but further preparation in the form of special reconnaissance and careful elaboration of the plan of operation gave positive results.
2. The artillery and air preparation lasted scarcely twenty minutes, but was so concentrated that the defenders were stunned and knocked out of the battle for the time required to cross the canal and establish the bridgehead.
3. The air force played a very important role. The bombings at the time of the fire preparation were executed with precision and extreme accuracy, very close to our own forces. The air effort on the first day was 145 sorties and on the following 70.
4. The "Crocodile" flame throwers rendered enormous service, both during the crossing and the tank attack. They were perfectly adapted for "smoking out"



the enemy from his positions in buildings, and in shrub-covered terrain, also when dug-in or hidden in shelters.

5. The correctness of the principle of "fire terror," which our armored formations had adopted from experiences during the previous year, was confirmed. This consisted of fire from all armored vehicles, delivered on everything in the terrain that might be the hiding place of some enemy weapons, whether confirmed or only possible.

6. One group operated in bad terrain where advance was possible only over roads which could bear the weight of a tank in spite of hard surface. Thus, the enemy with demolitions was able to check the speed, shock and maneuverability of our tanks.

7. Placing a combat group under the command of the assistant commander creates certain staff difficulties. The commander of the formation must be given means of command. A staff must be created for him similar to the staff of the brigade.



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# THE LIPPIZANERS\*

## Royal Horses of Austria

by H. H. Douglas

### CONCLUSION

FROM the preceding instalment of "The Lippizanners" it is clear that when, in 1580, Archduke Karl set out to establish a superior breed of horses he picked his principal stock from the three most superior breeds then in existence—the Andalusians, the Italians, and the highly esteemed and world famous Arabs. Some Danish and Kladrub stock was also introduced, but the three just mentioned have always exerted the pre-eminent influence, with the Arabs responsible for establishing the dominant white. In addition to the bays, browns, blacks and grays mentioned earlier there have been Lippizans of a light yellow color, as well as white horses with rather large black spots. There is no albino strain, the skin, nose and hoofs being black. The horses bred from these strains form a speedy, elegant, tough and durable type with dry, well-formed bones and well-rounded bodies, though, depending upon the predominant blood of the particular mixture, the figures of the horses may vary. As quick and durable riding horses they are unexcelled, but there is little evidence that they have been used extensively as cavalry horses.

The horses of Lippiza were extremely beautiful and well built, and surely the Royal Stables at Vienna needed beautiful carriage and riding horses, the latter especially for their luxurious riding ceremonies. Therefore the breeding in Lippiza was given special attention, and the whole stable built up by the most rigid standards.

It is hardly possible in an article of this kind to give any sort of an adequate idea of the beauty and remarkable qualities of the horses of the pure Lippizan strains bred with such loving care for more than 350 years. Milk-white at maturity, they have a strong, proud head, with deep, dark eyes, velvety nostrils, an unusually short and regularly formed throat, gracefully curved neck, white mane and tail, broad, beautiful breast, back relatively long, the flanks well closed, and light, power-

ful legs which make the grace and rhythm of their movements, whether at play or at work, as natural as their breathing.

Their intelligence and understanding is remarkable, and once their training begins it seems almost as though they already know just what to do, needing but the gentle commands and signals of the rider or driver to bring forth a perfect performance. The instinct to obey, to submit themselves to the will of man, seems to have been a part of the Lippiza breeding. A rider or driver invariably holds a whip, but never uses it except for the gentlest of signals.

Among early stallions used at Lippiza we find the following mentioned: *Cordova* (1701); *Lipp* (1717), a white horse from the stud of Lippe-Bückeburg; *Pluto* (1772), original Danish white horse from the old Fredericksborg Stud; *Conversano* (1774), original Neapolitan black horse; *Favory* (1779), dun horse from the Imperial Kladrub Stud; *Maestoso* (1773), white, from the Kladrub Stud; and *Neapolitano* (1790), original white Neapolitan. Besides these horses, there were also a number of original Arab stallions, some bred purely, and some crossed with Karst mares. Especially eminent among the Arabs was the white horse *Siglavry* (1816), because he formed with Karst mares what is still a highly respected stem. This original Arab was taken as booty by Field Marshal Prince von Schwarzenberg after the Battle of Leipzig and sold to the Lippiza Stud.

Since it was felt that an insufficient amount of Arab blood had been used not only at Lippiza, but in the other Austrian and Hungarian studs, in the year 1856(?), by order of the Emperor, a great expedition to the Orient was undertaken under the leadership of Colonel Rudolf Ritter von Brudermann to buy original breeding horses. In Syria, Palestine and the Bedouin deserts 16 stallions and 18 mares were bought. After an absence of ten months the mission arrived in Trieste June 22, 1857(?), with an addition of 14 foals. The



following day the horses were unloaded from the boat and taken to Lippiza and Prestranek. In the Lippiza Stud the two stallions, *Samson* and *Hadedi*, remained, along with 16 mares and one colt. The remainder of the shipment went to the stud at Bábolna, Hungary, over which Colonel von Brudermann was simultaneously placed in charge.

With these horses, and with the original Arab stallions, *Gazlan* and *Saydan*, brought to Lippiza a few years earlier, Arab full-blood breeding was undertaken, producing good, beautiful and noble animals. But in the heavy carriage service in Vienna these fine Arab horses could not compare with the robust Karst race. For this reason the full-blood breeding was given up. The Arab stallions were then used only for crossing with Karst mares, and here the Arab blood proved itself. Since 1870 only Karst or Arab stallions have been used.

The six stallion stems mentioned earlier are still bred at the present time—*Pluto*, *Conversano*, *Favory*, *Neapolitano* and *Maestoso*, with the successors of the original Arab *Siglavry* being used for the crossings. The *Pluto* stem, with no mixture of Arab blood, is the most robust of the Karst horses. All the other stems are more or less mixed with Arab blood—the *Conversanos* and *Maestosos* with *Siglavry*; the Neapolitans with *Gazlan*, and the *Favorys* with *Ganaghi* and *Gazlan*.

The year 1580 marked the beginning of what came to be the illustrious Lippizaner breed which eventually came to exert such a strong influence in the horse breeding of that part of the world, and which came to be the most preferred horses at the Austrian Court in Vienna. So distinctive and remarkable did they become that when the Spanish Riding School (so-called because the original Lippiza horses came from Spain), begun in 1729 as a wing of the Hapsburg Palace, and completed in 1735, was opened, none but Lippizaners were ever ridden there, and they quickly came to be a symbol of the pomp and circumstance of royalty.

It is sometimes stated that the Spanish Riding School got its name because of the Spanish style equitation practiced there. This version can hardly be true since Antonius de Pluvinel de la Baume (1555-1620), Europe's most finished horseman and riding master of the French Duke of Anjou (Henry III) early in the 17th century, received his training and early experience in Italy. Later, in the reign of Henry IV, he founded a riding academy near Paris for the training of royal horsemen. It was in Italy that he secured the background and experience which enabled him to prepare erudite and voluminous works on the art and science of fancy equitation—"*Maneige royal*." Paris, 1623. A grand folio with 66 plates; "*L'instruction du roy, en l'exercice de monter à cheval*." Paris, M. Rvette, 1625 and 1629; and "*L'exercice de monter à cheval, ensemble le maneige royal*." Paris, Chez E. Loyson, 1660. The latter also bears the name of René de Menou, Sieur de Charnizay, who edited and arranged for the publication of the earlier editions.

It is not unlikely that Pluvinel originated the idea

of establishing the Riding Academy "for the training of imperial, royal and aristocratic horsemen for martial and private purposes," but it was not until over a hundred years later that the idea actually took shape. There seems to be no indication that William Cavendish, Duke of Newcastle (1592-1676), had any part in originating the idea of the Riding School, but his books, together with those of Pluvinel, under whom he studied as a youth, were basic works in the development of the Vienna Academy. It seems hardly a coincidence that a second edition of one of his books, a handsome highly illustrated folio—"*Methode et invention nouvelle de dresser les chevaux*"—was published in 1737 just two years after the opening of the Reitschule. His first volume was published in French in Anvers (Antwerp) in 1658; the second was in English and published in London in 1667, later (1671) to be translated and published in France, where it was considered a classic. The title of the English edition is "*A new method and extraordinary invention to dress horses, and work them according to nature; as also to perfect nature by the subtlety of art; which was never found out but by the thrice noble, high, and puissant Prince, William Cavendish . . . etc.*"

The Riding Academy has remained essentially unchanged since the court architect, J. Fischer von Erlach the younger, saw the building to completion in 1735, though it underwent some alteration in 1850. The Reitschule became at once one of the show places of Vienna, and royal visitors were always honored with a riding demonstration. Theodore Roosevelt was also so honored by Emperor Franz Joseph. The Riding School was a familiar place to Schubert, and to Johann and Oscar Strauss where some of their music was first introduced. At one time Franz Lehar was leader of the band. Music is an inseparable part of every performance. The horses not only have an incredible sense of rhythm, going through the equine ballet with perfect grace and timing, but they seem to enjoy the music as much as humans. They have a peculiar grace in all their actions, emphasized when trotting or running, by which they seem to be beating time to an inner music of their own.

The Lippizaners, in common with other white breeds, are born black. In their second year they turn gray, in their third silver, and at the end of their fourth year they are nearly always pure white. It was when they were four that the chosen ones went to the Riding School. The others became riding or coach horses for the Imperial Household. The Lippiza Stud also furnished white or gray post horses for the Royal stables. These horses, though elegant and very speedy for general usage and endurance were not bred very high at Lippiza, being chosen from the breeding of Arab stallions with heavy Kladruber mares.

The Lippizaners have traditionally been branded with a small L on the left jaw, and during the reign of Franz Joseph they were also marked with a small FJ on the chest. The Lippizaners mature slowly, normally



taking about seven years, but remain in service a correspondingly longer time. It is not unusual for a horse of 25 years to be able to perform the strenuous routines of the Riding School, and the Pepinier stallion *Maestoso-Bresovica*, who was retired shortly after World War I, in his last year of service successfully bred fifty per cent of the mares covered by him.

World War I not only saw the end of the Hapsburg Monarchy and the eclipse of the Riding School, but it resulted in the ceding of the Istrian Peninsula to Italy. A part of the horses also went to Italy. These were taken to the island of Sardinia where, within a relatively short time, they all perished of a virulent breast disease. Those remaining in Austrian hands were moved to Piber (established in 1798 under Joseph II). Some figures give the number transferred as low as 3 stallions and 38 mares. Whatever the figure may have been there were, in 1936, according to Prof. J. W. Amschler of Vienna, 22 stallions and 53 mares of all ages at Piber. (In 1868 Piber housed 91 Lippizan stallions.)

When they were moved from Lippiza, deeply concerned about the future of the breed, Count Franz Esterhazy bought some of the most prized of the Lippizan carriage horses. He wanted to see the breed perpetuated and dedicated the three best pair of each generation to the Hapsburg who would some day, he was certain, return to rule over Austria and Hungary. For many years a bit of the glory of the Vienna Riding School was to be seen at his estate at Tatatovaras, a short distance west of Budapest. He also held annual sales there.

Not long after the end of World War I the Vienna Riding School reopened and in the latter part of the 1920s was listed by Baedeker as one of the tourist attractions of Vienna. It continued to function, though not without difficulty, until the German Anschluss in March 1938.

A few months after the conquest of Austria the German army sent a delegation of officers to Piber to determine what might be done with the Lippizans. Nothing, apparently, was done until 1943, when they moved them all to an army breeding institute at Hostau, a short distance southwest of Pilsen in Czechoslovakia.

The 2d Mechanized Cavalry Regiment of American Third Army seized Hostau on April 28, 1945, finding there about 247 Austrian Lippizans, including a few which may have come from Yugoslavia. The words of then Capt. Thomas M. Stewart, son of Senator Thomas Stewart of Tennessee, in a letter to the writer dated May 12, 1947, best describe the events immediately preceding the seizure.

"On about the 26th of April 1945 a German veterinary surgeon, Capt. Rudolf Lessing, entered our lines with the information that the Austrian Lippizan herd and some valuable Arabs, Kabardiners, Dons and Thoroughbreds were located at Hostau. (How the original contacts were maneuvered is still a military secret.)

"Colonel Charles H. Reed, my commanding officer, sent me to determine the presence of the horses and the

strength of the enemy defenses. With Lessing as guide I evaded the German outposts during the night and went to a small village across the Czech border where his servant waited with horses for the remainder of the trip. I rode a black Lippizaner stallion. This horse and one dark brown mare were the only horses in the herd that were not uniformly white in color. I found him a spirited and remarkably intelligent animal, responding as if he had always been accustomed to carrying me. I also jumped him across a small abatis about three feet high and five feet wide before the shocked Lessing caught up and informed me that the Lippizaner was not a jumping horse.

"In Hostau I made arrangements for the surrender of the Depot, and returned in the same manner to my outfit. We easily broke through the German lines, and Colonel Reed left me with a reinforced Cavalry troop to occupy Hostau.

"About ten days after V-E Day (May 8) I moved the Lippizans, Arabs, and some of the Thoroughbreds, about four hundred horses in all, across the Bavarian border to the vicinity of Cham (south of Hostau). This was a day's trek through the country for all except mares with very young foals, which were trucked. From Cham 14 mares (including *Madera* and *Saffa*) with 6 foals, and the stallions *Siglavý-Virtuosa* and *Neapolitano-Slavonia I*, were shipped to Mansbach (a short distance southwest of Eisenach), Germany, for possible shipment to the United States.

"During the last week in May we moved the Lippizans by truck to Austria, where they were turned over to General William Collier, Commander of the 20th Corps, and to Colonel Podhajsky, of the Riding School of Vienna, near Wels, between Linz and Lambach.

"In all there were about 88 mares with 60 foals, and 7 stallions of the Spanish Riding School (Hauptbeschäler, they were called). Of the other stallions there were 10 three-year olds, 8 two-year olds, and 24 yearlings. The fillies: 8 three-year olds, 17 two-year olds, and 14 yearlings, 235 altogether were delivered to Austria."

Capt. Stewart has also said that the black stallion he rode came from King Peter's Yugoslavian Stud. The brown mare he mentions may have also come from Yugoslavia.

Piber, the prewar home of the Lippizans, is in the British Zone, and Vienna, itself segmented, is in the heart of the Soviet Zone. Professor Johann W. Amschler, associated with the Riding School since about 1935, and professor of breeding at the Vienna Hochschule für Bodenkultur, is the principal breeding advisor for the Lippizan Stud.

At the time of the restoration ceremonies General Patton himself rode the Lippizan that had been selected by Hitler to be presented to Emperor Hirohito of Japan. Patton did better than Halsey.

Austria will continue to breed the regal Lippizans, not out of nostalgia for the past, but as a valued and cherished part of their national culture and heritage.



# Armored Division Associations

## 11th Armored Division

Response to the 1948 dues post card and Newsletter has brought us gratifying results—but there are still a lot of members from whom we have heard nothing.

Requests have been sent to all the local chapters for news of their meetings but we haven't as yet received much news from them. We realize there is quite a bit of work in organizing chapters and we know after they get running smoothly, we will have news in each issue of the JOURNAL.

At the New York Chapter meeting on October 3, the following members were elected: Arthur Shapiro, president, Robert D. Millar, vice president, Russel V. Bancker, secretary, William Reap, assistant secretary, and Oliver Johnson, treasurer. George D. Halprin, president of the Association, was unanimously elected honorary president of that chapter. Incidentally, congratulations are in order for the Halprins, who became the proud parents of a baby boy named Albert Philip, born October 18.

Plans for the convention were discussed and tentative dates of August 12, 13, and 14 were set. The Hotel Commodore was announced as probable headquarters for the event. We will have full details for you later on as to the prices of rooms, deadline for reservations, etc.

John Healy of the Minnesota Chapter plans for a meeting of that chapter for the latter part of November.

A Detroit Chapter should be formed soon. Several fellows are interested in organizing that territory and they should get together within the next couple of weeks.

General "Ted" Brooks assumed command of the Antilles Department September 15th.

"Pete" Kilburn is working on a radio program for the west coast listeners—we don't know just when he makes his "debut" on the air, but here's wishing him luck.

Clark E. Bennett (56 Eng) of Endicott, N. Y. thanks us for helping him to get his Bronze Star Medal.

Major "Mike" Greene (41 Cav) at Fort Knox tells of a get-together at Colonel Robbins' quarters. Lieutenant Colonel Joe Ahee, Chaplain Kinsler, Major Cunningham, Major Siemers, Lieutenant Colonel Brady, and Major Ralph Gray with their wives were among those present.

Lieutenant Colonel Raymond Lumry ordered 8 copies of the History—five to be given to families of members killed in his battalion. He is now with an Amphibious Training Unit in Coronado, Calif.

Edward J. Martin of the American Disabled Veterans in Boston, offers assistance though facilities of his office for members of the association residing in New England. John M. Gaskell (55 AIB), Newtonville was in Washington and obtained addresses of some buddies.

Robert Shickert (55 AIB), Pittsburgh, Pa. also paid us a visit and gave us some names of the 55 AIB. Miles Butler and Franklin Eaton also sent lists.

Lewis Conine (151 Sig) hopes to get a Philadelphia chapter going. Clarence (Eastern Airlines) Torrey of Chicago visited him in Philly recently. Don Casanova (Trns) is now singing in a night spot in Miami, Florida.

Homer B. Walker (A Btry. 490 AFA), 1208 Seventh Ave. Charleston, W. Va. wants to hear from his buddies in that outfit. He was shipped back to the U.S. after being wounded in action and has lost track of them.

F. Rod Smith (56 Eng) of Rochester, N. Y. writes that he enjoyed reading about the convention and will break his neck to meet with the old gang in New York next year.

Our thanks to the new subscribers as well as those who have been taking the JOURNAL for some time. We want all the news you believe would be interesting to other members. This column is published for your interest—so send us some news for the next issue of the JOURNAL. It should be in our hands by December 15th.

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## 12th Armored Division

Approximately 1,000 former combat veterans of the 12th Armored "Hellcat" Division, hailing from all sections of the country, met on September 13-14 at the Hotel Commodore, New York, for their first reunion since inactivation of the Association at Heidenheim, Germany, in September, 1945.

Main points of the convention were the election of a new executive council and Association officers for the year 1947-48. Jean Norton of Beaver, West Virginia, was elected president, with William R. Comfort of Cleveland, Ohio, as vice president. During the regular business session it was decided that the second annual convention would be held in Chicago, during September, 1948. The exact dates in September will be announced later. Following the business meeting all members and their wives were entertained at a dance and cocktail party given by the Association.

An elaborate banquet held at the Hotel Astor on the last evening of the convention was the highlight of the reunion. Lieutenant General Raymond McLain, Chief Liaison Officer of the Department of the Army to veterans' organizations, was the guest speaker of the evening. Following General McLain's address, guests were entertained with a two-hour floor show.

All former members of the Division interested in joining the Association are invited to contact the Association Secretary, C. P. Chapman, at 815 Rosedale Avenue, Bellefonte, Wilmington, Delaware.



# THE BOOK NOOK

Prices of all books advertised in the *Armored Cavalry Journal* are subject to change without notice. This is because of the increase of cost of production in publishing books that is being experienced by all publishers.

**LUCKY FORWARD.** By Colonel Robert S. Allen. The Vanguard Press, Inc. \$5.00.

It is quite evident in this book that General George S. Patton, Jr., is the hero and idol of author Colonel Robert S. Allen. Never has a more favorable book been written about a general and his army than *Lucky Forward*, the story of Patton's Third U.S. Army.

This is another one of those adolescent books on World War II reminding one of the little boy who screams, "My daddy can lick your daddy," etc.

If General Patton was ever wrong or if he made any mistakes during his command of the Third Army, the author of *Lucky Forward* has failed to mention them. General Patton, according to Colonel Allen, fought a faultless war against the blunderings of other American and British commanders, especially General Eisenhower and Field Marshal Montgomery.

On page 25 the author states, "It is not an exaggeration to state that Patton fought two wars in the ETO; one against the enemy and one against higher authorities for the opportunity to fight the enemy."

Throughout the book Colonel Allen displays his passionate hate of rear area service units. Although these units did their share in helping win World War II, Colonel Allen certainly gives them no credit. According to him they spent most of their time hindering the battle efforts of the Third Army.

Whatever may have been the underlying motive of the author in writing this book is not known. It certainly has added little, if anything, to the factual history of the war, and furthermore the deeds of a successful general stand alone without adolescent ramblings printed in book form for which the purchaser pays five dollars.

Sorry, but in fairness to the intelligence of our readers, this book cannot be recommended as good reading.

**I REMEMBER DISTINCTLY.** Assembled by Agnes Rogers With Running Comment by Frederick Lewis Allen. Harper and Brothers. \$5.00.

This book contains 500 of the most candid pictures in existence and 37,000 words of running commentary on the everyday life and dramatic events, the scandals and the heroics, the hijinks and the tragedies, the hopes and fears of the whole wonderful era between World War I and World War II.

Designed primarily for entertainment, this book is a valuable addition to anyone's library. It brings back memories of some of the greatest times in American history. There are pictures of Babe Ruth in his baseball heyday, the Hall-Mills case, the Bank Holiday, the Lindbergh kidnapping, the Hollywood idols, and hundreds more. Every picture brings back a memory to the reader.

**COMPANY COMMANDER.** By Charles B. MacDonald. The Infantry Journal Press. \$3.00.

Charles B. MacDonald came to the 2nd Infantry Division as a replacement company commander in September, 1944—and stayed with an infantry company (with time out for a wound and evacuation) for the rest of the war. *Company Commander* is his story—and by the time you've finished it, the men of Company I and Company G will be your friends, and winter warfare an old experience of your own.



# WAR AS I KNEW IT

By GENERAL GEORGE S. PATTON, JR.

**\$3.75**

Contained in this book are the rules and principles forged from General Patton's fighting experience in three wars, principles which constantly illuminate his thoughts and actions. It is the book that all students and believers in General Patton and his Third Army have been waiting for. Most of the book has been written from the diary that General Patton kept from July, 1942, until December 5, 1945, four days before his fatal accident.

**Order Your  
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*War As I Knew It* includes an account of the Third Army's campaign that is prefaced by a group of open letters from North Africa and Sicily, letters about the non-military aspects of Operation "Torch" and Operation "Husky" and is followed by two chapters in more personal vein. "Reflections and Suggestions" is the distillation of the General's military philosophy, and the last chapter, "Earning My Pay," is an account of the tight spots in his long military career.

**This Book Will Make A Splendid  
Christmas Gift**

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This is one of the outstanding books so far written on combat experiences of the past war. It is a book to be read by soldier and civilian alike.

In his preface, MacDonald says of his book, "The characters in this book are not pretty characters. They are not even heroic, if lack of fear is a requisite for heroism. They are cold, dirty, rough, frightened, miserable characters; GIs, Johnny Doughboys, dogfaces, footsloggers, poor bloody infantry, or as they like to call themselves, combat infantrymen. But they win wars." And, as the author says, it really is their story.

No better book on the soldier in the front lines has yet been written than *Company Commander*.

It is highly recommended reading.

✓ ✓ ✓

**ADVERSARY IN THE HOUSE.** By Irving Stone. Doubleday & Company, Inc. \$3.00.

Based on the life of Eugene V. Debs, this novel is a blazing story of love and devotion.

The book tells of the many years that Eugene Debs fought not only man's inhumanity to man, but also the adversary in his own house, an adversary to whom he was completely devoted.

Eugene Debs was driven by an overpowering dedication to the cause of the workingman, a dedication stronger even than love. It prevented him from marrying Gloria, the woman he loved. Years later he married a striking and determined woman named Kate Metzger.

To the very end, through Debs's public trial and the shame of his imprisonment in Atlanta penitentiary, Gloria's love never wavered, Kate's opposition never diminished.

✓ ✓ ✓

**PERSONAL RESEARCH AND TEST DEVELOPMENT IN THE BUREAU OF NAVAL PERSONNEL.** By the Staff, Test and Research Section in Cooperation with N.D.R.C. Edited by Lieutenant Commander Dewey B. Stuit. Princeton University Press. \$7.50.

This book is an evaluative summary of the research in selection, classification, and training of personnel conducted by the U.S. Navy's Bureau of Personnel. As a case history of the application of modern technique to complex personnel problems, this study will be useful to psychologists in military organizations, educational institutions, public personnel administration, business, and industry.

The book is a detailed account of the experience of one personnel research organization with the use of some distinctly new and other established techniques to the varied problems of military selection, classification, and training.

✓ ✓ ✓

**AMERICA AND WAR.** By Colonel Marion D. French. The Military Service Publishing Company. \$5.00.

Here is an important military history that interrelates the history of the United States with the history of its armed forces.

Throughout his absorbing account of America and War, Colonel French carefully weighs, balances and analyzes the perpetual pull-and-push between conflicting influences; the social against the economic, the liberal against the conservative, the political against the military, the isolationist



against the expansionist; and interprets the effect these struggles have had on America's history.

By drawing a combined picture of the significant influences on American history—never forgetting the very important military and naval aspects which practically all general historians have ignored—Colonel French has for the first time set the whole historical scene in perspective. Minor, and generally forgotten, events are shown in their true relation to the whole scene of American history.

✓ ✓ ✓

**NOW HEAR THIS!** By John J. Motley and Philip R. Kelly. The Infantry Journal Press. \$4.00.

In this book the authors have tried, according to their Foreword, to pull together in a narrative form the chronological actions of representative ships of every type in the U. S. Navy. Included in the book are the fighting records of many great American naval ships, both large and small.

✓ ✓ ✓

**STRATEGY IN WORLD WAR II.** A Strategic Examination of the Land Operations. By Lieutenant Colonel Alfred H. Burne, British Army Retired. The Military Service Publishing Company. \$1.75.

After pointing out that the advent of the Atomic Bomb has not necessarily changed the aspect of war, Colonel Burne deals with land strategy so far as the subject can be isolated. This book should be in the library of every student of military strategy.

✓ ✓ ✓

**PRIZE STORIES OF 1947.** The O. Henry Awards. Edited by Herschel Brickell. Doubleday & Company. \$3.00.

This is the twenty-ninth annual volume of the best of American short-story writing. Mr. Brickell has written an introduction appraising the short-story scene and the prize winners.

✓ ✓ ✓

**THE GREAT TIDE.** By Rubylea Hall. Duell, Sloan & Pearce, Inc. \$3.50.

*The Great Tide* tells the story of a boomtown Gulf port, of plantation life on Florida's fabulous West Coast in the 1830's and '40's, and of a tempestuous, unforgettable woman, Miss Carolina Cohran. The story sweeps across 10 adventurous, tragic years of Caline's life in the exciting, flamboyant, doomed city of St. Joseph, and later at magnolia-scented Greenwood plantation.

✓ ✓ ✓

**OPERATION VICTORY.** By Major General Sir Frederick Francis de Guignand. Charles Scribner's Sons. \$3.75.

The Chief of Staff to Field Marshal Montgomery has written an important historical book on World War II.

General de Guignand begins his story in 1937 when he was a major entering upon his first staff assignment with the British Army. An outline of the operations of World War II in which he had a hand, de Guignand devotes much of his book to the staff work that went on, the planning and coordinating measures necessary to the efficient conduct of war.

## EVERY AMERICAN SHOULD READ



By Colonel William C. Braly

What happens when an officer of the United States Army, a man who has spent his life in the service, and is known and respected from Corregidor to Fort Williams, Maine, is told he is lower than the lowest Japanese private? How can he keep his self-respect when he is slapped, with or without provocation, by any stray Jap soldiers who happen to pass by? How can he keep his sense of humor when he is shivering in rags, underfed, overworked?

Colonel William C. Braly answers these questions—and poses many more. In *The Hard Way Home* he tells of the privates and noncoms who inflicted suffering on Americans in contravention of all the rules of warfare. He brings home the fact that the Japs responsible for brutality were the "Japanese people" that are being forgiven for their sins today.

**\$3.50**

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# TWO NEW AND IMPORTANT HORSE BOOKS

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## The Horse of the Desert

By W. R. BROWN

\$10.00

*The Horse of the Americas* gives the first comprehensive account of the arrival, spread, and development of the Spanish horse in the New World. In addition to the historical account, Mr. Denhardt discusses breeds, types, strains, and colors. Appended is material on the evolution of the Western saddle, brands, the rodeo, and the American Quarter running horse.

*The Horse of the Desert*, written by America's greatest authority on the subject, is the only book on the Arabian horse now in print. It contains: an extensive list of the principal Arabian tribes, sub-tribes, and clans; the most complete and authoritative list of the strains and families of the Arabian horse; the largest bibliography on the subject; a map showing the regions most suitable for breeding horses in the United States, and the Arabian ancestry of most of the present-day breeds.

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WEST POINT. By John Crane and James F. Kieley. Whittlesey House. \$6.00.

In a colorful, descriptive text and 600 beautiful photographs (4 in full color) is caught the essence of life at the United States Military Academy—the classes, the dress parades, the physical training, the colorful history and traditions. The perfect book for past and future graduates of West Point. Foreword to the book is written by President Truman.

THE 91ST INFANTRY IN WORLD WAR II. By Major Robert A. Robbins. The Infantry Journal Press. \$5.00.

This book includes a short history of the 91st Infantry Division in World War I as well as the story of its training and combat service in World War II from activation on August 15, 1942, at Camp White, Oregon, to inactivation on December 1, 1945, at Camp Rucker, Alabama.

WHERE I STAND. By Harold E. Stassen. Doubleday & Company, Inc.

In this book Mr. Stassen, announced 1948 presidential candidate, has set down the nucleus of his political beliefs against a background of personal experiences.

The book in 12 chapters covers: 1. Bayonets Vs. Pickets; 2. On the Other Foot; 3. The Russians and Our System; 4. Sergei of Sverdlovsk; 5. Communists in America; 6. The Fair Balance; 7. The Minnesota Labor Law; 8. Dynamic Capital; 9. Housing; 10. The Health of America; 11. Small Business; and 12. In Summation.

In his Foreword to the book, Mr. Stassen says, "I know of no way to advocate ideas without expressing them. I believe in the principles set forth in this book. I urge them upon my countrymen regardless of my political fortune or misfortune."

WAR AS I KNEW IT. By General George S. Patton, Jr. Houghton Mifflin Company. \$3.75.

Contained in this book are the rules and principles forged from the General's fighting experience in three wars, principles which constantly illuminate his thought and actions. It is the book that all students and believers in General Patton and his famous Third Army have been waiting for.

Most of the book has been written from the diary that General Patton kept from July, 1942, until December 5, 1945, four days before his fatal accident.

From his childhood, George Patton had one absorbing interest—the military art. His life culminated in history's greatest opportunity for the practice of this art. His memoirs have the interest which always is found when an intensely human expert writes of the field to which he has given the unswerving devotion of his life.

The account of the Third Army's campaign is prefaced by a group of open letters from North Africa and Sicily, letters about the non-military aspects of Operation "Torch" and Operation "Husky" and is followed by two chapters in more personal vein. "Reflections and Suggestions" is the distillation of the General's military philosophy, and the last chapter, "Earning My Pay," is an account of the tight spots in his long military career.



THE HORSE OF THE AMERICAS. By Robert Moor-  
man Denhardt With a Foreword by J. Frank Dobie.  
The University of Oklahoma Press. \$5.00.

Here is the first comprehensive account of the arrival, spread, and development of the Spanish horse in the New World. From the time that Columbus planted the seed stock in the West Indies, through the period of the Conquest of both North and South America, to the cow horse of the late nineteenth century and the modern Quarter Horse, Robert M. Denhardt has told the story of the Western mount.

In addition to the historical account, Mr. Denhardt discusses breeds, types, strains, and colors—Palominos, Appaloosas, Pintos, Albinos, and others of North America; *Costenas* and *Cholas* of Peru; *Criollos* of Argentina, Uruguay, and Brazil, and the *Caballo Chileno*. Appended is material on the evolution of the Western saddle, brands, the rodeo, and the American Quarter running horse. There are also lists of modern horse associations and a "family tree" of the four famous families of Quarter Horses.

✓ ✓ ✓

THE HORSE OF THE DESERT. By W. R. Brown. The MacMillan Company. \$10.00.

Written by America's greatest authority on the subject, it is the only book on the Arabian horse now in print.

It contains: an extensive list of the principal Arabian tribes, sub-tribes, and clans; the most complete and authoritative list of the strains and families of the Arabian horse; the largest bibliography on the subject; a map showing the regions most suitable for breeding horses in the United States, and the Arabian ancestry of most of the present-day breeds.

W. R. Brown, the author, was president of the Arabian Horse Club of America for many years, and a member of the United States Remount Council.

✓ ✓ ✓

ADMIRAL HALSEY'S STORY. By Fleet Admiral William F. Halsey and Lieutenant Commander J. Bryan. McGraw-Hill Book Company, Inc. \$4.00.

This is Admiral Halsey's own story of the war in the Pacific. It is the Admiral's own intimate report to the nation.

✓ ✓ ✓

THE ORGANIZATION OF THE GROUND COMBAT FORCES. By Kent Roberts Greenfield, Robert R. Palmer, and Bell I. Wiley, of the Historical Section Army Ground Forces. Historical Division, Department of the Army. \$3.65.

This volume is the first to be published in the series THE UNITED STATES ARMY IN WORLD WAR II, and the first in the sub-series THE ARMY GROUND FORCES. All the volumes will be closely related, and the series will present a comprehensive account of the activities of the Military Establishment during World War II.

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*"The Key to America"*

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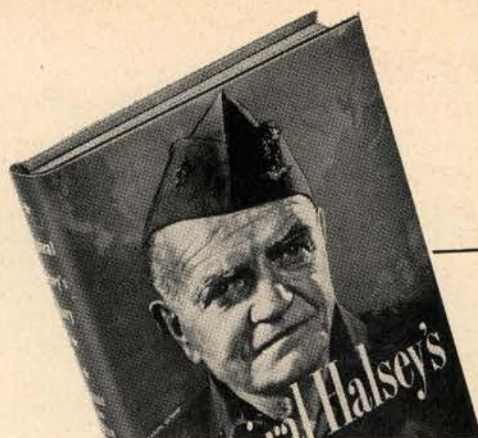
This book is a magnificent pictorial tribute to the United States Military Academy at West Point, an institution that has served its country proudly for almost a century and a half. Here many of the celebrated generals of our past wars were once cadets; here also many of this last war's most valuable leaders learned the rudiments of military leadership. In its descriptive text, plus 600 photographs (4 in full color), is given the very feel of life at the Academy—the classes, the dress parades, the physical training, the colorful history and traditions.



## THE COMPLETE CARD PLAYER

By A. ALBERT OSTROW. Whittlesey House Publication. 771 pages, 6 x 9, illustrated, \$3.75.

Here is everything to help you get more fun out of cards—by keeping the game "regular," according to the rules most of America's 83 million card players follow. The book gives full, modern directions and rules for 350 card games for players of all ages. All the best-known and standard games are here, plus scores of variations—games for children and beginners, games for various numbers of players, solitaires, etc.



## ADMIRAL HALSEY'S STORY

By WILLIAM F. HALSEY and LIEUTENANT COMMANDER J. BRYAN, III. 310 pages, 6 x 9, 38 photographs and line drawings, \$4.00.

Here, at last is Admiral Halsey's own great story of the Pacific War. This human document is William F. Halsey's first intimate report to the nation. In it, he takes you from his plebe days at Annapolis—where he was not always a model midshipman—to the great moment when he made good his brag in Tokyo Bay. A completely candid book, you will find it one of the greatest true stories of life and fighting at sea in our times.

## ATOMICS FOR THE MILLIONS

By DR. MAXWELL LEIGH EIDINOFF and HYMAN RUCHLIS. 281 pages, 6 x 9, \$3.50.

In a style stripped of scientific jargon, ATOMICS FOR THE MILLIONS traces the discovery of and developments in atomic energy from Greek theory, through the fact of fission, to a preview of the coming applications of radioactive materials to medicine and the second industrial revolution.

Liberal scattered through the pages are 110 simple and attractive drawings. These illustrations not only have a semi-humorous appeal, but also add to the clarity of the text.

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## On Weapons, Hunting, Shooting

### HATCHER'S NOTEBOOK

By Major General Julian S. Hatcher, USA Retd. The most important book by one of the world's outstanding small arms experts. Fascinating and useful material on a score of subjects for shooters, ballisticians, gunsmiths, historians. 500 pages. Illustrated. \$5.00

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By Colonel Townsend Whelen. An anthology of the world's most exciting hunting stories by famous hunters. Volume I covers hunting in Africa and Asia; Volume II in America. Profusely illustrated. Introductions and notes. \$4.00 each.

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By F. C. Ness. Longtime technical adviser to the National Rifle Association, Ness here distills twenty years of experience with small bores. Wildcats, ballistics, rifles, and shooting are covered from every angle. 300 pages, photos and drawings. \$4.00

### PISTOLS AND REVOLVERS

The first Volume of the NRA Book of Small Arms. This standard work is the best historical and descriptive book on small arms ever published. 800 photographs, 70 drawings cover every type of commercial handgun. 650 pages. \$10.00

### NATIONAL RIFLE ASSOCIATION LIBRARY BOOKS

These books are recommended by the NRA as standard books on the subjects. WALTHER PISTOLS, 100 pages, \$2.00. MAUSER RIFLES AND PISTOLS, 235 pages, \$5.00. MANNLICHER RIFLES AND PISTOLS, 234 pages, \$5.00. REMINGTON HANDGUNS, 132 pages, \$5.00

### SCARNE ON DICE

By John Scarne. When the rifle shooting's over and you start playing with the ivory bullets, this fascinating and authoritative work will save you money. Gives all the odds, percentages, rules, cheating methods. Superbly illustrated. 400 pages. \$4.00

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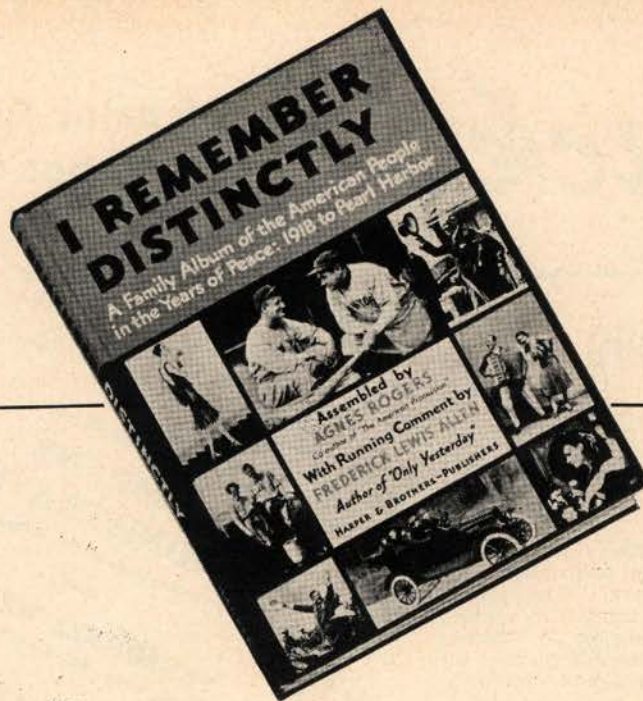
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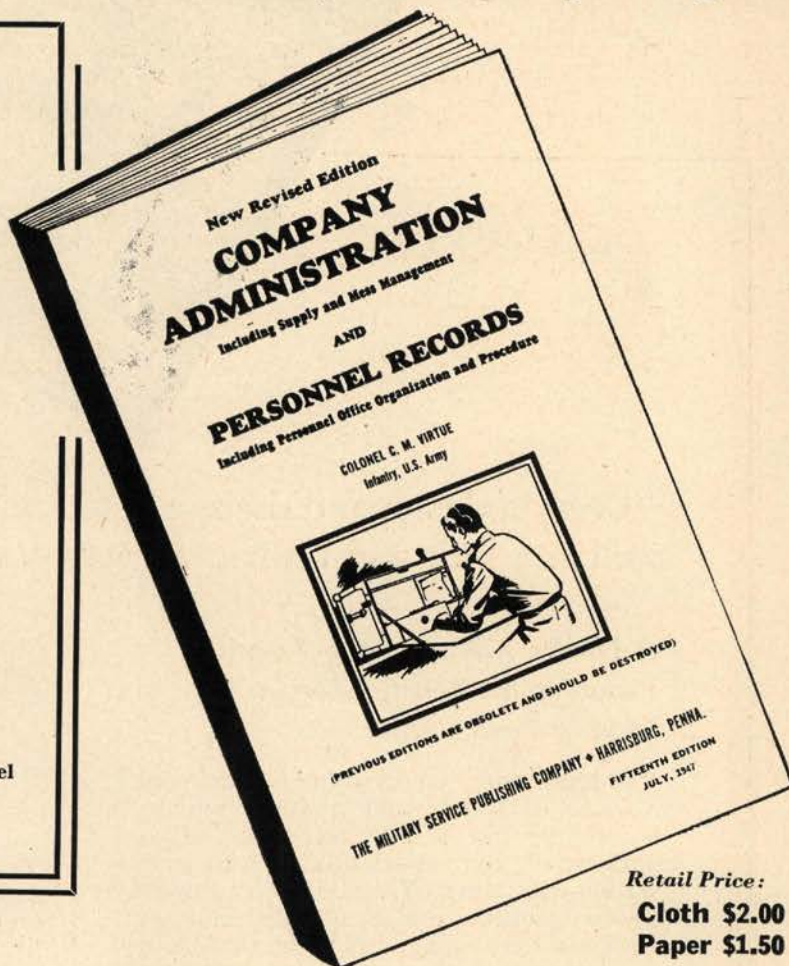
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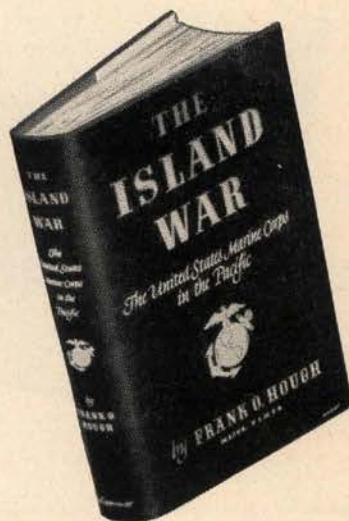


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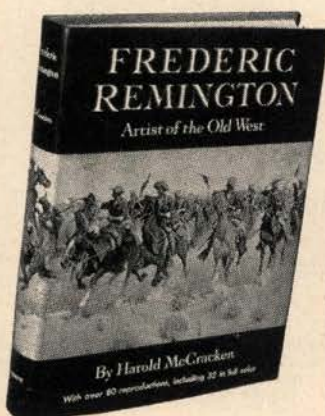
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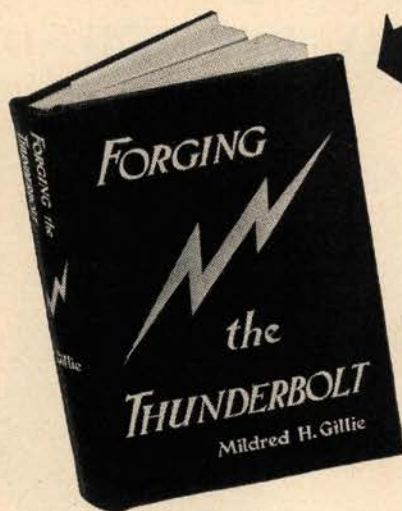
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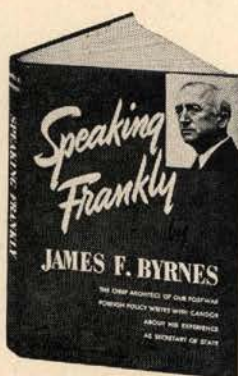
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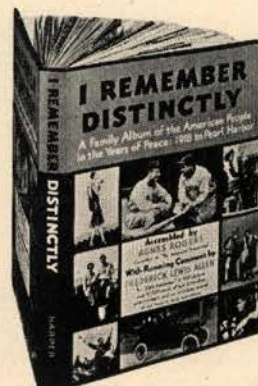
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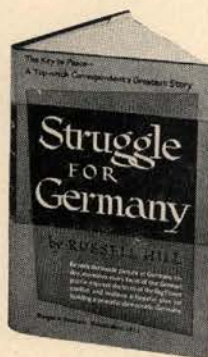
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