ARMOR

january-february 1968

the mobile branch...

THE UNITED STATES ARMOR ASSOCIATION

Established 1885 as *The United States Cavalry Association*

"To disseminate knowledge of the military arts and sciences, with special attention to mobility in ground warfare; to promote the professional improvement of its members; and to preserve and foster the spirit, the traditions and the solidarity of Armor in the Army of the United States" — Constitution.

ARMOR

The Magazine of Mobile Warfare

Volume LXXVII **January-February 1968** **No. 1**

ARTICLES

FEATURES

DEPARTMENTS

COVER

The 11th Armored Cavalry Regiment shoulder insignia symbolizes the aggressive spirit of the mobile branch with a rampant horse upon a shield of the traditional red and white colors of cavalry guidons.

ARMOR Magazine is published bimonthly by the United States Armor Association, Suite 418, 1145 19th Street, N.W., Washington, D. C. 20036, to stimulate interest in, provoke thought on, and provide an open forum for decorous discussion of professional matters. Articles appearing herein represent the personal views of the contributors. Unless otherwise stated, they are neither expressions of official policy nor do they represent the position of the publisher. Unless credited, photographs are official Department of Defense releases.

MEMBERSHIP DUES (including ARMOR): $4.75 one year, $8.50 two years. Active or associate membership is open to all active, reserve, retired or honorably discharged members of the U. S. Armed Forces.

SUBSCRIPTION RATES: Individuals not eligible for membership, unit funds and institutions may subscribe to ARMOR. **Domestic:** $6.50 one year $12.00 two years. **Foreign:** $8.00 one year, $15.00 two years. Single copies $1.50.

CORRESPONDENCE: All correspondence should be addressed to ARMOR, Suite 418, 1145 19th Street, N.W., Washington, D. C. 20036 (Telephone: (202) 223-2161).

POSTMASTER: Second-class postage paid at Washington, D. C. and at additional mailing offices.

ARMOR may be forwarded to persons in the United States Service whose change of address is caused by official orders (except to APO addresses) without payment of additional postage (157.4 Postal Manual).

LETTERS TO THE EDITOR

"HANOI'S UNDERESTIMATED WEAPON"

Dear Sir:

Received the September-October issue and enjoyed reading "Hanoi's Underestimated Weapon" by Captain Cargile. I agree with the captain that we are underestimating North Vietnam's ability to spread its propaganda across the States and the world.

JOSEPH L. GANN
SSG, USMC
Camp Hansen, Okinawa

So do we Sergeant! The recent demonstrations at the Pentagon and on certain college campuses certainly tended to confirm many of the points discussed by the author. EDITOR.

A CHALLENGE TO ARMOR

Dear Sir:

Congratulations on your new magazine format! I feel certain that it will boost the prestige of both the magazine and the Armor Association. I am still amazed at the large number of Armor friends who are not members. Perhaps this "new look" will show them that the Association is not only alive but moving forward.

Keep your momentum.

JOHN R. SITTEN, JR.
Major, QMC
I Field Force, Vietnam

TANK PHOTOS SOUGHT

Dear Sir:

I am a Japanese tank historian. I am very much interested in hearing from anyone who can lend me private photos of World War II Japanese tanks captured by the U.S. forces during the war. These will be used in a book I am writing. All photos will be returned to the sender.

TADAO SHIBUSAWA
No. 2 of 7, 3 Chome
Akabanenishi
Kita-ku, Tokyo, Japan

COMMENT ON "NIGHT EYES"

Dear Sir:

The article "Night Eyes" by Colonel Illston, in the May-June ARMOR, was very interesting. It seems to me that there is a simpler method of using the AN/PPS 4 radar to direct tank fire than that outlined by Colonel Illston. Essentially, this is the application of the principles and procedures of mortar gunnery.

Instead of paper and a protractor one can use two *M16* plotting boards. The first is used to plot azimuth. The radar is substituted for the observer and the tank or tanks for mortar or mortars. All computations follow mortar gunnery procedures. The second plotting board is used in a similar manner, to convert elevations obtained from the radar scales to elevations for the gunner's quadrant.

The flat trajectory of tank guns does require special attention to mask clearance. Otherwise, this system is just as flexible and responsive as that used with a forward observer and mortars.

GORDON S. FOWKES
Captain, Armor
Ft. Leonard Wood, Mo.

While the primary employment of tank guns should always be in the tank commander-observed direct fire role, we are pleased to see reawakened interest in practical methods for bringing effective main tank gun fire against the enemy when such fire is not possible. It never did seem appropriate to miss a chance to wallop the enemy with tank cannons just because the tank crew could not see the target. EDITOR.

ORIGIN OF THE ARMOR PATCH

Dear Sir:

Perhaps this little story may interest you.

I went to France in 1917 with the 147th F.A. One day, General Patton, then a captain, came down to Montrichard looking for an adjutant. St. Aignan nearby, was the replacement center and we had a battalion there, one at La Courtine and one at Saumur. He made the Tank Corps look good to me and I got 200 volunteers from the 147th and other troops down there—truck drivers, mechanics and machinegunners—and went up to Bourg, a little village near Langres (Haute Marne), where the Light Tanks had their headquarters.

Not long after our arrival, some division, or the advance elements thereof, came in. They had shoulder patches. These were the first we had ever seen.

At mess that night, Patton said, "I want you officers to devote one evening to something constructive. I want a shoulder insignia. We claim to have the firepower of artillery, the mobility of cavalry and the ability to hold ground of the infantry. So whatever you come up with it must have red, yellow, and blue in it."

I was billeted in a chateau with a medico, a Lieutenant Howard. We spent all that evening in front of a fireplace with some crayons that I had liberated trying to figure out use of the colors and a design. Finally we decided that the design should represent a pyramid of power. But we had a devil of a time dividing a pyramid into three colors. Finally, by erecting a vertical from each side of the triangle, we got our design. We didn't decide which color to use at the top until early A.M. Then, we put the yellow on top as Patton was cavalry.

At breakfast the next morning everybody showed up with their attempts. I guess that we were the only ones that had managed to get color on ours. In any event, Patton adopted our design and pulled a 1000 franc bill from his pocket. This was the first that I had ever seen or at least held in my hand. He told me to take one of the Ford machinegun vehicles (I can not remember what we called them but they were a motorized trap) and go into Langres and have as many of our shoulder patches made up as I could and get them back by retreat. I managed to get the three colors in felt at the Belle Jardinier, a big store on the Place Diderot, and took them into a hat and cap shop next door. I persuaded the old lady in charge to start her crew making shoulder patches. They did a good job of them and I had one sewed onto my overseas cap, as a possible idea of a new use of them. I managed to get two or three hundred of them out to Bourg before retreat.

Patton was tickled about it. If there was anything he wanted it was to make the Tank Corps tougher than the Marines and more spectacular than the Matterhorn. That triangle was the first step. A few days later he conceived the idea that our overcoats were all too long and he ordered them cut to knee length and the surplus made into belts.

We were different all right. At that time there were just three companies in the Light Tanks and not to exceed 350 men, all volunteers and from every conceivable outfit.

As a fellow grows older, details and particularly names slip one's memory. But, as I recall, that is the story of how armor got its shoulder insignia.

WILL G. ROBINSON
Colonel, AUS-Retired
South Dakota State Historical Society
Pierre, South Dakota

UNITED STATES ARMY
THE CHIEF OF STAFF

TO THE OFFICERS AND MEN OF ARMOR

The members of the United States Army join me in extending congratulations and best wishes to you on the 191st anniversary of Armor.

The distinguished service to the Nation of the United States Cavalry and its successor Armor is well known. As America's frontiers advanced across this continent and as its commitments to the cause of freedom and peace were extended beyond our borders, the mounted soldier has always been in the forefront.

Although his weapons and mounts are continuously changing, the historic mission of the mounted soldier to bring mobile fire-power and shock effect to the battlefield and its environs remains unchanged. He has fought bravely to win a just peace, and stayed to secure that peace. He has given freely of himself to assist others to build a way of life fit for free men.

Today you, the inheritors, are adding to that great tradition by your service in Vietnam, by your defense of the borders of Korea and Germany, and by your preparation here at home for whatever you may be called upon to do for our country.

As you begin another year of service to the Nation, the men and women of the Army join me in expressing pride in your past accomplishments and in wishing you continued success as you move forward to meet new challenges.

Harold K. Johnson

HAROLD K. JOHNSON
General, United States Army
Chief of Staff

THE MOBILE BRANCH

By General Hamilton H. Howze

In an examination of the long, long history of land combat one finds that the land combat forces were divided generally into three parts:

(1) That composed mostly of foot soldiers. This is the branch which has traditionally borne the brunt of the fighting, and is considerably the most effective in the mission of holding terrain against enemy attack. It has also usually been the largest branch, this being in part a reflection of the high price of horses (then) and vehicles (now).

(2) A mobile branch, certainly not helpless in defense, but employed generally as an auxiliary in that role. The mobile branch has been most effective in reconnaissance, attack, counter attack, pursuit and exploitation.

(3) The heavy firepower branch, which used to be employed alongside the foot soldiers but which has now receded to positions behind the protective screen of other forces.

The three have of course been known through the centuries as infantry, cavalry and artillery. Because the conduct of war is characterized normally by severe difficulty and has therefore always strained the ingenuity and organizational ability of military commanders and their staffs, it has been a matter of some convenience to them that there were no more than three basic branches to deal with. Now however there has arisen, if not a fourth branch, at least a complication: a method of achieving mobility by air. This has confused and in some respects has reversed the roles of infantry and cavalry—the latter having been masquerading recently under the name of "armor."

Under the altogether safe assumption that air-mobility is here to stay in sophisticated as well as in counter-guerilla warfare, the question is how that new factor in field operations should modify the structure of the Army. But first we must tackle a small problem in nomenclature.

At the conclusion of World War II there occurred a pretty heated debate as to what name should be applied to a branch which would comprise both the tank formations and the armored cavalry units. I was a part of that debate and argued strongly in favor of calling it "cavalry," saying (with others, but apparently not very persuasively) that "armor" might well prove to be a transitory title—that there was no certainty that mobile forces would continue to be characterized primarily by armor plate, wherefore calling the branch "armor" might and indeed most inevitably would restrict incorporating into it the more mobile and flexible forces which might develop in the future. "Armor," we said, connoted no more than a defensive material, steel, which formed the body of a combat vehicle, and hence was thoroughly undescriptive of what the force should do in combat, "cavalry" was by far the broader term, and though it might conjure up visions of the charge at Balaklava was nevertheless the only name sufficiently indicative of the role which should be played by the branch whose primary characteristics were mobility and shock.

Some of us also contended that the armored infantry which formed a part of armored divisions should also be part of the cavalry, for these troops had functions so intimately related with those of the tank battalions that unit training and combined training would be accomplished better within a single branch which had, or should have had, the traditional and broadly understood role of cavalry.

GENERAL HAMILTON H. HOWZE *has long been an articulate and far-sighted spokesman for mobility and the mobile arm. No champion of any single means of mobile combat, General Howze is or was an accomplished horseman, motorcyclist, armored fighting vehicle driver, parachutist and pilot. During his 35 years of commissioned service and subsequently, he consistently has contributed thought-provoking articles to ARMOR and its predecessor, the* Cavalry Journal. *During World War II combat, General Howze commanded the 13th Armored Regiment and Combat Command A of the 1st Armored Division. Later, he was Assistant Division Commander of the 2d Armored Division in Germany, Director of Army Aviation on the Army General Staff, and Commanding General of the 82d Airborne Division, XVIII Airborne Corps and Eighth Army. Now Vice President for Product Planning of the Bell Helicopter Company, General Howze has recently visited both Israel and Vietnam.*

The cavalry officer should train in both tanks and armored rifle units.

To argue this matter in further detail, or to get too excited about it, would I suppose be quixotic. But the basic contentions just stated seem good, so it may now be time to consider a change back to the name of cavalry, and a rearrangement to incorporate into the branch of cavalry the most mobile forces of the Army. A short but excellent article by Major Krawciw (pronunciation left to you) makes the same point—see *ARMOR*, September-October, 1967.

Just to illustrate a principle, I must talk a bit more about the horse. In the days when they were considered a useful means of locomotion, not all horses were in the cavalry. In many national armies there were more horses distributed among the infantry formations than in the cavalry, the difference between the branches laying not in the numbers of horses present overall, but in the fact that each member of the cavalry was provided a steed, whereby the entire cavalry force achieved a speed of movement which could not be matched by the infantry. This provided obvious benefits, but with benefits came penalties—horses required extra supply and used up much manpower, so cavalry was not as good as infantry in defense of a position for the simple reason that one man in four had to be in the rear taking care of the transportation. These men were called horseholders. We have them even now in the shape of air crews, drivers and mechanics, and they still diminish the percentage of overall strength available to man a defensive position.

What should comprise the "mobile branch"? Definition by citing the means of locomotion is difficult—in fact I think it is impossible to do with any logic. Some say that cavalry (I shall hereafter call the branch cavalry—paradoxically, I suppose in a magazine called *ARMOR*) should include all combat forces whose usual function it is to fight "mounted," or to be delivered directly into combat by means of locomotion other than leg power. In practice however that definition won't work—there are too many exceptions. It is preferable to differentiate according to the roles of cavalry and infantry, developed over the years and still broadly understood.

What units must do the jobs habitually requiring unusual tactical mobility, or a mobility differential over other associated formations, for successful execution?

First and foremost, though perhaps not permanently so: the armored divisions. Reconnaissance, tank and rifle battalions of those divisions should be part of the cavalry branch.

Two: the air cavalry brigades, of which there are none, but which are badly needed. The air cavalry brigade, conceived and strongly recommended in 1962 by the Army Tactical Mobility Requirements Board, is distinguished from the airmobile division by the fact that every member of the combat echelons is assigned a seat in an aircraft. An airmobile division, by contrast, requires three lifts by its organic aircraft to move the division.

Three: the armored cavalry regiments.

Four: the non-divisional tank units.

These four categories should be cavalry, but they leave a few issues undecided.

The mechanized divisions are certainly similar to armored divisions and in some cases will be fought in similar fashion. It would nevertheless appear desirable that they continue to be considered as basically infantry, thus providing the infantry a means to take full advantage of progress in the development of mechanical means of surface transportation. These divisions would have to retain a strong capability in defense of terrain, but need not achieve the speed and flexibility of employment required of the armored divisions.

The arrangement as thus far described will put some of what we now call armored infantry battalions in the infantry, some in the cavalry. It is probable that there should be some differences, between the two, in battalion organization. No sweat, in my opinion. As stated before, the cavalry officer should train in both tanks and armored rifle units as they are used in armored divisions.

A sticky question is what branch should incorporate the tank battalions of the infantry and mechanized divisions. Intuitively I favor their being cavalry, but this is contradictory to the position taken, above, on the armored infantry. Perhaps the decision should rest with the infantry: if it wants those tanks in battalions they should be cavalry. On the other hand it may prefer them split up among the infantry brigades, in which case they might better be infantry. Infantry-accompanying tanks could well be infantry manned, for their employment will be vastly different from those in armored divisions.

And I would also leave the infantry of the infantry divisions to the infantry. This concession, I presume, will provoke a number of cat-calls from our friends the doughboys.

But what about the airmobile divisions? Again one is much tempted to say they should be cavalry. It is indeed a bit absurd to see the most mobile combat force on earth, the First Cavalry Division—capable of running circles around an armored division in most terrain—called infantry. It is a division which in conflict with a modern enemy would *in the absence*

of air cavalry brigades be forced, by default, to execute cavalry, not infantry, missions. Its placement in Vietnam, and the job it does there, are a reflection of its cavalry characteristics, and indeed its name was not accidentally selected. One may quite correctly point out that the several infantry divisions in Vietnam have come to behave rather like airmobile divisions, but that is by reason of exceptionally heavy attachment of assault helicopter battalions, and because none of our forces (except the Marines) have a requirement for defense of a position against strong enemy attack. The situation constitutes an argument strongly in favor of activating additional divisions that are truly, organically airmobile.

If an adequate number of air cavalry brigades—scouting helicopters, shooting helicopters, supply helicopters, heliborne riflemen, and command posts capable of extended operation in the air—are to be activated, as they most assuredly should be, then the airmobile division may and should remain infantry. An additional argument for this solution is the fact that airmobile divisions will grow in number, and might and probably should, in our Army, ultimately exceed the number of straight-leg infantry divisions. The rationale for this lies in the fact that we are not apt to fight without allies: we had 'em in Korea, have 'em now in Vietnam, and would have them in Western Europe or in the Middle East. There are some 200 divisions in "Western oriented" countries; so say that five or even more of these divisions should be airmobile doesn't seem to be a disproportionate proposal. And the industrial and economic facts are that the U. S. can equip, man and train airmobile divisions better than can its prospective allies.

To illustrate the magnitude of the tactical changes which may be upon us I turn to the Arab-Israeli war. These remarks reflect a week's visit to the battlefields, and talks with the senior commanders, in September. The war was a struggle of a size and intensity that I believe most people, even professional soldiers, do not realize. To give one an idea: a British scientific institute has recently estimated that the Egyptians lost 40,000 men and 600 tanks in four days. Very few of the battles of World War II inflicted losses at that rate of those dimensions.

Tactical airpower played a major and perhaps even the decisive role in the Six Day War. We have partly forgotten, in our Army, the great effectiveness of tactical airpower against a vehicle-dependent army operating in terrain which provides no overhead cover. Just because it was possible in Korea and is possible in Vietnam for relatively primitive forces to move supplies through rough, vegetation-covered country despite the efforts of our vastly superior airpower, it does not follow that it can be done with vehicles (or camels or oxen or coolies) across wide stretches of open (arid or semi-arid) or even partly open terrain (e.g., the West German plain).

Upon the destruction of the Arab air forces by the Israeli Air Force there could be, for the remainder of the war, no outcome other than an Israeli victory. The Egyptians made countless mistakes in tactics and leadership, but even without these errors the position of the seven Egyptian divisions in the Sinai became untenable as soon as the Israelis took supremacy in the air. It is not to much to say that the seven divisions, whatever the outcome of the initial ground action, could not have long sustained themselves in the eastern reaches of the Sinai under the relentless pounding of the Israeli Air Force, for the resupply of those divisions would not have been possible across the one hundred fifty miles of starkly visible roads snaking across that brushless desert.

In the desert no variety of ground force will be able to accomplish its mission for long under a superior enemy tactical airpower. But even under conditions of air *equality*, or even of our own air *superiority* (as distinguished from total supremacy) a vehicle-dependent force will be unacceptably vulnerable. In February and March of 1943 German and US/British fighter air strengths over the Tunisian battlefield were at an approximate parity. In the flat desert areas beyond the sheltering mountains along the Algerian border U.S. vehicles were, by order, not permitted to move in daylight except when the operational need was urgent. Why? The Luftwaffe was destroying them, that's why—at an alarming rate. We could of course move relatively safely at night, so that's what we did. But it's extremely important to note that the night will no longer provide sanctuary. The aircraft-mounted low-level, infrared and radar detection devices will illuminate ground vehicles brilliantly against the desert background. Indeed the night, rather than impede the fighter or the shooting helicopter, will instead protect it and improve the hunting. I search vainly for words to indicate, strongly enough, the significance of this change in the situation, a change operating much to the disadvantage of the ground vehicle.

A word now on comparative vulnerability.

It is hard to ascertain how often tanks were destroyed by Israeli fighters. Certainly a number were, but a number many times greater were abandoned by their crews either because of being cut off by other vehicles burning and blocking a defile, or because the crews found it imprudent—to put the best light on things—to remain in so obvious a target. The Israelis possess now, through capture, several

hundred Russian-made tanks and SP guns in good operating condition.

Armored personnel carriers are insufficiently protected to turn modern aircraft-delivered strafing fire and bombs. It is futile to hope that armored infantry could survive repeated attack in coverless terrain.

Trucks, no matter what they carry, are almost totally vulnerable.

Because trenches are so very visible to the pilot, and because the ground is usually neither rock nor loose sand, entrenched infantry will (and in the Six Day War did) suffer heavily from air attack. Egyptian and Syrian infantry were in some cases induced to abandon their trenches on that account.

What would happen to helicopters when the enemy has a real capability in the air? It is pointless to hope that they would thrive, either, but they would at least have a much better chance than anything but tanks —and in some respects better than tanks.

Desert fighting is characterized by rapid movement, but that movement is, surprisingly, largely confined to the vicinity of the roads, partly because cross-country trafficability for even tracked vehicles is often poor on account of extreme roughness or very deep sand, partly because one must control the roads to be supplied. In consequence tactical air need only watch the roads to find its targets—all too often lined up in near-perfect order for attack.

Airmobile forces, in contrast, are not at all limited to the roads, may establish overnight bases almost anywhere and thereby make their discovery not impossible, certainly, but far more difficult. To achieve this would require major resupply by air at night, yes; but however expensive this might be it would be cheaper than having the supplies and their carriers burned up on the roads. In the desert distances within and between units are great, laterally as well as in depth. This simple truth, taken with the day-and-night vulnerability of ground supply vehicles, emphasizes the soundness of the Army's approach in developing a composite low-disc-loading cargo aircraft. Such an aircraft, combining reasonably efficient *vertical* lift with good cruise speed and payload, will be a godsend to the logistician faced with the task of supplying tanks and helicopters in the forward areas of battle.

The Israelis did employ helicopter-borne forces in vertical envelopment against a numerically strong enemy in the Six Day War. On some occasions it was too easy—the enemy was already in rout. On two occasions however heliborne forces put down behind enemy lines inflicted substantial losses on the enemy and greatly speeded the process of victory in those areas. No helicopters were lost—either by enemy ground fire, or by enemy air attack.

There were instances of Egyptian fighter attack on individual helicopters, whose pilots had been carefully trained to turn toward the attacking fighter and at the appropriate moment dive rapidly for the ground. This put the fighter in such a steep, and steepening, angle of dive that he had to break off. In a much more general use of helicopters against fighters with pilots more capable than the Egyptian there would of course be helicopter losses, but the limited evidence does indicate that the flying helicopter is no ripe plum waiting to be plucked.

The fight in the Sinai was characterized by enormous areas devoid of troops—empty. This was no less true in 1942 and 1943 in the Western Desert and Tunisia; gaps of twenty-five miles in the opposing "lines" were not unusual there, and in the Sinai they were larger still. Airmobile forces would obviously find these gaps extremely useful to fly through.

If we add all this up we arrive at the conclusion that an armored division of the conventional sort is not the right answer for open-country warfare unless we can assure that division of protection, day and night, against more than very occasional attack by enemy fighter aircraft. The tank, itself, may not be particularly vulnerable, but the vehicles of the divisional infantry and artillery are, and all supply vehicles are too, and that is unacceptable.

If vertical-lift aircraft are comparatively much less susceptible to destruction, and I believe they are, it follows that the proper composition of some of our armored divisions (specifically the 1st and 2d, which are part of the strategic reserve) should be tanks plus airmobile rifle units plus air-reconnaissance plus artillery, part of which last should be airmobile, part armored self-propelled. All of this should be backed by a judicious combination of cargo VTOL aircraft and some armored surface vehicles for logistical support.

Airmobile rifle units, moving at speed over ground obviously unoccupied by the enemy, freed from the tyranny of the roads and oblivious to road blocks, could do such eminently useful things as seizing critical terrain, enveloping defensive or blocking positions, cutting off the retreat of enemy delaying forces, blocking the movement of enemy reserves, ambushing enemy supply, mining enemy roads, establishing blocking positions of our own which could not be cut off by enemy envelopment—and indeed, operating with considerable freedom in the hostile rear. These are things which are likely to prove pretty effective in upsetting the aplomb of enemy major generals.

Airmobile rifle units will be at least as effective in defense as armored infantry. The accompaniment, by riflemen, of tanks in assault is not an important

function in open country warfare. Rifle units can assist tanks more effectively by coordinated, as distinguished from accompanying, attack.

As for air reconnaissance units! The desert lies bare, open for inspection, night and day.

Armored divisions of this sort would be much superior to conventional or mechanized divisions in open country, and would constitute a most appropriate and efficient reinforcement of the conventional divisions now assigned to Seventh Army in Germany.

I must confess now that this has been a pretty Olympian view of matters, and one that disregards many precedents, many vested interests, many complications and difficulties. Some of these factors may invalidate one or more parts of the proposition. On the other hand it is desirable at least that a study be made, and that study should start with an acknowledgment that the more mobile branch should not be less mobile than the less mobile branch. That sentence is a little imperfect, but so too is the situation when viewed objectively and theoretically. As the emergence of armored forces before and during World War II induced a realignment of forces and means, so has the emergence now of airmobility for ground troops. There is of course no crashing need for immediate reorganization, but it does make sense to consider pragmatically what should belong to what branch. Taken purely on the basis of who has done most to develop airmobility, the infantry should have the lion's share: Armor has limited its vision too much to high velocity cannon and steel plate. Of the senior officers of the Army who know most about air mobility only two, Seneff and Oden, are cavalrymen; six (Kinnard, Norton, DePuy, Rowny, Wright and Tolson) are infantrymen—and airborne, significantly; and Knowles and Williams are artillerymen.

But on the basis of *role* the most mobile of the airborne formations, the tank battalions, the reconnaissance units and the tanks of the armored divisions and their associated riflemen (many of whom should become airmobile) should

belong to the

Cavalry.

innovation in process

ARMOR TO TEST the ACV

by Major David G. Moore

The Vietnamese call it the "Monster," the French an air glider, the British a hovercraft, and the U.S. Navy a surface effects ship. By any name it is a revolution—a revolution in ground mobility and in mounted combat. It is big, noisy, and hard to maneuver. It cannot climb hills or go through jungles, but it can move at speeds up to 60 knots over mud, swamps, water, or land. It is the Air Cushion Vehicle (ACV) which the Army is buying for testing.

Although the concept of air cushion vehicles is not new, practical and dependable vehicles have become available only in the past few years. Much of the pioneering work for the current ACVs was accomplished by British Hovercraft Corporation, a subsidiary of Westland Aircraft Limited. The British Army has used hovercraft in Malaya and Borneo for several years to patrol rivers and interior areas inaccessible to other vehicles.

In 1963, Bell Aerosystems contracted with the Hovercraft Corporation to build air cushion vehicles in the United States. Thereafter, the U.S. Navy purchased three militarized versions of the Bell *SK5* hovercraft for testing. The vehicles were sent to Vietnam in May 1966 and participated in operations in support of *MARKET TIME* and *GAME WARDEN,* as well as in the Plain of Reeds. The latter venture, a joint U.S. Special Forces and Vietnamese operation conducted in the Mekong Delta, proved to be the most successful of the entire test program, both for the vehicles and the combat unit supported.

The new Army air cushion vehicles are similar to the *SK5* models being used by the Navy. The Army test unit, organized along armored cavalry lines, will be manned by Armor officers and enlisted men.

THE AIR CUSHION PRINCIPLE

Air cushion vehicles are supported by a cushion of high volume, low-pressure compressed air generated by a centrifugal lift fan. As the lift fan builds up air pressure in the cushion the vehicle is lifted. When the air pressure equals the weight of the vehicle, air escapes from the cushion at the same rate that it is being supplied. The air pressure provides the major portion of the required lift. Momentum lift and aerodynamic lift are not significant. The vehicle is almost frictionless when on its air cushion, which allows easy propulsion to moderately high speeds.

The major problem facing design engineers has been how to maintain efficiently enough air pressure under the vehicle to provide adequate obstacle clearance and speed. On presently operational vehicles this problem has been solved by the use of skirts hanging from the edge of the vehicle to within a fraction of an inch above the ground. These skirts are made of a flexible rubber-canvas material and form what is called the plenum chamber. In actual practice a single plenum chamber is not stable. If such a platform is tilted, the air rapidly escapes allowing one side of the vehicle platform to drop. This in turn allows air to spill from the other side.

It takes several cycles for such a chamber to stabilize once it is disturbed. Also, the large size of a single plenum chamber restricts the height at which the vehicle can hover.

The problem of stability is solved by placing additional skirts under the vehicle and compartmenting the air chamber. Increased hover height is gained by placing another skirt parallel to the peripheral and interior skirts and ducting air between them, thus forming an annular jet. These dual skirts, or trunks, give the vehicles a skirt height of four feet. With this configuration the *SK5* has stability equal to, or better than, that of a medium tank in cross-country operations.

THE ARMY *SK5* CONFIGURATION

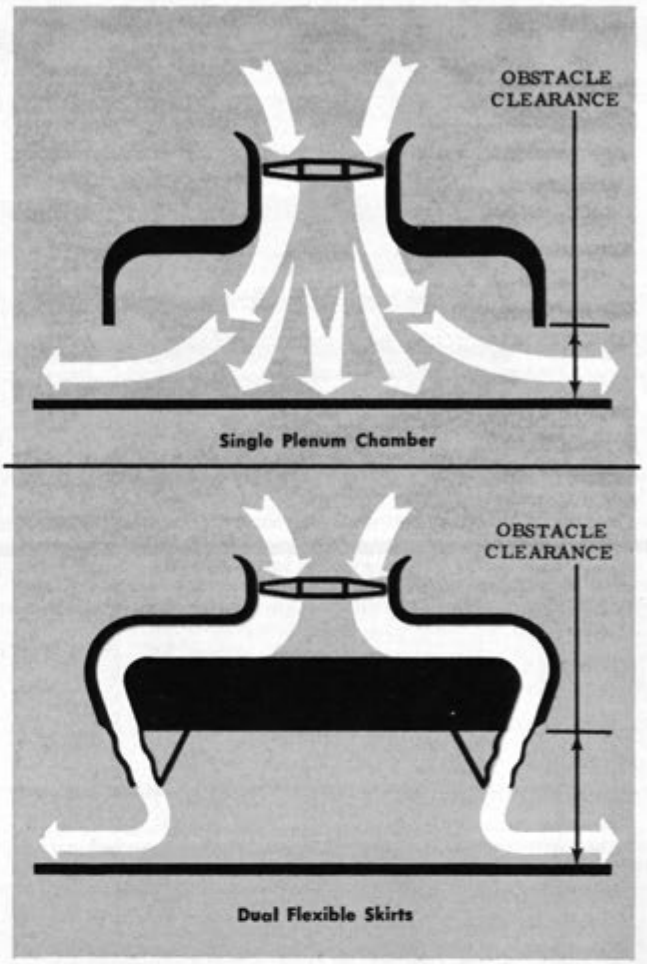
The *SK5* is 39 feet long, has a beam of 23 feet 9 inches, and is 16 feet high. With its 1150 horsepower General Electric *LM100* engine the *SK5* has a top speed of about 60 knots. The engine drives a nine-foot, three-bladed propeller with reversible pitch and a seven-foot centrifugal lift fan. The lift system uses the annular jet principle and operates off the mechanically integrated propulsion system.

Weight has the greatest influence on the vehicle's performance including speed, acceleration, maneuverability and braking. Combat loaded, the vehicle weighs about 20,000 pounds. Above 22,500 pounds vehicle performance begins to drop rapidly and somewhere between 24,000 and 25,000 pounds, according to design limitations, it drops below acceptable levels.

The inclusion of "puff ports" for low speed maneuvering has greatly enhanced the abilities of the Army ACV in relation to the original Navy model. These puff ports are small horizontal air ducts mounted on both sides of the ACV. As air is allowed to escape through the louvered doors on the puff ports the vehicle is pushed in the opposite direction. Using the puff ports, the vehicle at hover can almost turn on its axis. At forward speeds up to 5 knots it can turn in its own length.

Above 15 to 20 knots, the puff ports are not used, and the twin-tail rudders become the primary direction control device. The outer skirts are rigged with lift devices which give some assistance in turning by spilling air from the bottom of the skirt causing a side thrusting force. The skirt lifting devices are also used to assist in holding the vehicle on a side slope. The *SK5* has a minimum turning radius at 30 knots of about 50 meters on land, and over 100 meters on water. Minimum turning radii are influenced by many factors such as vehicle speed, wind, terrain conditions, skirt drag, vehicle weight, vehicle trim, and driver skill.

The efficient use of available control devices can overcome and minimize many of the limitations of the vehicle. Vision obscuration caused by dust or spray can be controlled. An experienced driver can keep dust behind the rear of the main cabin during most maneuvers. With the correct coordination of controls the vehicle can stop and start on slopes of about 10 percent.



MILITARY EQUIPMENT ON THE *SK5*

As a result of experience gained by the Navy, manufacturer's improvements and Army generated requirements, modifications have been made to improve the combat capability of the ACVs:

—The rounded non-load bearing outer decks have been straightened and made strong enough to support troops and supplies.

—Two M66 ring mounts which are each designed to support twin-mounted caliber .50 machineguns have been installed in the cabin roof.

—Armor plating has been placed around the cabin, engine and transmission, batteries and fuel tanks.

—An M5 40mm grenade launcher subsystem, identical to that used on helicopters, is mounted on

A heavy ACV skims over San Francisco Bay following overhaul after eight months of service in Vietnam. Modifications included installation of auxiliary fuel tanks, addition of communications equipment, new skirts for improved performance and ease of maintenance, and "puff ports" for improved directional control.

the left front deck. A seat for the gunner has been installed in the front center of the cabin.

—The driver, M5 gunner and radar operator are to have helicopter-type seats with armor protection.

—A versatile system of radios has been installed.

All the Army vehicles are identical in design and construction. However, they will have different "bolt-on" equipment. Two of the ACVs will be heavily armed. These have been designated assault air cushion vehicles (AACV). They will be armed with one caliber .50 machinegun in each of the two roof mounts, one 7.62 machinegun in each of the two rear cabin windows and one M5 40mm grenade launcher sub-system on the left front deck.

The third ACV will have less armament. As a result, there will be more cargo space for carrying troops or equipment. This configuration has been titled the troop air cushion vehicle (TACV). Its armament will be one 7.62mm machinegun in each of the two rear cabin windows.

The *SK5* vehicles are equipped with an electronics system which will include aviation radio, a Decca 202 radar, and possibly a navigation aid device. The radios provide ground-to-air and ground-to-ground single side band (SSB). The display for the radar is a high resolution 6-inch scope.

According to reports on the Navy operations, the radar works well for navigating rivers and shore lines at night and is effective for obstacle avoidance. It has sufficient resolution to pick up sampans, vehicles and other ACVs. The concept of a "radarman-navigator" in a vehicle is novel to the Army and particularly to Armor.

THE FUTURE OF AIR CUSHION VEHICLES

An attempt to predict the ultimate capabilities of air cushion vehicles would be analogous to Orville Wright visualizing the supersonic transport in 1903. Several companies in the United States and Europe are developing ACVs and all appear to be pointed toward commercial markets with very large vehicles. Nonetheless, combat vehicles far superior to the present operational ones are possible.

Limitations of size, noise, and maneuverability will have to be overcome if better fighting vehicles are to be produced. It has been suggested that these problems can best be solved, in the shortest time and with the least funds, by developing air cushion assisted vehicles. These would have conventional powered and steerable wheels or tracks plus skirted lift fans which would provide variable ground pressures. By regulating the amount of air pressure in the cushion, the vehicle could operate on its wheels or tracks in the conventional manner, on a partial air cushion and wheels or tracks in soft or loose soil and in wooded or steep areas, or on the air cushion only in inundated, marsh, or other marginal areas.

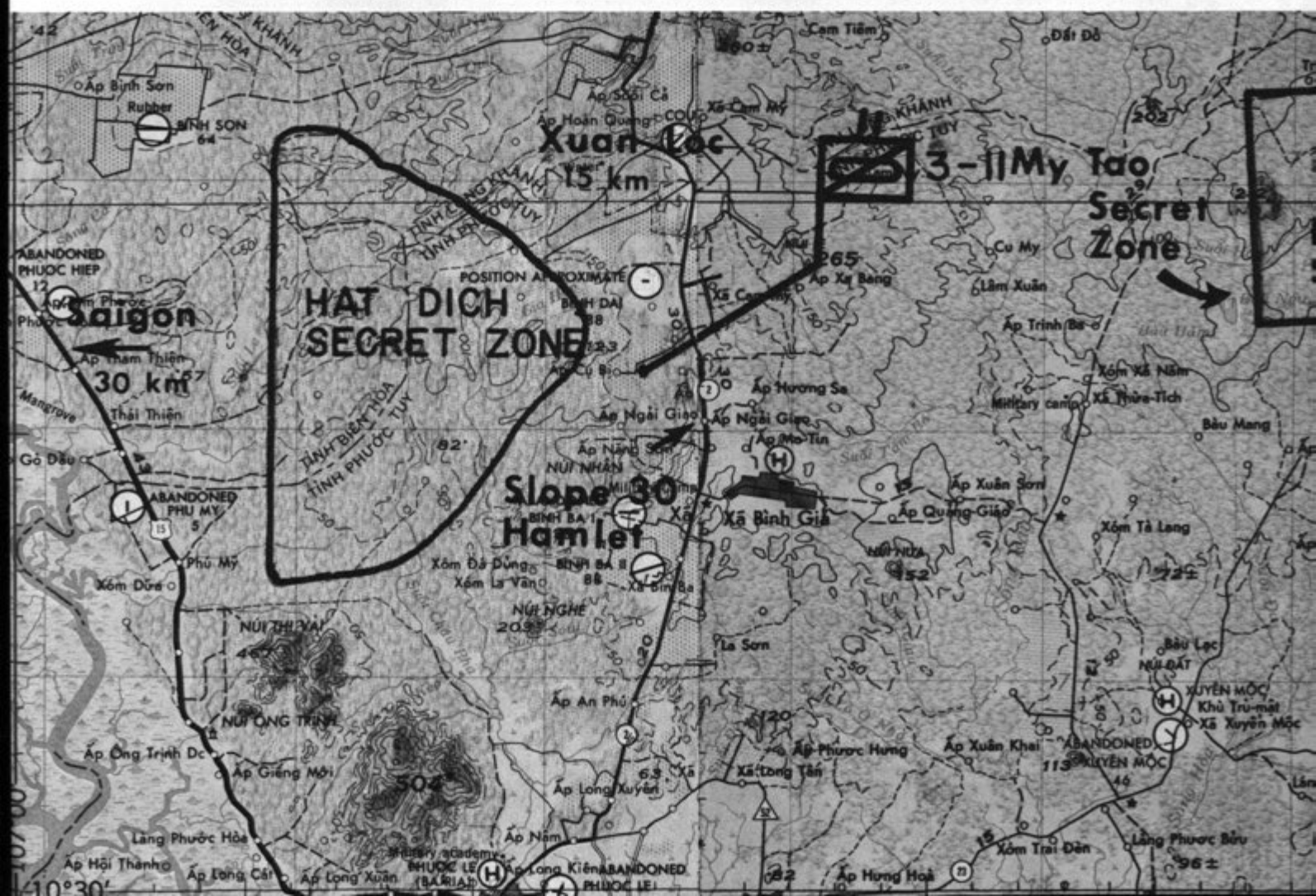
The future may bring an entire family of air cushion and air cushion assisted vehicles ranging from logistical support vehicles to special purpose transporters and from armored reconnaissance vehicles to main battle tanks. Armor people have their eyes on that future and are contributing their share toward realizing its promise.

A SPECIAL COMBAT REPORT

The Affray at Slope 30

by Captain Ronald A. Hofmann

The first hint of trouble came at 2130 with the terse message received in Team K's command track from ambush patrol #1: "Three VC observed by starlight scope, passing by in the vicinity of our position." Ambush patrol #1 was located 700 meters to the northeast of Team K's perimeter in a stand of young rubber. It had moved to its position shorly after dusk. The patrol was led by a young and energetic Staff Sergeant Wayne Shoemaker, who with several other Team K NCOs had recently volunteered to extend his tour in Vietnam. Sergeant Shoemaker was to die that night in a bitter battle against an approaching enemy column.



The 3d Squadron of the Blackhorse Regiment was in its tenth day of Operation AKRON, a 9th U.S. Infantry Division drive that had kicked off on 9 June 1967 in the middle of the summer monsoon season. The objective was the destruction of enemy forces and installations in the traditional VC secret zone known as the HAT-DICH.

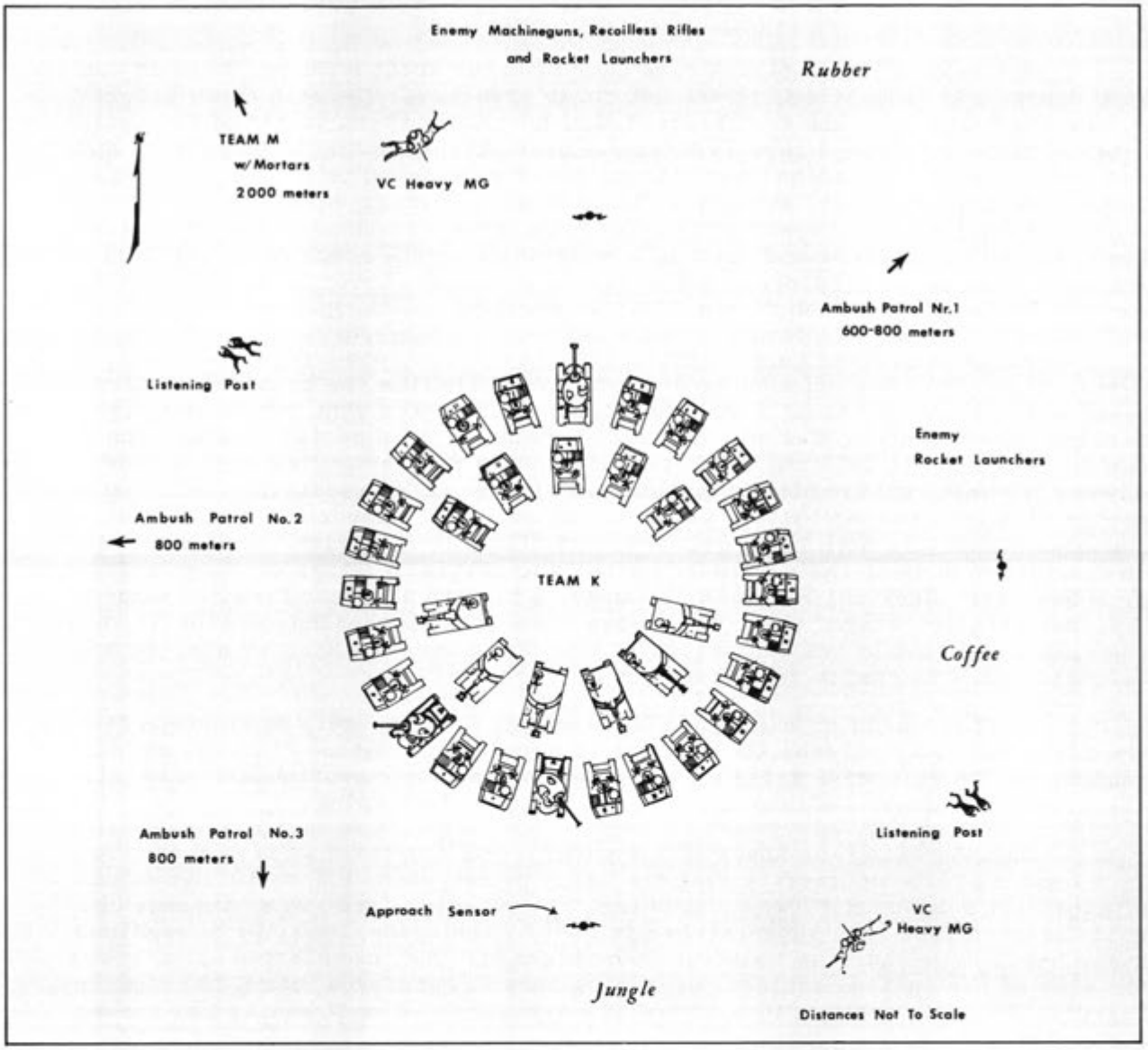
Lieutenant Colonel Arthur F. Cochran, the squadron commander, was well pleased with the performance of his four teams. The thorough and systematic search of the assigned AO (Area of Operations) had resulted in daily discoveries of extensive base camps, rice and salt caches, and equipment storage areas. Enemy contact however, had been limited to brief encounters with small reconnaissance and ambush elements. Initially the squadron had pushed deep into the primary forest and, as the operation progressed, moved further south until on 18 June it was operating in the vicinity of Slope 30 hamlet.

Slope 30 hamlet had long been a symbol of Viet Cong domination in northern Phuoc Ty Province. It is situated on Highway 2 and was astride a VC line of communications between the HAT-DICH secret zone to the west of Highway 2 and the MAY TAO secret zone to the east. It was the focal point of VC activity in the area for it not only provided a rest haven for VC troops passing through the area, but it was also the supply center for transient VC troops and Viet Cong located in nearby base camp areas. The hamlet, which closely parallels Highway 2, is bordered by a short strip of cultivated fields and rubber and coffee plantations. Beyond this two kilometer strip the primary forest takes over.

That afternoon, the squadron command post, together with the organic 155mm self-propelled howitzer battery, had moved into a relatively open area to the northwest of Slope 30 hamlet. All teams were instructed to pull back from the primary forest in the evening and to occupy separate, but mutually supporting, night defensive positions. The squadron provisional mortar battery (consisting of the nine 4.2 inch mortars from the three cavalry troops) was ordered to lager with the northernmost unit, Team M. This assured organic fire support to all four night defensive positions. Team K was given the mission of securing the squadron command post and HOW Battery.

Team K, consisting of its three organic platoons reinforced by a tank section and a flamethrower, arrived at the squadron CP location by 1730. It went to work immediately preparing the night lager position. Fields of fire had to be cut 150 meters north and east of the squadron CP. The areas to the west and south were relatively open rice fields and grazing land.

"Circle your Wagons!!"



By 1945, just prior to darkness, the team's three ambush patrols were briefed and ready to depart. Around the perimeter, fields of fire had been prepared, and anti-intrusion devices and claymore mines were staked out. The perimeter was further reinforced by the armored cavalry assault vehicles (ACAVs) of the 3d platoon from the regiment's attached 919th Engineer Company. A few ACAVs from the Squadron Headquarters Troop and HOW Battery completed the ring of armor.

As the squadron CP settled down for the night, a total of 27 ACAVs and three tanks were on guard. Ambush patrols, 700-1000 meters out, were in position to the northeast, the south and the west, while listening posts occupied approaches not covered by anti-intrusion devices. Defensive concentrations had been fired, and the quiet of the night was only occasionally interrupted by the howitzer and provisional mortar batteries.

The 0100 communications check with the ambush patrols was routine. But, a few minutes later word of the enemy sighting came from an excited radio operator with ambush patrol #1. He reported that enemy contact was imminent. Shortly thereafter, automatic weapons fire and grenade explosions were heard to the northeast. These were followed immediately by violent and intense antitank and automatic weapons fire against the Team K perimeter. Ambush patrol #1 not only gave Team K a few important seconds of warning, but it also prematurely triggered the enemy attack by stopping one of his advancing columns. The ensuing confusion among the enemy ranks in the darkness cost them the element of surprise.

The bulk of the antitank fire came from too great a range. While it caused some damage and casualties, it was not fully effective. The main enemy effort during the initial attack was directed against the northern sector of the perimeter. This was followed quickly by successive attacks against the eastern and southern sectors. The latter two attacks later were found to be secondary efforts, designed to divert attention from the main attack. Outgoing red tracers crossed wildly with the enemy's incoming green tracers. Based on the unusually high density of antitank and automatic weapons fire, the enemy force initially was estimated to be a reinforced battalion. Documents later confirmed that it was a main force battalion of the 274th VC Regiment.

While Team K was busy fighting off the attack, Team M reported incoming mortar fire. This was apparently designed to neutralize the squadron mortars. Despite the heavy incoming fire, the mortar men started what was to be a fire mission that would last for over an hour. Throughout this period, key personnel remained exposed to call out fire commands and to replace aiming stakes blown down by the enemy mortar attack. Within two minutes after receiving the incoming mortar fire, the mortar battery fired illumination in support of Team K. This was expanded quickly to both high explosive and illumination, with the HE concentrated on the rubber east of the perimeter. After the initial volleys, a young draftee from New York, Sergeant Robert B. Kennedy, a forward observer from 3d Squadron Howitzer Battery, walked the fire through the coffee plantation and finally through the open area south of the perimeter. At the same time, HOW Battery started countermortar fire to assist Team M and the mortars.

The arrival of an Air Force flare-ship at 0135, roughly 20 minutes after the first contact, allowed the mortars to cease illuminating missions and to concentrate on defensive fires only. A flare-ship stayed continuously on station, illuminating the battlefield until first light in the morning.

Shortly after the shock of the enemy's initial burst of fire wore off, Team K gained fire superiority over the enemy by returning a devastating volume of automatic weapons and 90mm cannon fire. The outgoing fire was so intense and well directed that fire superiority was lost by the enemy, never to be regained. Major David K. Doyle, the squadron operations officer, had alerted all teams at the time of the initial contact, preparing them to reinforce Team K if necessary. However, Colonel Cochran did not find it necessary to commit additional forces during the attack.

The 11th Armored Cavalry Regiment CP, located in the Blackhorse Base Camp about 30 kilometers to the north, was alerted by a 3d Squadron radio message, and was in a position to observe the fireworks from a distance. Regiment immediately dispatched armed helicopters to the scene and at the same time prepared an emergency supply of ammunition.

Minutes later an 11th Cavalry light fire team began its attack along the edge of the perimeter. This was an extremely hazardous assignment for the gunships, for it required a west to east firing pass, directly in line of the trajectory of mortar rounds falling to the east of the perimeter. The helicopter fire team never faltered, and after their last pass enemy fire decreased appreciably. On completing their fire mission, the helicopter pilots jettisoned their rocket pods, landed within the Team K perimeter, and volunteered to evacuate the first group of wounded.

Heroic action was also commonplace within and on the Team K perimeter. In the initial volley of fire, the northeast sector had been hit severly. Men who were knocked from their machinegun positions on the ACAVs, either by rocket or recoilless rifle fire, staggered back to resume their positions. If they were too severly wounded, volunteers from the inner perimeter immediately replaced them. ACAVs that had caught on fire were saved by officers and men from the squadron command post and from Team K who moved from vehicle to vehicle using anything available to extinguish the fires.

Soldiers of Troop K, 3d Squadron, 11th Armored Cavalry, display a Communist B40 antitank rocket launcher captured from a VC platoon leader during the battle of Slope 30. The launcher is still loaded.

Although many vehicles were damaged, not one was lost in the two-hour action. In some cases, on seeing an adjacent vehicle hit, ACAV commanders moved to an exposed position to cover the evacuation of the wounded. When the platoon leader of the first platoon was wounded, young Sergeant Alfred Pankey, Jr., took charge and reorganized the defense of the southern perimeter.

During the action, ambush patrols #2 and #3, as well as the two listening posts, were ordered to remain in position. Radio contact with ambush patrol #1 was lost after their initial warning message just prior to contact. A 0210, ambush patrol #3, 800 meters to the south, reported that it was pinned down by automatic weapons fire and requested assistance. The firing around the Team K perimeter began to slow down. Then a six ACAV force under Second Lieutenant Daniel Mullins, the third platoon leader, moved out from the relatively quiet western sector of the perimeter. This force fought its way to the beleagured patrol #3 and back without any casualties. However, the eight man patrol had suffered three casualties, one dead and two wounded.

About 0230, the enemy started a hasty retreat. First Lieutenant Craig Farley, the second platoon leader, was given the mission to reestablish contact with the enemy if possible and to find ambush patrol #1. Even though it pushed forward vigorously, the platoon made no further enemy contact. By 0300 hours, Lieutenant Farley reported finding the ambush patrol.

Though heavily outnumbered by the enemy, ambush patrol #1 had fought the VC to a standstill, forcing them to withdraw without their dead. The ground around the patrol position was littered with enemy bodies and equipment. However, this patrol had paid a heavy price for its gallant stand. Of the ten men, the patrol leader and three others were dead. Five others were seriously wounded. Lieutenant Farley's force evacuated the patrol to the perimeter and then volunteered to go back out to recover the VC bodies and equipment. At 0400, they returned again to the perimeter with 15 VC bodies and numerous automatic weapons and documents which helped in determining the enemy's plans and unit designation.

Ambush patrol #2 to the west was not affected by the action and remained in position to monitor the open flank.

At first, when the enemy began to disengage it was assumed he was withdrawing to the northwest into the primary forest. Team I was committed to pursue in that direction. Subsequently, a captured VC operations order indicated a withdrawal route to the east, across Highway 2, into the MAY TAO secret zone. Prior to 0530, Teams L and M began pursuing the VC to the east. After Team I found no evidence of enemy activity in the area to the northwest, it was committed to join in the pursuit toward the east. Contact was never regained. However, numerous blood stained trails were discovered, together with eight VC bodies that had been abandoned near the trails. Intelligence reports received shortly after the engagement indicated that the enemy had evacuated a large number of dead and wounded to the east.

Before the first light on 19 June Team K had been resupplied with ammunition, all casualties had been evacuated and the unit had been reorganized to adjust for casualties. Team K had suffered ten men killed in action and a dozen men seriously wounded but was ready for further missions. By 0600, with the sun rising, Team K began a detailed search of the battlefield.

Two wounded VC were taken prisoner. A total of 56 enemy dead were found along with numerous crew-served and individual weapons. Captured weapons and ammunition confirmed enemy use of a combination of antitank weapons in the attack. These included B40 rockets and 75 and 55mm recoilless rifles. An astounding amount of ammunition was found. Also recovered were 12.7mm machineguns, 82mm mortars and M79 grenade launchers. Every individual rifle captured was an automatic weapon, most of them AK47 Chinese-made assault rifles.

Several factors contributed to the defeat of the enemy force. The frequent moves of the squadron CP and its teams did not allow the enemy to use his cherished thorough planning and rehearsal prior to the attack. However, despite this drawback, he did relatively well as evidenced by the diversionary attack against Team M and the secondary probes against the eastern and southern sectors of the Team K perimeter.

Captured wire and communications equipment confirmed enemy use of field telephones during the attack. The contact of ambush patrol #1 with one of the advancing enemy columns appeared to have caught the enemy off guard. This caused much confusion and the VC lost the precious element of surprise.

The 11th Cavalry Regiment's SOP of massing the cavalry troop mortars in battery made it possible for Team K to receive immediate and effective indirect fire support. At the same time, HOW Battery was in position to shoot counter-mortar missions. Regimental support by armed helicopter fire, resupply and medical evacuation was timely and smoothly executed. The U.S. Air Force flare-ship support was efficient and effective.

Last but not least, the disciplined defense, rapid reaction and courage displayed by the American cavalrymen in this action played a primary role in the defeat of a numerically superior VC force.

CAPTAIN RONALD A. HOFMANN, Armor, was assigned to the 11th Armored Cavalry in February 1967. During the battle he describes he was Troop K commander. He won a Silver Star that day, in addition to another Silver Star and a Purple Heart he earned while the CO of Troop K. A native of Switzerland, he earned his commission through OCS and has spent most of his career in cavalry units. His assignments have included the 3d Cavalry Regiment at Fort Meade, the cavalry troop of the 173d Airborne Brigade on Okinawa, and the cavalry squadron of the 4th Infantry Division of Fort Lewis. In Vietnam, Captain Hofmann was a cavalry advisor to the Vietnamese, an advisor to the Montagnards, and a member of the 173d Airborne Brigade as well as the Blackhorse Regiment. He was serving his third year in Vietnam when he was seriously wounded in another action on 21 July of this year. He is now recovering at Walter Reed Army Hospital in Washington. Previously he has authored ARMOR articles on Swiss and Chinese armor.

88 ARMOR OFFICERS SELECTED FOR COLONEL

	Sequence No.		Sequence No.		Sequence No.
Adams, Claude M.	171	Eek, Lauris M., Jr.	1054	Packard, Donald F.	738
Allender, Nicholas V., Jr.	641	Fuller, Howard R., Jr.	283	Patton, George S.	311
Bartley, Hugh J.	1086	Gay, Joseph M., Jr.	383	Pittenger, Ronald R.	322
Beaty, Raymond H.	448	Gossett, Warren R.	910	Porta, James R.	861
Beckner, Richard G.	524	Greene, Maurice C.	879	Revolinsky, Philip A.	170
Berry, Robert H.	523	Hanson, Benjamin S.	547	Reynolds, Donald H.	1000
Beuke, Henry A.	485	Harrington, Richard H.	952	Richter, Francis A.	978
Blum, Stanley D.	517	Hayes, John G.	1082	Sacra, Sam W.	373
Bowen, Thomas W.	413	Helms, John L.	337	Sargent, Chester C.	197
Brooks, Glenn P.	921	Hillard, James R.	16	Schappaugh, George H.	971
Brown, Hugh M., Jr.	75	Hodes, John T.	1035	Shell, Claude O., Jr.	865
Buckingham, Clay T.	1046	Howell, Martin D.	763	Sinclair, Christopher B., Jr.	577
Byrd, Billy W.	950	Hulse, Melvin N.	872	Slocum, John M., Jr.	744
Callahan, Robert F.	905	Hunt, Milton T., Jr.	9	Smythe, Harry C., Jr.	285
Clark, Clyde O.	231	Jones, John G.	793	Stanfeld, Norman T.	514
Coleman, James F.	843	Kimball, George E.	463	Taylor, Frank L.	668
Cranford, Jack	456	Knapp, Robert E.	545	Thompson, John G.	705
Crittenberger, Dale J.	794	Koch, Kenneth W.	329	Thompson, Milton R.	125
Crockett, Edward P.	797	La Mar, Andrew W., Jr.	292	Tibbetts, Frederick E., 3d	418
Cullinane, Daniel B., Jr.	71	Lang, Francis E.	2	Tilson, George P.	1051
Cushing, Robert H., Jr.	416	Madigan, William	932	Trost, Leonard E.	815
Davidson, Kenneth E.	922	Martin, Samuel R.	280	Troy, Guy K.	571
Davidson, Lonnie M.	215	Matteson, Jack F.	975	Wallis, Matthew R.	282
Day. James A.	556	McCurley, Henry H.	842	Warren, John W.	804
Dew, James R.	124	McDaniel, Paul B.	1005	Webb, George S., Jr.	533
Dickson, James H., Jr.	829	McNeil, Robert J.	1090	Wilkins, Van Court	339
Donoho, Louie W.	662	Miller, George L.	536	Wilson, Minter L., Jr.	575
Duncan, Samuel K.	79	Nye, Roger H.	532	Wolf, Duquesne A.	973
Dunham, Jack V.	729	Ogilvy, Hubert W.	481		
Edwards, Stephen O.	553	Otte, George F., Jr.	559		

ARMOR BOX SCORE

OVERALL

	CONSIDERED	SELECTED	% SELECTED	Secondary Zone SELECTED
Armor	219	81	36.9	7
Army	3140	812	25.9	73

FIRST TIME CONSIDERED

	TOTAL	SELECTED	% SELECTED
Armor	111	70	63.0
Army	1522	722	47.4

PREVIOUSLY CONSIDERED

	TOTAL	SELECTED	% SELECTED
Armor	108	11	10.2
Army	1618	90	5.6

MAJOR GENERAL GUY VERNOR HENRY

28 JANUARY 1875–29 NOVEMBER 1967

PRESIDENT 1930–1934
THE UNITED STATES CAVALRY ASSOCIATION

HONORARY PRESIDENT 1950–1967
THE UNITED STATES ARMOR ASSOCIATION

Major General Guy V. Henry, who retired from the Army for the first time nearly 20 years ago, died in Wenatchee, Washington, on 29 November 1967. He had been ill for several monhs, his condition worsening after the death of his wife in June, 1967. General Henry had been living in Wenatchee with his younger daughter and son-in-law, Colonel and Mrs. E. W. Williams, since July.

On Guy Henry's passing the Army bids good-bye to one of its true professionals, of the old school: a school which related all aspects of life to the military, which embraced the Army so completely that all personal matters were subordinated to its demands. Here is implied no narrowness, but simply consuming interest and wholehearted devotion to duty. One may envy the enormous pleasure he derived from the routine of service to his country.

But his driving sense of duty, combined with unavoidable circumstance, sometimes tortured him, too. He graduated from West Point too late to participate in the Spanish American War in Cuba, though he did serve in the suppression of the Philippine Insurrection in 1900. World War I found him at West Point as Commander of Cadets, from which non-battle post he was long unable to extricate himself. He missed the main show, though he did organize and train the 15th Infantry Division, as its commanding general, in 1918 and '19 at Camp Logan, Texas.

His retirement in 1939 was forced by statute; he was 64. It removed any opportunity for active command in World War II, but he was recalled to active duty in1941 and served an additional eight years as U.S. Army member on a succession of US-Candian, US-Mexican and Inter-Allied Defense Boards and Commissions.

General Henry was at once one of this nation's ablest horsemen and one of the earliest among the cavalrymen to see the inevitable replacement of the horse by the armored vehicle. The transition was not an easy one for the cavalry, and for those who scorn military conservation let me say that tradition dies hard, and that the esprit and pride and battle records of the old mounted units were hard to match anywhere in the military service. But in his practical way General Henry saw the handwriting plain on the wall, and in his position as Chief of Cavalry he provided methodically and efficiently for the change that had to come.

His friends rather expected him to retire from his post as Chief for he had come to the head of his branch—a source of great pride to him. Instead he accepted a reduction in grade and the command of the 7th Cavalry Brigade (Mechanized) (the 1st and 13th Regiments of Cavalry, converted from horse units). This brigade, at the time, comprised most of what we now call "Armor" and was to become the nucleus of the 1st Armored Division. He stayed at Knox for 15 months, and then was assigned as Commander of the Cavalry School, from which he retired when he turned 64. It was at Fort Riley that I met and married his elder daughter, Mary.

On the night before General Henry's retirement ceremony on 31 January there was held one of the regular winter horseshows, in the old West Riding Hall. He was an entry in the biggest class, open jumping. It was no stunt—he simply wanted to win the cup. He almost did, tying for first place with a perfect round, but losing in the jump-off against some of the best horses and horsemen in the Army.

While it was an extraordinary performance for a man aged 64 years and two days, it must be remembered that he was an extraordinary master of the horse, of fact now commemorated in New York's Madison Square Garden Hall of Fame. In his younger days he was senior horsemanship instructor at the Cavalry School, and in 1912 captained the U.S. Equestrian Team in the Olympic games at Stockholm. His home, in common with those of all great horsemen, was filled with horseshow trophies, some big and awkward enough to win the distinction of permanent storage in the attic. He coached and advised our Olympic teams for years, served for ten years as President of the Federation Equestre Internationale, and was a perenial judge at the National Horseshow in New York.

But horsemanship was for him contributory, and never an end in itself. He was a cavalryman and soldier. He never lost his interest in the Army, and indeed was in active service—counting call-back after initial retirement—for an astonishing 50 years. He derived much satisfaction and pleasure from his permanent appointment as Honorary President of the Armor Association, whose meetings he attended regularly as long as he was able. At these meetings old friends and much younger men as well accorded him attention and an obvious respect. Being human, he liked that.

Guy Henry had a natural reserve. He was neither a very gregarious nor an outgiving person. But character—the plain unvarnished virtues of a man—seemed to clothe him, and governed everything he did. He was abidingly gentle and considerate, and yet of great strength. Son of a soldier, grandson of a soldier, he died nearly ninety three years after his birth at Old Camp Robinson in the Red Cloud Indian Agency, part of the territory now known as the state of Nebraska. He was born to the Army, and he can never leave it.

—Hamilton H. Howze

THE EVOLUTION OF THE

SOVIET BATTLE TANK

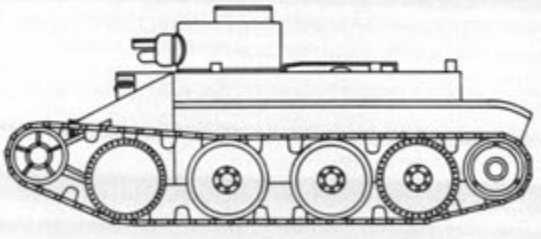
By Lieutenant Colonel Doctor F. M. von Senger und Etterlin

Lieutenant Colonel Doctor F. M. von Senger und Etterlin, German Army General Staff, served for four years in Russia during World War II as a platoon leader and company commander in the German 1st Cavalry and 24th Panzer Divisions. After being wounded eight times he was transferred in 1945 to the Armor Inspectorate of the German Army High Command. In 1949 he earned the Doctor of Law degree at Gottingen University. Following public service in the Ministries of Interior and of Defense, he re-entered the German Army serving as G3 of an armored brigade and commander of Panzerbrigade 94. He is currently G3 (Ops) of a NATO Army Group in Europe. Colonel von Senger is a graduate of the German Staff Academy and the NATO Defense College. He is the author of The World's Armoured Fighting Vehicles *and a number of other works on armor matters. This article is his first article for ARMOR. It appeared in German by mutual arrangement between the author and the editors, in the September 1967* Allgemeine Schweizertsche Militar *Zeitschrift.*

Major Raymond E. Bell, Jr., and Captains John W. Fisher and Robert Schiemann, the translators, are armor officers serving as German instructors at West Point. Major Bell and Captain Fisher have each authored several ARMOR articles including that by the latter elsewhere in this issue. All have served with armor units in Germany.

In 1965, the history of the development of the Soviet medium tank passed the 25 year mark. From the *T34* to the new *T62,* the various prototypes of this series have been developed in an evolutionary manner without interruption.

In June 1940, the first *T34* rolled off the production line. It was beyond all question a masterful feat in the history of the development of armaments. In contrast to many other countries, the Soviet Union succeeded, with its *T34,* in gaining a lead in the field of tank development by the beginning of World War II.



T3 Medium Tank (Christie) 1931

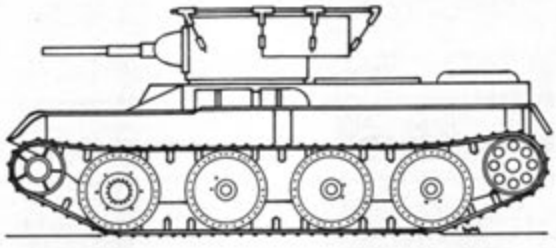
German tanks at this time were based on conceptions from the period before the Spanish Civil War and the limited experiences that had been gained there. The British models suffered from the failure to balance off certain basic tactical and operational ideas which resulted in a division of tanks into "infantry" and "cruiser" or "cavalry" tanks. Finally, the establishment of viable large armor units was totally unrealized in France.

For a long time the Soviets concealed the fact that the *T34* was the last link of a development that had begun with the private creations of the American designer, Christie. This was first admitted by Soviet Engineer Colonel W. D. Mostovenko in an article in the September 1966 magazine *Technica i Voorussenie.*

The Christie 1931 type tank was purchased by the Soviets. Beginning on 23 May 1931, it was produced in great numbers as the Soviet *BT* (Bystrokhdnii Tank) series. This *BT* armored vehicle served to outfit large cavalry units for long range operational missions. It could run either on its tracks or on its road-wheels.

The *T34* is a product of this line of development. It emerged from a combination of the technical elements of the fast cavalry tank with those of the well armored infantry tank.

According to Mostovenko in his above mentioned article, in his books *Tanks of the Past and Present* (Berlin 1961, German Military Press, East Germany) and in the article *"History of the T34 Tank"* in the *Soviet Military Review* for March 1967, the origin and later history of this tank, about which the Western world had known nothing and which was an unpleasant surprise for the German troops on the Eastern front in the summer of 1941, was as follows:



BT5 Cavalry Tank, 1933, one of the BT Series

> "In the second half of the 1930's, the experiences of the First World War, which had the character of a position war, had lost a great deal of their significance. Soviet principles of long range operations brought with them new requirements for the organization and tactics of armored troops in a mobile war and made it possible to determine correctly the necessary types of tanks and their characteristics. The *T26, BT7M, T28* and others that were built in the years 1932-1939, boasted a high degree of mobility and great firepower. Their armor protected them only against hand weapons, since at the beginning of the decade, when these tanks were developed, the armies of the possible enemies of the USSR did not possess highly developed antitank weapons. In 1936 and 1937, however, antitank guns whose projectiles could penetrate up to 58 mm of armor were introduced into the armed forces of the Western nations in large numbers. A continued use of relatively thin armor for the basic tank models was therefore no longer feasible.
>
> "The military requirements stemming from these developments, as they had to be applied to armored vehicles, called for increased firepower and heavier armor protection against artillery fire. This, however, fire. This, however, was not to be permitted to be obtained at the cost of maneuverability or cross-country mobility.
>
> "The necessity of equipping the tanks with armor effective against antitank guns and also equipping them with large guns led to the point where the light tanks which were the most widely used types in the 1930's, had to be replaced by heavier tanks with different battle characteristics than those already inherent in the other tanks built at this time, namely the medium *T28* or the heavier *T35*. These tanks had three and five turrets respectively. If one intended to retain several turrets with armor effective against antitank fire, an excessive increase in the weight of the tank would have been incurred. Therefore, it was decided to fit medium and heavy tanks with only one turret. This allowed the gross weight to be brought down by decreasing the amount of

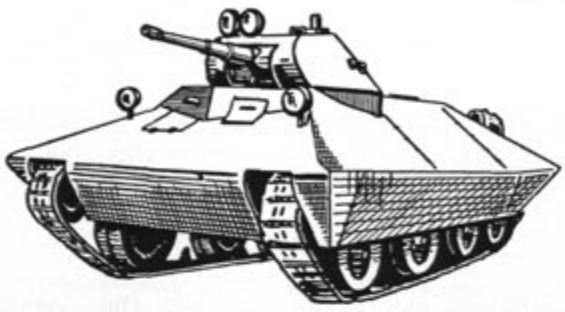
B17 tanks, though fast by 1932 standards, were protected by the armor from hand weapons only.

armor plating needed. This represented an extraordinarily important decision that led to new methods of construction for tanks of this type."

The *T46/5*

"The *T46/5 (TIII)*, the first Soviet tank with shellproof armor, was constructed in the early part of 1937. It was a further development of the *T26* (licensed for construction from Vickers-Armstrong). With a weight of 28 tons, it had 60 mm armor which was effective against 37 mm antitank rounds at all ranges and against 76 mm rounds with an initial velocity of about 2100 feet per second, at ranges of from 1200 to 1300 meters. The armament consisted of a 45 mm gun and two machineguns, one of which was mounted co-axially with the main gun and the other mounted in a niche in the rear of the turret. A 300 horsepower engine gave the vehicle a top speed of 20 mph. The engine was coupled to the driving portion of the suspension system at several points. The only notable changes from the previous models were in the armor. The significance of this tank in the history of Soviet tank manufacture is that, with its production, the first experience was gained which was required for the development of a shellproof armor for tanks.

"The saving of weight through decreasing the number of turrets and the reduction of the inside size of the vehicle allowed by the smaller number of crew members, created the required conditions to strengthen the armor without having to increase the weight of the new heavy and medium tanks in comparison to the older *T28* and *T35* types."



The *BT-IS* was developed in 1938.

The *BT-IS*

"In 1938, the light tank *BT-IS* in which various devices and mechanisms from the older basic *BT* model were used, was developed. Moreover, a new principle of form for the hull was tried in which all armored portions of the bow, sides and rear were highly angled for the purpose of defeating the effects of a direct hit. The turret was also constructed according to this same principle. The most important solutions to construction problems came from the inventor Zygankovitsch. The uniqueness of his drive system was that during wheeled operation, three pairs of bogie wheels served as drive wheels."

The *A20*

"In the 1930's, the Soviets paid a great deal of attention to the construction of tanks with the capability for either wheeled or tracked operation. This could be traced to the relatively short life of the tracks and to the erroneous assumption that the tracks were the most vulnerable part of the tank. In 1938-39, a new type of wheeled/tracked vehicle was built, the 18 ton *A20*. The hull and the turret took on the characteristic form later seen in the *T34*. The *A20,* however, was only equipped with a 45 mm gun and its armor was only 25 mm (one inch) thick. It differed from the *BT7M* in that it had a hull and a turret with somewhat more armor, as well as a new drive system. During wheeled operation, three of the four pairs of bogie wheels were drive wheels. The shape of the hull was worked out by the engineer M. I. Tarshinov. After the *A20,* other tanks were developed with heavier armament and armor protection.

"The *A30,* a variation of the *A20* was fitted with a 76.2 mm gun instead of the smaller 45 mm.

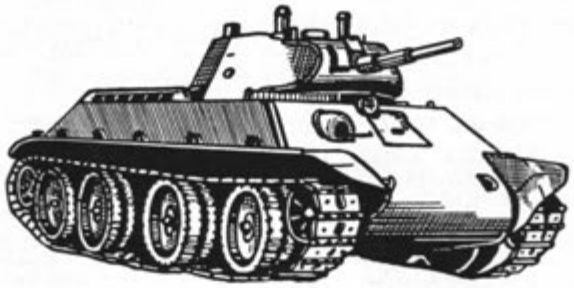
At the time of these developments, one of the main problems to be solved was that of a choice of an engine that met the requirements for battlefield employment and which at the same time would not call for excessively complicated construction of the vehicle to be driven by it.

"Two of the designers who worked on this project, M. I. Koschkin and A. A. Morozov, came to the conclusion that the use of a wheel/track

The *T46*, 1937, armor was effective against 37 mm antitank rounds.

type drive system made any vehicle too complicated. At their urging, the pure-tracked *T32* tank was developed. During a conference on new tank designs in August of 1938, the defense department approved their proposed model for construction. The armor was to be 30 mm (1¼ inches) thick.

"The *A20* and the *T32* were both demonstrated to a government board of review in the summer of 1939. Both models proved equally dependable and mechanically sound and outperformed all other models put against them. The board determined, however, that the *T32* needed better armor protection in order to fully protect the crew. But it did not decide on which version the main effort should be concentrated in the future. Test runs did not facilitate the reaching of a decision.



The A20 design exhibited later *T34* features.

It was the military action at the end of 1939 that finally determined that the desired tank would have to have more firepower, more armor protection against antitank fire and a more rugged drive system for the full tracks. From this moment on, the construction of the *T34* was accelerated. This vehicle was in an engineering sense, a further development of the *T32*. The *T34,* known the world over as the "34," was accepted by the Soviet armed forces on 19 December 1939, even before its experimental model had been completed."

THE CONSTRUCTION CHARACTERISTICS OF THE KV AND T34 SERIES

"The immediate predecessors of the *KV* (Kliment Voroschilow) tank were the *SMK* with two turrets) and the *T100*. Their armament consisted of a 76 mm and a 45 mm gun as well as several machineguns. Their armor gave full protection against 37 mm antitank rounds. These vehicles were all powered by gasoline engines. The *SMK* had a torsion suspension and the road wheels had internal damping devices.

"In 1939, the development and manufacture of the *KV1* heavy tank with a single turret was also completed. This was the first tank with a single turret and shellproof armor that was accepted for mass production. In December 1939, it was introduced into the Army.

"A new level of tank development was reached with the *T34* and the *KV1*. These pointed the way to a new direction in tank construction. Each one was assembled from a series of major components that were joined for the first time in the actual construction phase.

"The medium and heavy tanks had a 76 mm long barrell cannon with an initial velocity of 662 meters (2200 feet) per second. This was considered high for that time [In comparison, the initial velocity of the 75 mm armor defeating round of the German Mark IV tank was 380 meters (1240 feet) per second]. At the same time the *T34*, as well as the *KV*, was equipped with the rugged *W2* diesel tank engine.

"The development of the Soviet *W2* diesel tank engine had been completed in 1935. Prototypes of this model were, as already mentioned, tested in the *BT7M* tank starting in 1938. Experiences with that tank showed the merits of the diesel engine and made further construction improvements possible.

"While foreign tank development oriented itself on the gasoline engine, the equipping of the Soviet tanks with the diesel motor led to a significant increase in the cruising range with the same amount of fuel. In addition, the maintenance of the tank was simplified, the danger of fire in combat and on starting was decreased and the disturbances to radio traffic were reduced.

The *W2* diesel engine was installed in the *T34* and *KV* tanks with minor changes. The principal components were mutually interchangeable. This resulted in simplification both in production and in the maintenance of the engine.

"Since 1938, singly suspended bogie wheels have been used exclusively in Soviet tank construction because they allow the highest speed and compared to other types of suspension have the longest life. The transition to this suspension came about as a result of the experience with the *BT* tanks and the experimentation with numerous coupled suspension systems which had been used on most tanks during the previous thirty years. After trial of a number of experimental constructions, the *KV* tanks were equipped with torsion bar suspensions. Such a principal of suspension in tank construction was new for a heavy tank. During the building of this suspension, a number of complicated questions, to include the selection of materials and technical production procedures, had to be solved.

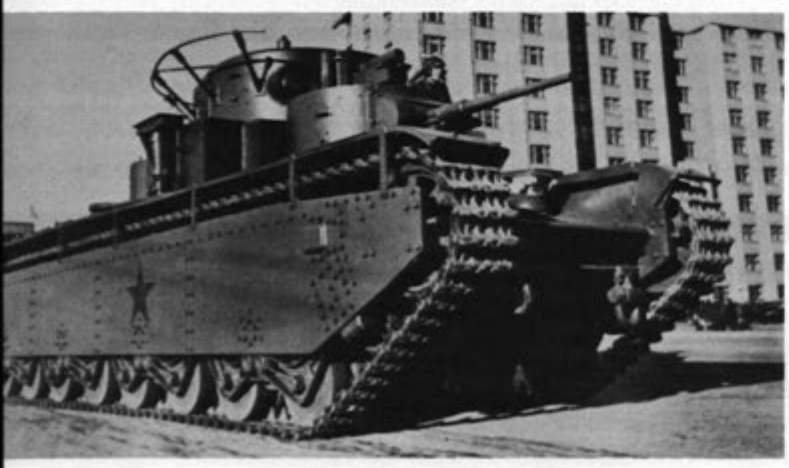
The successful solution of all the problems inherent in the construction of the torsion bar system made it possible to employ this system in all Soviet tanks.

"Before 1938, the suspension system on the *T28* and *T35* were protected by special devices. This complicated the construction of the armor plating and led to decreased performance of the vehicles. The transition to the shellproof armor plating with the retention of the previously mentioned protective devices would have greatly increased the weight of the tank. Therefore it was necessary that sufficient protection for the suspension system to be developed that special protective devices could be discarded. The construction improvements of the suspension made this possible.

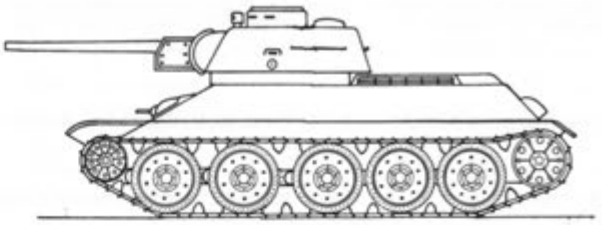
"At first, the *T34* and *KV* were equipped with wide tracks. This led to decreased ground pressure and increased cross-country mobility. With the Soviet tanks, the mean specific ground pressure did not exceed .7 to .75 kilograms per square centimeter (10.2-11.4 pounds per square inch) as compared to the German, English, French and American light and medium tanks with ground pressures from .95 to 1.0 kilograms per square centimeter (13.8-14.5 pounds per square inch.)

"Bogie wheels of large diameter are one of the characteristics of fast tanks. This became a reality with the Soviet *T34* tank. With these, the *T34* suspension system was made suitable for the complex employment conditions of a modern battlefield.

"In the construction of the *T34* tank, the requirements of mass production were taken into consideration and simplified maintenance in the field was assured. All principal components of the tank were simply built and the crews learned to master them easily. Numerous new technical features were also introduced in the armor plating.



The heavy *T35* bristled with five turrets and contained a 10 man crew within.



The *T34*, 1942, with a 76 mm long barrel cannon.

"On the basis of the successes achieved up to 1939 in electric welding, welded construction of the tank hulls for the medium and heavy tanks was developed.

"In casting, one could look to certain experiences from the period of bullet-proof armor. At the time, turrets were already conically shaped to reduce the number of shot traps. The already available solutions, however, could not be adapted to the tanks with shell-proof armor plating for different reasons. The shape of the *T34* tank hull was something completely new in the field of armor protection. It can be said at this point that joining the side plates to the front plate of the welded turret of the *T34* was first done successfully with a mortise and tenon joint."

THE T34/76

In February and March 1940, two prototype *T34/76* tanks made a march from Charkov to Moscow to Smolensk to Kiev and back to Charkov. After this trial, the mass production of this tank was begun. From June through December 1940, 115 tanks were built; in the first six months of 1941, 1110. The creators of the medium-heavy tank *T34* and its further improvements, chief engineer Morosov, (who died in the fall of 1940) and engineers Kutscherenko, Baran, Schpeicher and others won special Soviet praise.

Again, according to Mostovenko:

"The *T34/76* had a fighting weight of 28 metric tons (31 US) and was armed with a 76 mm cannon and two machineguns. The well situated armor plating lessened the vulnerability of the tank hull and the turret significantly. The thickness of the front of the hull [1.8 inches at 60 degrees] made it capable of withstanding a 75 mm projectile. The maximum speed of the tank was 55 kilometers (34.2 mph) per hour. The ground pressure was .74 kilograms per square centimeter (11.4 pounds per square inch) and the cruising range was in the neighborhood of 300 km (188 miles) on roads.

"Compared to the German *Pz III*, the *T34* was faster and had good cross-country mobility. In addition, its cruising range was several times greater than that of the German tanks. The 37 mm cannon of the German *Pz III* was ineffective against the armor of the *T34* at all ranges, while the 76 mm cannon of the *T34* could penetrate any point on the 30 mm armor of the *Pz III* at any distance up to its maximum range.

"The kinetic energy at the muzzle of the *T34's* 76 mm cannon was 7.6 times greater than that of the *Pz III's* cannon. Even greater was the superiority of the *T34* over the *Pz IV*. *This tank* was even less well protected than the *Pz III* and had less speed and cross-country mobility than the Soviet tank. Its 75 mm cannon had only a slight armor penetrating effect and was unsuitable for combat with the *T34*.

"The original welded and molded *T34* turret was later replaced by a six sided molded turret of simpler construction. Also simplified was the fusing of the armor plate components. Molded bogie wheels were introduced. The capacity of the fuel tank was raised and so forth.

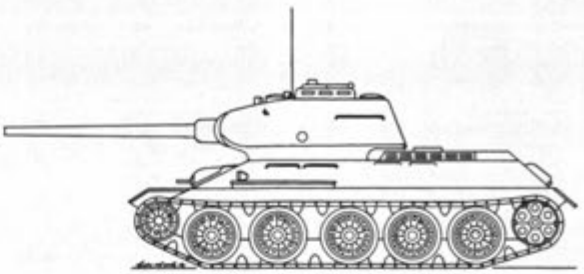
"In the winter of 1942-43, the most important Soviet tank, the *T34* was further modified. The construction of the hull was simplified. The armor components were joined by automatic welding with flux which gave higher quality joints. In order to widen the field of vision of the tank commander, the commander's cupola was introduced. A five speed transmission replaced the original four speed transmission. The automotive characteristics of the tank were improved and the shifting of gears was simplified. Also, the air filter was perfected further. The reliability of all parts of the tank was increased."

THE *T34/85*

"The *T34/85* tank soon made its appearance on the battlefields. The 85 mm cannon of the *T34/85* had good ballistic characteristics. In spite of an increase in weight, the speed and cross-country mobility of the tank remained approximately as great after the modernization.

The *T34/85* weighed 32 metric (35 US) tons compared to the *T34/76* at 28 metric (31 US) tons. With the considerable increase in weight the favorable horsepower to weight ratio (PS/t) sank from 18.6 to 15.3. This was still higher than that of the opposing German models—*Pz III* = 13, *Pz IV* = 12, *Pz V Panther* = 13.2 and *Tiger I* = 12.7.

At the same time the ground pressure rose from .6 kilograms per square centimeter (8.5 pounds per square inch) to .81 (11.6 psi). Nonetheless this



The T34 was armed with an 85 mm during the winter of 1942-43.

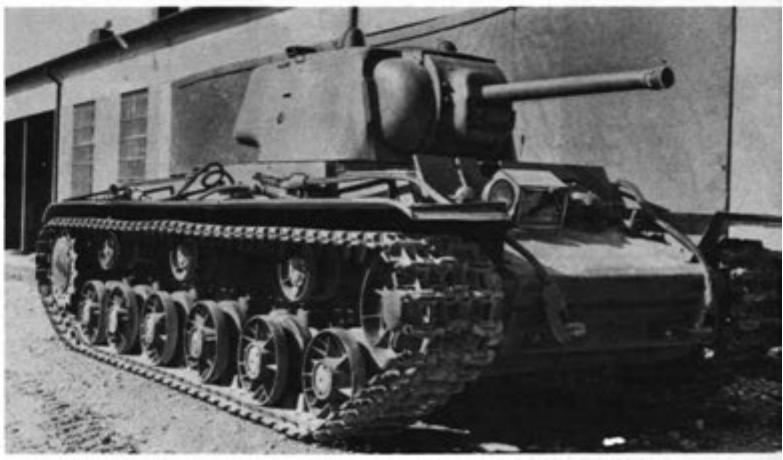
was considerably lower than that of other standard tanks of the time such as the *Cromwell* at 1.0kg/cm² (14.5 psi), *Pz III* at 1.1 (16), *Pz IV* at .88 (12.9) and *Tiger I* at 1.05 (15.1).

The new *T34/85* turret was a temporary expedient and as such it was not completely effective. The undersized circular track of the cupola required a thin neck which proved fragile. Also, the large turret overhang gave the *T34/85* many shot traps.

The considerable increase in combat weight of the *T34/85* from 26.5 metric (29 US) tons to 32 metric (35 US) tons caused the favorable horsepower to ton ratio of 18.6 to fall to 15.3.

With the development of new types after the end of World War II, the manufacture of the *T34/85* was stopped, except for limited production built under license for the purpose of stimulating the satellite military industrial capacity. The earliest of the *T34* series had remained in troop use for 15 years, a time span which had made these models obsolescent. Nonetheless they had required only minor modifications to keep them in a virtually continual state of combat readiness.

In a subsequent installment the author will discuss the Soviet tanks which stemmed from and succeeded the T34 series. THE EDITOR.



The KV1 tank was the first Soviet tank with a single turret.

SHORT, OVER, LOST or...TARGET

A range for firing novel ideas which the readers of ARMOR can sense and adjust. This is a department for the new and untried from which the doctrine of tomorrow may evolve. Items herein will normally be longer than letters but shorter and less well developed than articles—about 750 words maximum is a good guide. All contributions must be signed but noms de guerre will be used at the request of the author. ON THE WAY!!

TAKE A BREAK

Captain Thomas R. Stone, Artillery

"Take a break!" More welcome words are seldom heard by a trooper on the last leg of a twelve-mile forced march, or during bayonet course practice. But the idea of taking a break is applicable to the leader as well as the soldier. Today in Europe, most company-size units are commanded by junior lieutenants. The training day seems to be made up of one crisis after another whether the unit is in the field or in garrison. Often, these officers have not had the benefit of learning as they progress through the jobs of platoon leader, executive officer, and perhaps a battalion staff job prior to becoming a unit commander. After a short time in a platoon, they become the "Old Man." In addition to the normal time required to be an effective unit commander, they must put in additional hours studying areas of company administration which in other times they would have learned on their way up.

Mess and maintenance forms and procedures, the maintenance of a unit fund, the preparation of a unit training program, the administration of company punishment are but a few of the subjects which must be studied and mastered.

Often one day blends into the next, the weeks and months slip by, the leader pushes for his AGI-CMMI inspection, and before that is over he is trying to train his unit for ATTs which are followed by a river crossing exercise which . . . .

Things come so fast and furiously that a leader usually forgets to take a break. It is amazing what results a few quiet minutes spent in reflection over what the unit has done and is to do in the future will achieve. The leader can forget temporarily the day to day cares of his deadline status and area police and really concentrate.

I first learned of the break system from a senior officer who inspected my unit during a troop test. He pointed out that the break could be taken any time at any place. For example, the commander could sit down at the base of a tree and stop for a few minutes to think—Is my unit progressing as it should? Do I have an objective? Am I making the best use of my men's time? The break can be taken in the office as well as in the field.

As a result of taking such breaks, the task of a unit commander becomes clearer, and he can utilize better his own and his men's time and efforts.

So, though the pressure is on and the commander feels that he needs four hands to get things done, he should free himself occasionally to stop and "Take a Break."

It pays off.

DO WE REALLY WANT TURRET MECHANICS?

Sergeant Major Robert Sauter

Today, Armor has placed increased emphasis on the school trained technician to maintain our complex fighting equipment. The turret mechanic must be highly skilled and knowledgeable about the turret systems we have today. In the time to come he will have to know the complicated systems now in development.

The personnel to be trained in this field, which is vital to our very existence as tankers, are carefully selected using established criteria for attendance at the course of instruction at a service school. These standards are high.

The current G series TOE of the tank battalion and the armored cavalry squadron provide that, for turret mechanics in MOS 45G20, the highest attainable grade shall be E4.

A career soldier will take a good hard look at the following before voluntarily entering or remaining in a career field:

1. How far can I advance in the field?

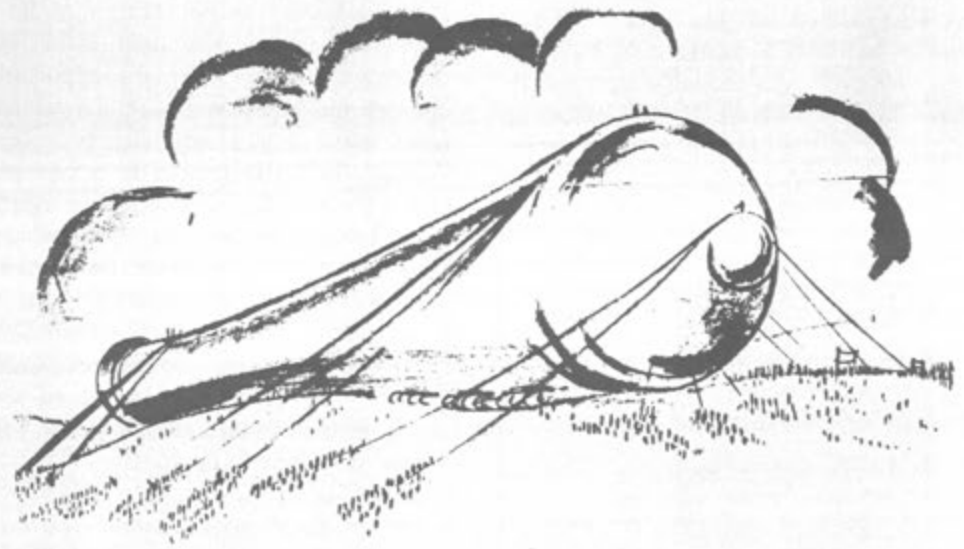
2. What incentive is provided for me to pursue this career field?

3. How does this field compare with others in terms of advancement and career incentives?

Let us take as a typical example an enlisted careerist who has a choice of being a turret mechanic or an armor crewman. First he looks at the grades authorized. A turret mechanic is only authorized the grade of E4 while the armor crewman can advance as a tank driver or gunner to the grade of E5. The turret mechanic must have successfully completed a 10-week course of instruction at a service school for award of his PMOS, while the tank driver or gunner receives his PMOS by virtue of being proficient in his job at unit level. This, coupled with the fact that the driver or gunner may advance more quickly to a tank commander's position and grade could be the decisive factor in selecting one of the two career fields.

Considering the time and dollars expended to train turret mechanics to maintain complex turret systems, an incentive should be established to retain these technically proficient personnel. In addition, the inexperience of the company/troop and battalion/squadron maintenance supervisory personnel with turret functioning and repair causes the commander to lean heavily upon the E4 for his technical knowledge. A real incentive could be provided by revising the TOE to upgrade the positions of turret mechanic to Specialist E5 at company and troop level and SSG E6 at battalion and squadron level.

Through this change a career with a future would be created for these armor technicians in whose hands rests so much of the combat readiness of Armor firepower. And—the retention of these carefully selected, school trained technicians would be enhanced. Now is the time to make the move.



Unsolicited Industry proposal found abandoned at the U.S. Army Combat Developments Command. OWNER SOUGHT.

MAIMED BATTLE TANK

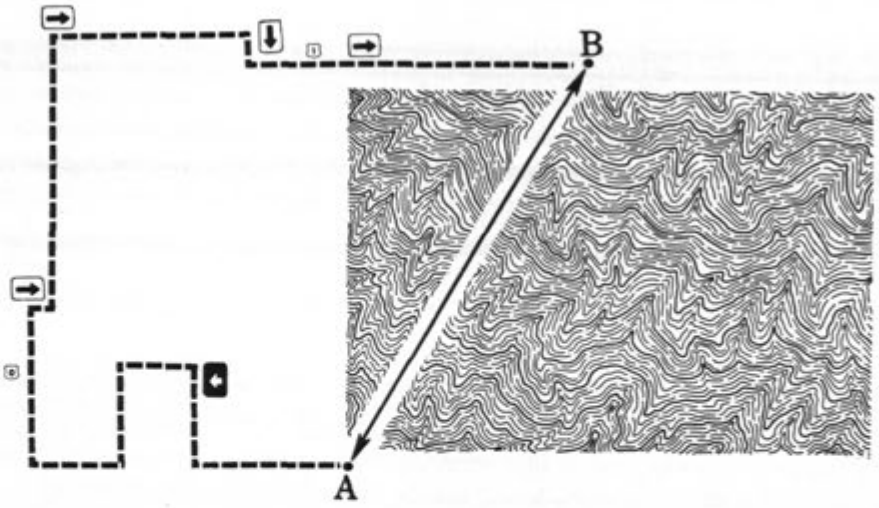
CONCEPT: No Engine - No Track - No Hull

PRINCIPLE: Huge gun tube is hauled on battlefield by 4 Artillery Groups, 1 Infantry Division. Fired remotely from Washington.

EMPLOYED: On objective it is pointed at our own lines. Awed enemy, assured we are executing national suicide policy, gather behind it to watch. Tube is fired. Has extremely short range (100 meters), but 1400-mile recoil.

PROBLEM: Holding range to 100 meters.

THE SHORTEST DISTANCE



By Captain John W. Fisher

On the cover of the August, 1967 edition of *Army* magazine was a photograph that should have made a deep and lasting impression in the mind of every Armor leader. It was an aerial shot of the winding road leading up to the northern entrance of the Mitla pass. It might have been hard to pick out the actual road had it not been well-marked by the charred hulls of burned-out Egyptian vehicles that extended as far as the eye could see.

The title of the feature article in this issue of the magazine was also printed on the cover: "SINAI II—The debris of battle is a measure of Egyptian defeat, Israeli victory." An equally appropriate title might have been: "SINAI II—A lesson on the disadvantages of a road-bound column movement."

CAPTAIN JOHN W. FISHER, *Armor, is a 1960 Distinguished Military Graduate of Stanford University. Following the Armor Officer Basic Course he served in the 3d Armored Division as a platoon leader in the 3d Squadron, 12th Cavalry, assistant combat command S3 and tank company commander in the 1st Battalion, 33d Armor. Thereafter, he commanded a company in the United States Army Training Center, Armor at Fort Knox. Upon graduation from the Armor Officer Career Course in 1965 he was assigned to the United States Military Academy as an Assistant Professor of German.*

The truly pathetic aspect of this photograph is that it clearly shows miles of trafficable terrain for tracked vehicles on both sides of the road onto which many of the vehicles could have fanned out—true Armor terrain. Instead each driver followed the vehicle ahead of him and thereby followed it to certain destruction by the Israeli pilots who had the once-in-a-lifetime opportunity to strafe and bomb a bumper-to-bumper column that extended miles in length.

The question to be asked now is: "How often do we too get into the questionable habit of traveling only on roads when the opportunity for cross-country movement exists?" To be sure, there are times when it is a necessity because of maneuver damage, POL limitations in a peacetime situation, and the desire for administrative control. But how many times, even in a purely tactical situation with the free maneuver allowed, do we grab a map and start looking for the nearest main road net the minute any movement is required? The answer is: much too often! To be sure, there is a certain ease of map reading, a feeling of security, and a much smaller chance of making a wrong turn that would not endear us to the CO.

But where is the "mental mobility" that is supposed to characterize Armor leaders? And where does the enemy most often lay mines? What about the hours of map reading training with their problems on trafficability analysis, grade determination, guiding on landmarks, locating fords and the like?

From the photograph on the cover of *Army* it is clear that someone either omitted such matters from their studies or forgot what they had learned. As you know, the topic of "What is Armor terrain" is a favorite one for a lengthy discussion; it seems ironical that there in the Sinai Desert, in perfect Armor terrain, one side forgot about mobility. By

moving off the road many of the vehicles headed towards the Mitla pass could have made it instead of being locked in between other vehicles. Tracks visible in the sand on the photo show that a few drivers did get off the road and headed for the pass, omitting large curves and winding portions of the road. A few, but far too few. It is interesting to note that there are no burned out vehicles near these tracks.

Why is straight line, off-the-road movement so often left out of the picture? Excuses numbering into two figures could, no doubt, be listed, but they do not solve the problem. A way of getting into the habit of off-road movement along with a chance for practical application is needed. The German Army has recognized this problem and has come up with a solution.

The author had the opportunity to participate in a competitive exercise whose main purpose was to instill the habit of cross-country movement and to increase one's confidence in his map reading ability while under pressure. The exercise was conducted by the 15th Panzer Brigade located at Koblenz, Germany and, although it took place a while ago, the value of the exercise is ageless. While this exercise was conducted on a rather large scale with participants from the French, American and German armies, it could be run at any level from platoon on up through brigade.

Teams were made up of two men, each qualified to drive a ¼-ton vehicle. The teams were instructed to report with their vehicles to a certain location at a specified time and to have with them a certain numbered map sheet. After all teams had assembled at the starting point, a card with ten identical sets of coordinates was given to each team. The requirement: drive from the starting point, pass through each set of coordinates and finish at the last set listed on the card. Some of the points were listed as having to be approached from a certain direction, i.e. from the north. The team that passed through all points in the shortest total distance would be the winner. The vehicle that had traveled the next least number of kilometers would be second, and so on.

Teams were to be dispatched from the starting point at five minute intervals. A preparation time of 15 minutes was allowed. In effect, the team that could determine the correct succession of going from one point to the next and that also could most closely adhere to a straight line distance between each two points would win. Two adjacent points might be connected by a fine road but one fact was repeatedly very evident—*it might not be the shortest distance between them!*

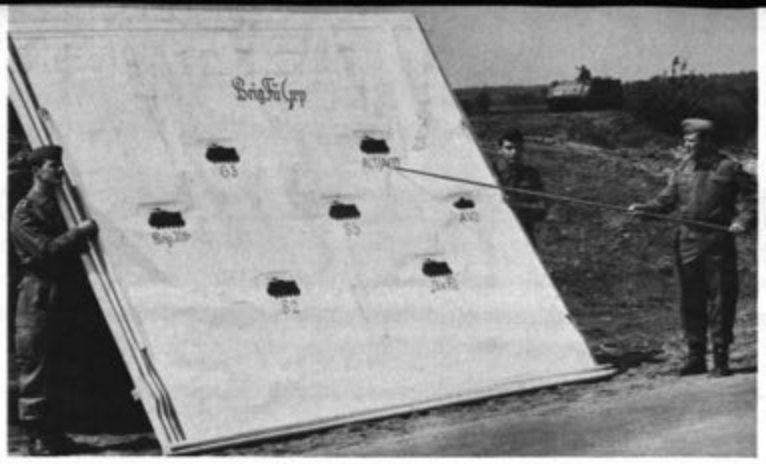
Control and personnel requirements were held to a minimum. No radios were allowed. Four controllers were spread among the 9 intermediate points to keep a record of the vehicles passing through. The teams were informed that only half of the points would be manned, but if they decided to take a chance and miss a point in the hope of cutting down on their total mileage and this point happened to be one of those that was manned, their vehicle would not be recorded as having passed through and they would then be disqualified. Not too many teams decided to take the risk.

Other control personnel included a man at the starting point to coordinate activities, hand out cards, start the vehicles at the proper time intervals and record the initial odometer reading. Another controller was stationed at the finish point to record odometer readings there. The distance traveled during the exercise was about 100 kilometers and a reasonable time limit of about six hours was set in which to complete the driving. The exercise was not intended, nor did it turn out, to be a race.

The experience and training gained in this rather simple exercise was invaluable. Maps were examined with great care in order to find trafficable straight line routes. Map reading training while on the move lasted every minute of the way. Fords across streams had to be found as well as small trails through dense forests. The element of competition provided the "pressure"; the element of being alone as a team and knowing that no matter how many dead ends you came across, some other team might meet a few more, kept an element of suspense throughout the event. Main roads came to be avoided in the search for the shortest distance. Though tanks were not used, the training was just as valuable for it forcefully imparted the idea that roads are not the only trafficable terrain, something that we too often forget. POL, equipment and personnel requirements were relatively few and the training received for the amount of effort to organize the exercise was no small dividend. Perhaps the greatest benefit was the self-confidence attained by all the teams that negotiated the course, especially by those that did well. If such a course were to be set up within the limits of a unit's area of responsibility in an actual wartime situation, an additonal benefit of better learning the terrain in that area would be achieved.

The entire exercise was very well received by all the teams. They found it challenging, interesting and professionally rewarding. The simplicity of the exercise and the minimum equipment and personnel requirements should appeal to the operations planner. The lesson learned by the participants was sure to remain with them for a long time: *think in straight lines!*

Insignia of Kampftruppenschule II



Brigade Commanders Course instruction

The "Heart of the throughout the yea

The German Arm

(Kampftrupp

A reconnaissance vehicle of an armored reconnaissance battalion

A German Army armor school was re-established in 1956 primarily as a training center for armor troops. It was soon apparent that armor, armored reconnaissance and armored infantry are closely related and dependent upon one another not only in combat but also in training. In 1958, separate schools for each of these were merged into one training establishment—Kampftruppenschule II. Here students from section leader to brigade commander learn armor organization, tactics, communications, maintenance and weapons.

To fulfill its mission, the school has a faculty of 110 officers, 155 NCOs, 150 soldiers and 376 civilians. It trains about 3500 students annually.

The 105mm gun LEOPARD is the c

The new German mechanized infantry combat vehicle (MICV)

The new German armored recovery vehicle

▶

Maintenance sergeants from all combat arms receive preventive maintenance and repair training

◀

Armored Troops" is visited continually
r by prominent German and foreign officials

Future platoon leaders solve tactical exercises on the sandtable

Brigade General Philipp
Commandant, Kampftruppenschule II

my Armor School

penschule II)

urrent standard German battle tank

The school is organized into four training departments: Officers and Officer Candidates, Sergeants and Corporals, Weapons and Communications, and Vehicle Maintenance and Repair. There are a research and development staff and a school troops brigade to conduct demonstrations and troop testing of new materiel. The nearby Munster-North troop training areas, particularly Bergen-Hohne, afford excellent terrain to all organizations up to divisions for conducting field training exercises.

Armor exclusive

by

Hauptmann Hans Georg Estor, BRD

and

Master Sergeant James Papachriston, USA

The German 90mm tank destroyer

An HS30 mechanized infantry combat vehicle

Sergeants and corporals in a communications class

Cadet to Field Grade in the BUNDESWEHR

by Captain James F. Thomson

The acceptance of a German youth into the *Bundeswehr* (Army of the Federal Republic of Germany) for a regular officer career is the beginning of many years of specialized training and service duties.

There are three categories of commissions in the *Bundeswehr:*

- Temporary Service Officer: engaged for a tour of service of not less than three years and up to a maximum of fifteen years.
- Regular Career Officer: commissioned for an indefinite tour until he reaches retirement age. The retirement age varies depending upon the grade of the officer. For example a *Hauptmann* (captain) retires at age 52, while an *Oberst* (colonel) retires at age 58.
- Reserve Officer: originally enlisted for eighteen months in compliance with the compulsory military service laws. Reserve officer candidates then may volunteer for a six month extension of service to complete officer training and receive their commissions. Or they may volunteer for further training three times during the five years following discharge from their original enlistment and then receive their commission on completion of that training.

CAPTAIN JAMES F. THOMSON, *Armor, entered the service as a private in 1954. He advanced to sergeant prior to attending the Infantry Officer Candidate Course from which he was commissioned in March 1963. He attended the Armor Officer Basic Course in 1963. Thereafter he served as a platoon leader, company executive officer, company commander, and battalion S4 in the 3d Battalion, 64th Armor in Germany. In June 1965, Captain Thomson was transferred to Vietnam where he served as advisor to an infantry battalion. A June 1966 graduate of the Armor Officers Advanced Course, he is presently serving with the 6th Armored Cavalry Regiment at Fort George G. Meade, Maryland.*

The author wishes to acknowledge the kind assistance of Oberstleutnant (LTC) Friedrich Sacha, German Liaison Officer at the U.S. Army Armor School in obtaining material for this article.

This article illustrates the career pattern for regular career officers in Armor. The pattern for other branches is similar. All applicants for a regular officer career much be graduates of a *Gymnasium* (junior college). They must also undergo stringent physical and psychological tests. Those who are accepted begin their army training as a *Panzershütze* (officer candidate).

INITIAL TRAINING FOR THE OFFICER CANDIDATE

Initial training is with a training company of a regular field maneuver battalion. During a three month period the candidates receive their basic training along with the other *Bundeswehr* recruits. This training is very similar to that of the U.S. Army basic training program.

Upon completion of their basic training, the candidates are retained in the field maneuver battalion for an additional two months to receive driver and maintenance training. This is given by a tank company. It encompasses all the organic vehicles.

KAMPFTRUPPENSCHULE II

The next training phase is at the *Kampftruppenschule II* (Combat Arms School II) in Munster/Lager, north of Bergen-Hohne, Germany.

The land on which the school and its three training areas is now located was purchased in 1892. It has served as an army training site ever since. The *Panzerschule* (Tank School) was formed at Munster in 1956. It functioned for two years until the *Bundeswehr* changed its doctrine and organization. Three separate branches: *Panzer* (Armor), *Panzeraufklärung* (Armored Reconnaissance) and *Panzergrenadier* (Armored Infantry)were combined into

one. The school was then referred to as *Die Panzertruppenschule* (Armored Forces School) until 1962 when it was renamed *Kampftruppenschule II.*

The present school attendance is approximately 1500 students. The courses range from the Brigade Commanders Course through tactical and technical courses such as Staff Functions (S1, S2, S3, and S4) Officer Gunnery Instructor and Battalion Maintenance Officer.

The officer and officer candidate classes at *Kampftruppenschule II* are programmed for not more than thirty students each. A senior officer advisor is assigned to each class. The advisor attends all periods of instruction with the students, instructs them in certain subjects himself and counsels them when necessary. He is also required to submit an efficiency report on each student at the completion of the course.

The school is so tailored that classroom instruction requires only 40 percent of the allotted time. The remaining 60 percent is devoted to practical exercises in the field or in garrison offices of the *Lehrtruppe* (School Brigade), depending upon the subject.

All departments (e.g. Communications, Maintenance and Weapons) are assigned their own vehicles and equipment for instruction. This permits the *Lehrtruppe* to support only the tactical phases of training. The *Lehrtruppe* is one of the best TOE units assigned to the *Bundeswehr.* It is maintained at 100 percent strength in men and equipment.

THE ARMOR OFFICER CANDIDATE

Officer candidates are enrolled at *Kampftruppenschule II* for the *Fahnenjunker* Course. Here they receive five months' instruction in leadership, map reading, communications, basic tactical training and tank crew training with emphasis on the tank commander's duties. After the first month, the candidates are promoted to *Gefreiter* (corporal). Upon completion of this course the candidates are assigned to a field battalion to apply the knowledge they have gained.

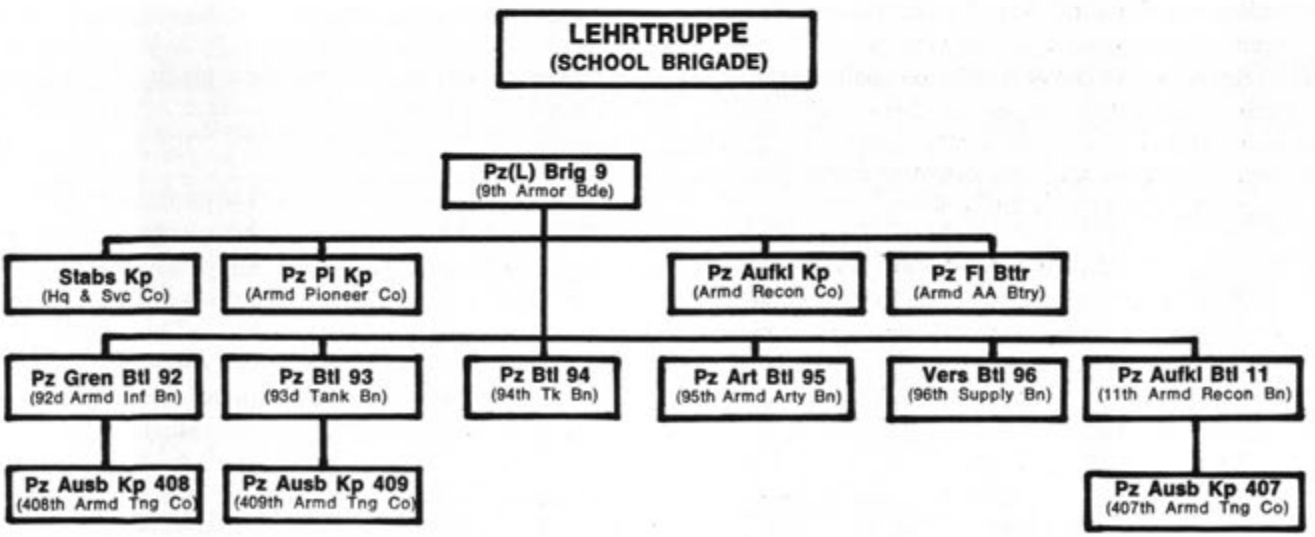
TROOP DUTY AS AN NCO

The following five months, serving with a battalion, comprise a crucial period for the candidates. Each is assigned as a tank commander and is required to perform all the required duties of that position. The officer candidate participates in tank gunnery and field training exercises from platoon to battalion level. He must prove himself to be a capable leader. Those failing to perform their assigned duties in an acceptable manner are dropped from the officer training program. During the second month with the battalion the candidates are promoted to *Fahnenjunker* (cadet sergeant).

Those completing the requirement to serve successfully as tank commanders return to *Kampftruppenschule II* for the six month *Fähnrich* (tank platoon leader) course. During this course, the candidates receive more instruction in general military subjects and tactics up to company level. The majority of the tactical training is conducted through practical exercises in the field.

ADVANCED OFFICER CANDIDATE SCHOOLING

Upon successful completion of the *Fähnrich* course, the candidates are promoted to *Fähnrich* (cadet staff sergeant) and sent to one of three cities, Hamburg, Hanover or Munich, to attend an army officer school. This schooling begins the formal officer training of the candidates. The program of instruction is divided into an initial nine month



phase followed by a second six month phase. Sixty percent of the first phase is devoted to tactical training at the battalion level. The remaining 40 percent is spent in general education to include chemistry, German philosophy, mathematics, physics and one foreign language. Successful completion is rewarded by promotion to *Oberfähnrich* (cadet master sergeant) and enrollment in the second phase.

Normally the candidates remain at the same location to pursue six months of further instruction in subjects similar to those of the first phase, but on a more advanced level. Here the emphasis is reversed with only 40 percent being devoted to tactical training and 60 percent to general education. Success in this course brings the commissioned rank of *Leutnant* (second lieutenant).

THE NEW LIEUTENANT

Prior to reporting for their new duty assignments as platoon leaders, the new lieutenants must attend a two-month technical course at the Ordnance School. Here they receive further instruction in automotive and weapons maintenance.

The position of platoon leader will be held for approximately three years. During this time, a lieutenant must prove himself to be a capable leader. In addition, he must complete successfully two or three special courses such as the Officers Gunnery Instructor Course, the Ranger Course, and the Special Night Devices Course. This must be accomplished before he is promoted to *Oberleutnant* (first lieutenant) This promotion normally comes between his 66th and 69th months of service.

THE FIRST LIEUTENANT

With the rank of *Oberleutnant,* the officer may be assigned as a platoon leader, company executive officer, battalion S1 or battalion S2. While serving in one or more of these positions, he is required to attend either the Battalion Staff Officer Course, Company Commanders Course or a selected special course.

Beginning in 1969 it will be mandatory for all first lieutenants to attend a five-month course at The Armed Forces Academy. There the students pursue such courses as administration, leadership, logistics, martial law, and politics.

PROMOTION TO CAPTAIN

Prior to being promoted to the rank of *Hauptmann* (captain), the officer must have completed seven years of commissioned service, be 27 years of age and have fulfilled his service requirements in an acceptable manner.

Once promoted to captain, the officer is eligible to take command of a company or serve as a principal staff officer at battalion level. If the officer has not completed the Company Commanders Course he must do so prior to assuming command. While a captain he will be required to attend the Special Leadership Course for Company Commanders, the Preventive Maintenance Course, the Armed Forces Academy (if not a previous graduate) and the Field Grade Officers Preparatory Course.

The Field Grade Officers Preparatory Course is attended by members of all the services: Army, Navy and Air Force. From this course, each year the 100 best qualified officers are chosen to attend the General Staff Officers Academy for three years.

Those who fail to meet the academic requirements of the Field Grade Officers Preparatory Course are retained in the service as captains until their retirement age of 52.

PROMOTION TO MAJOR

These officers who complete the Field Grade Officers Preparatory Course successfully are eligible for promotion to major. Other requirements for promotion to major are at least twelve years commissioned service and successful completion of four years military schooling from date of commission. The normal age for promotion to major is between 36 and 38.

As a major the officer may be assigned as a battalion executive officer, or as a brigade, division or corps staff officer. He may also serve on the staff of the *Truppenamt* (equivalent to USCONARC) or the Ministry of Defense. Some majors are assigned as instructors at one of the many service schools.

Following promotion to major the officer's career will vary. Those chosen for and graduated from the General Staff Officers Academy will hold many staff positions from division level up to the Ministry of Defense and Joint Service staffs. Periodically these officers will return to troop units for command duty as they advance toward promotion to general officer.

The remaining officers, not fortunate enough to attend the General Staff Officers Academy, will serve in staff positions up to corps level or hold command positions in accordance with their grade. Normally, members of this group will not advance beyond the grade of *Oberst* (colonel) and will retire at 58 years of age.

In contrast to the "up or out" orientation of United States Army officer career management, the German system seeks to utilize to the fullest the individual capabilities of each professional officer from commissioning to retirement. The unfit are unhesitatingly eliminated. However, the officer who reaches his own highest level and can continue to serve effectively at that level is retained until retirement in his fifties. Thus the investment in a very thorough program of military training and education is fully realized.

THE VICKERS MAIN BATTLE TANK

by Colonel B. S. Heath

During the past few months, the Vickers Main Battle Tank has been mentioned in various military periodicals. It gives every appearance of being an interesting development, particularly in view of its light weight and its potential for employment in areas with less well-developed road nets. This article by The Vickers Limited Engineering Group of London was prepared exclusively for ARMOR. *The author is a Military Armament Technical Advisor to that firm. All photographs are courtesy of Vickers Limited. The Vickers Main Battle Tank has been named the "Vijayanta" ("Victorious") by the Indian Army.* Editor.

The British firm of Vickers-Armstrongs has been producing tanks without a break since World War I.

The latest Vickers tank is a four man model designed to give the firepower, mobility and protection needed to fight in all conditions, nuclear and conventional, in any part of the world. It has adequate crew accommodations, fuel, ammunition and so on for 24 hours of continuous operations.

It has the same engine, gearbox, auxiliary engine, brakes, steering and ranging machinegun as the *Chieftain*. It has similar stabilization but mounts the 105mm gun of British design which has been adopted by the Americans and the Germans for the *M60* and *Leopard*.

Carrying less armor than the *Chieftain,* it is about 13 tons lighter, is faster, and can swim as well as wade.

PHILOSOPHY OF DESIGN

There are two modern philosophies in tank design. The first places the major characteristics in the order of firepower, protection and mobility. The second has these characteristics in the order firepower, mobility and protection. The British *Chieftain* was designed according to the first mentioned philosophy while the *Vickers* tank is designed in accordance with the second. Firepower is manifestly the first consideration, but in the *Vickers* design a balance has then been struck between excellent mobility and adequate protection within an overall weight of 38 tons.

FIREPOWER

Firepower is the most important feature of any tank. Before one can kill one must be able to hit. In the antitank role a high chance of a first round hit is essential. In order to ensure the best chance of these, two factors are paramount. First, one must have the right type of gun and ammunition, and secondly, one must have a reliable method of finding both range and line. The armor-piercing discarding sabot projectile (APDS) as fired from the British 105mm gun is the best ammunition, since it gives the flattest trajectory with the smallest angle of descent and the shortest time of flight.

All British experience and research indicates that

the stabilized .5" (caliber .50) ranging machinegun, fitted in the *Vickers* tank, provides the quickest and most reliable method of finding both range and line. Optical range finders have proved to be unreliable in battle conditions and in poor visibility. Moreover, they cannot operate while the tank is moving and, as they make no allowance for crosswinds, they cannot establish the true lay for line at all. The ranging machinegun is undoubtedly the most efficient device in these respects, and can be used out to a range of 2000 meters. Furthermore, the fact that the ranging machinegun, the main armament, the co-axial machinegun and the gunner's sight are all stabilized means that the gunner can acquire a target, hold it and fire while on the move. Although it may be argued that the ability to fire on the move is not always desirable, the fact remains that it is possible with an acceptably high chance of a hit. In any case, the target will be in the sights as soon as the tank stops. Also it does mean that suppressive fire from the co-axial machinegun is possible while advancing from fire position to fire position. The high velocity, and thus the flat trajectory, of the APDS round ensures that once the range of a particular target is established a variety of targets in a wide range band plus and minus of it may be engaged using the same range setting. This makes possible the rapid engagement, in quick succession, of a number of targets at different ranges. It has been demonstrated that the *Vickers* can hit 10 targets, at ranges varying from 600 to 1000 meters and with wide azimuth dispersion, in 55 seconds.

Having assured the best possible chance of obtaining a first round hit on the target, one must, of course, provide the best possible chance of achieving a kill. In order to ensure a kill it is not only necessary to penetrate the main armor of the target, but it is also necessary to ensure lethal effects within the armored envelope. This the solid penetrator of the 105mm APDS round is able to do against all tanks except the heavier tanks at the longer ranges. Having defeated the armor, the APDS round is several times more lethal than the hollow charge shell of the same caliber.

In the infantry support role, a high explosive round is required. However, the conventional high explosive (HE) round has little or no effect against armored vehicles. For this reason the *Vickers* tank utilizes a high explosive squash head of HESH (US designation HEP) round. This round, while as good as the conventional HE against personnel in the open, is particularly good against buildings, bunkers or fortifications and, in addition, has an excellent armor-defeating performance. Thus, all rounds carried in the tank are armor-defeating. Since the angles of descent and times of flight of any high explosive shell are bound to be comparatively large, the accurate range and line finding provided by the ranging machinegun becomes even more important when these rounds are used against pinpoint targets. The stabilization of the weapons has advantages when supporting infantry while on the move, with either HESH or machinegun fire.

MOBILITY

The good mobility of the *Vickers* tank is assured, first by the moderate weight of 38 tons, and secondly by the fact that it utilizes the same engine, gearbox, steering mechanism and brakes as does the *Chieftain*. Appreciating that these components were designed for a tank weighing 50 tons, their reliability and long life is assured. The gearbox has been specially designed to suit the characteristics of the opposed piston supercharged two stroke engine. A feature of this gearbox is that while gear changing is completely automatic and no clutch is necessary, gear selection is under control of the driver and is foot operated. Six speeds forward and two in reverse are provided. Driver training and fatigue are reduced to a minimum.

COMPARATIVE DATA

	Vickers MBT	Chieftain	M48A2	M60A1
Combat weight (tons)	38	57	52½	51
Hull length	23'11"	25'1"	22'4½"	22'7½"
Hull width	10'4¾"	11'1"	11'11"	11'11"
Hull height	8'	9'3"	10'1⅝"	9'10"
Ground clearance	1'4"	1'8"	1'3¼"	1'6"
Maximum speed (mph)	35	25	32	30
Vertical obstacle	3"	3"	3"	3"
Ditch crossing	8"	10'4"	8'6"	8,9"
Hasty fording	3.9"	3'6"	4'	4'
Flotation	Yes	Yes	No	No
B.H.P. at rpm	700/2670	700/2400	820/2400	750/2400
Operating range (mis)	420	310	160	335
Ground pressure (psi)	12.8	12	11.9	11
Main gun (mm)	105	120	90	105
Main gun ammo (rds)	44	–	64	57
Auxiliary	1–50 cal 1–7.62mm	1–50 cal 2–7.62mm	1–50 cal 1–7.62mm	1–50 cal 1–7.62mm

The maximum speed on roads is 35 mph. Speed across country is largely a function of the ability of the suspension to provide a ride acceptable to the crew. The *Vickers* Tank has a torsion bar system which is unconventional in that an auxiliary torsion bar is housed in the axle arm of the two leading and the rear suspension stations on each side. This means that the normal, across the hull, torsion bars are designed to supply a soft ride but are reinforced by the auxiliary bars at a given wheel deflection to provide a rising spring rate. The latter is essential if a good ride over rough terrain is required.

The *Vickers* tank can swim as well as wade. For swimming, a nylon screen which is carried permanently on the hull can be erected in 15 minutes. While afloat the tank is steered and propelled by its tracks at a speed of about four miles per hour.

PROTECTION

Protection is provided by homogeneous quality steel armor. Careful design of armor distribution ensures the maximum immunity within the overall weight limit of 38 tons. The maximum protection is afiorded over the frontal arc of 60 degrees, while elsewhere protection is given against near burst medium artillery. The armor plate affords the same immunity as armor casting. But through its use the thickness, and therefore the weight, is easier to control, and production is easier and less costly. Additional protection is provided by the low silhouette of the *Vickers* tank.

GENERAL

Reliability is a paramount feature of the *Vickers Main Battle Tank*. This has been achieved mainly by the use of components developed for and proved in the latest mark of the *Centurion* and in the *Chieftain*. Vickers were the design parents for both of these tanks and it can be said that *Centurion,* developed through thirteen different marks and still in service in ten countries, is one of the world's most successful tanks, while *Chieftain* is the most powerful in service today.

The *Vickers Main Battle Tank* has been adopted by the Indian Army and is being built under license in India in what is probably the most modern tank manufacturing plant in the world.

The Vickers Main Battle Tank "swimming."

ВОЕННЫЙ ВЕСТНИК

Translated from Voyenny Vestnik (Military Herald), Moscow, February 1967

CONCERNS OF SERGEANTS

By COLONEL I. MAREYEV

In front of me are notes from conversations with sergeants. In these notes are expressed the thoughts of the most numerous group of our commanders and also their anxieties and concerns.

The first thing that attracts attention is the fact that the sergeants have a correct understanding of their role in the solution of the problems which are facing the troops and they try to fulfill their duties in the best possible manner. However, despite the desire to do so, not every one is successful in staying on top of the situation.

The main difficulty is the problem of working with people. "I am not able to establish mutual understanding with my subordinates," says one. "I know the equipment better than I know the people," asserts another. A third is somehow never able to achieve faultless performance.

Why is this the case? The answer to this question cannot be given simply. There are many reasons. Man is more complex than any machine. If something is not functioning properly with a mechanism, it is possible to look at a book of instructions and find the necessary answer there. On the other hand, in matters of indoctrination it is necessary in many cases to rely on one's own intelligence and experience. For the proper management of a group, even the smallest one, it is necessary to have not only certain skills and knowledge, but it is also necessary to have organizational ability.

It is in terms of these qualities that many sergeants experience difficulties. The blame for this falls first of all on the training organization. It is not by chance that some junior commanders state without hesitation that they have been weakly prepared for working with people. However, the matter does not end only with this. The development of a sergeant, as in the case of any commander, takes place in the line organization and its units through practical work with subordinates. Our best officers understand this well.

Let us, for example, take a look at the battery where the commander is officer D. Vlasov. Here the sergeants are real assistants to the officers. All of them are first and second class specialists, have received excellent ratings in training and are good indoctrinators of the men. However, they did not reach this state immediately nor did they do it by themselves alone. Rather, they did so as a result of the concern of the officers, especially the battery commander.

Vlasov personally conducts the political, instructional-methodological and leadership instruction for the sergeants. He also conducts weekly meetings which are seminars for the exchange of work experiences. At the seminars, which are conducted in a business-like manner, one listens to reports by the sergeants on the fullfillment of socialist obligations by their subordinates and hears discussions of the methods of training and of maintaining discipline.

Nevertheless, the battery commander devotes his main attention to individual work with the sergeants. He carefully analyzes their activity, always praises them for their good efforts, points out shortcomings, and helps them to correct their deficiencies.

The battery commander attaches great importance to having the sergeants independently solve all problems coming within their competence. For example, there was the following case:

Somehow Private Kabanov was guilty of an infraction of military discipline. The sergeant complained about him to the battery commander.

"And what have you done?" asked Vlasov.

This question left the sergeant nonplussed.

"And what am I able to do? My rights are not that extensive."

"They are not minor rights," remarked the officer, "and these are no small matters. The important thing is not to shirk responsibility. You are responsible for the men and for their indoctrination.

Now show me that you are trying to work with them and do not hide behind the back of someone else."

This is the way that Vlasov always acts. The results which he has achieved are reflected in the fact that now the sergeants solve problems boldly, take an active part in disciplinary matters, and gain unswerving performance on the part of the soldiers. On the whole, throughout the battery the sergeants offer more rewards and punishments than do the officers. In the battery there is no tendency tó judge the state of discipline on the basis of the number of punishments which have been doled out, and the sergeants punish the slackers strictly when it is necessary. If one takes 100 percent as the number of punishments meted out by the officers, then the portion accounted for by the sergeants would be 102 percent. With respect to rewards the picture is similar: officers—100 percent, sergeants—104.

However, by no means do all commanders work with their sergeants in this way. This is evident from the following remarks: "During drill we spend most of our time listening and watching." "Sufficient talks are held with the men; however, they are able to retain very little." "I myself shoot well, however I am not able to train my subordinates properly."

What do these remarks indicate? They indicate that the steps which are taken to instruct the sergeants are often of a vague and general nature and that the sergeants receive little in the way of specific advice or recommendations.

At meetings and assemblies it is frequently said that it is necessary to increase the prestige of the sergeants. However, in practice there is not enough done with respect to this matter.

What is more, there are cases in which the commander, rather than helping a sergeant, concludes that it is too much trouble to work with his people. There are always some leaders who are quick to remove junior commanders and who speak to them in an irritating and coarse manner. And when such a commander is told that this behavior cannot be tolerated, he justifies his approach with the hackneyed expression: "This will make them get with it and work harder!" These are harmful words. Anger and tactlessness have never accompanied success. They destroy the spirit.

From year to year standards for sergeants become more stringent. They must not only have a good knowledge of teaching, equipment, and their specialty, but they must also master advanced instructional techniques and be able to influence the attitudes of the soldiers.

Practical work with subordinates is the real school of training and indoctrination for the sergeants. The sergeants gain a great deal as a result of conducting instruction in combined arms and special training. In the company commanded by V. Purdnikov the squad leaders are given a role in the conduct of instruction on weapons, drill, physical training, marksmanship training, and other subjects. The day before instruction is to be conducted the unit commander instructs the sergeants and discusses with them the training and indoctrination tasks, the ways to fulfill them, the method of organization of Socialist competition, and other matters. All this facilitates the development of the organizational abilities of the junior commanders and strengthens their prestige.

It is particularly appropriate to touch on the interrelationship between the sergeants and the other enlisted men. It must be admitted that one still encounters sergeants who do not want to spoil the friendly relations they have with the men, who permit familiarity and lack of discipline, and who are guilty of infractions of established rules and thereby undermine their own prestige. In response to a question concerning why he was not participating in maintaining discipline, Sergeant Petrov gave the following answer: "In school they spoke to us about a demanding attitude, but in this company they demand very little. Why should I be the exception?"

This is why from the very first moment of the arrival of a sergeant in the unit he is taught to develop correct relations with his subordinates and he is persistently reminded that he is the leader and must both be demanding and show concern for his men. It is this aspect of the matter which receives primary attention in the company which is commanded by Captain V. Makarov. Here correct relations have been established between the sergeants and the remaining enlisted men and constant concern is displayed over the prestige of the squad leaders. The sergeants are entrusted with work; their performance is checked; and they are helped in ridding themselves of shortcomings.

Once, at a meeting with his sergeants, a company commander proposed a discussion of the statement: "The sergeant is the direct commander and friend of the soldier." This evoked statements on the part of some young commanders to the effect that it is impossible to be a good commander while still remaining a friend of one's subordinates. Some of them tolerated connivance and familiarity; a demanding attitude was considered to be artificial severity and nagging.

The meeting, which incidentally had been carefully prepared, appealed to the sergeants. The problems discussed excited their interest. During the exchange of opinions it was determined that often the platoon leaders give instructions to the soldiers over the heads of the sergeants, that they do not

always take into account the sergeant's opinions when evaluating unit performance and do not always consult with them when allowing the soldiers a pass to go to town.

At the same time it was necessary to address some of the sergeants about their own mistakes and shortcomings. For example, Sergeant Zinenkov, after once receiving a valid comment from a senior commander with respect to deficiencies in his work, began to heap the blame on his subordinates and to accuse them of carelessness.

"When senior commanders make comments to you or even punish you," said Captain Makarov, "the sergeant does not have the right to become bitter and should not become unnerved. He must quietly eliminate the deficiency and must not vent his ire on his subordinates."

The sergeants then expressed their opinions. Everyone agreed that one must not blame his subordinates for his own mistakes. It is necessary to admit one's own blame. Criticism by the commander is not a personal thing but rather an aspect of his job. A leader must be determined, calm, and demanding. In all things and at all times to be in control of one's self is the sacred duty of all leaders.

The prestige of a sergeant depends on the sergeant himself, on his level of training, and on his attitude toward his work. Therefore, the sergeants are correct when they state: "Prestige can be won only through intelligent and sympathetic understanding"; "Be the master of your own specialty and keep up-to-date"; "Prestige is gained through a very demanding attitude with respect to one's self and one's subordinates"; "Be an outstanding soldier in combat and political training and be morally clean and honest"; "Do not ignore the small things"; and "Do not berate other sergeants when speaking together but rather support each other."

One cannot help but agree with these opinions. They are an indicator of thoughtful and serious evaluation by the sergeants of their own duties and role in the army and of a high degree of interest in the best accomplishment of their military duties.

Attempts on the part of some officers to do everything for their subordinates and to deprive them of their place in maintaining discipline have a negative effect on the prestige of the sergeants. At times this harmful style of command is explained in the following way: "It is easier for an officer to award punishment himself, and the benefit will be greater." It is possible to agree that this is easier. However, it is hardly the case that this is better. In such cases the sergeant loses his rights; his responsibility diminishes; and the qualities of initiative and determination are not developed. The sergeant stops noticing the faults of his subordinates and does not react to them.

Other officers attempt to do everything themselves out of fear that things will not turn out well. Here is a graphic example. Sergeant Tarasenkov did a good job of directing the actions of the drivers when loading equipment on a railroad flatcar. However, his battalion commander suddenly and without any need interfered in the work of the sergeant, shunted him aside and himself began to take charge. And, when things did not go well, rather than accept the blame himself, he berated his subordinates for their poor preparation for the move. It hurt the sergeant to see and hear all this. Will the men listen to the sergeant if the senior commander does not trust him and deprives him of his proper rights to command? Hardly.

And here is still another example. It was necessary to clean up the area of a training facility. An officer was assigned to check on the work of a squad headed by a sergeant. A fence had to be repaired. Again, an officer supervised the work of the soldiers. Is it not clear that such practices cause great damage to the prestige of not only the sergeant but also of the officer?

The role of the sergeant has always been great. Now this role has become even greater. This is explained by the changes which have occurred and which are occurring in the personnel of the army, in the technical outfitting of the troops, and in the nature of the tasks which are performed by them.

The attainment of constant and high combat readiness of all units, the rapidity of their actions in case of an alarm, and the accomplishment of the training-for-combat mission depends to a large extent on the initiative displayed by the sergeants in the performance of their military duties. The sergeants have a large role in instilling high moral-political and combat qualities in the soldiers, in obtaining conscientious obedience to superiors, and in the maintenance of strict order in accordance with regulations.

Without the sergeant it is not possible to have order in the working day of the officer. The proper use of sergeants has been demonstrated by the many companies and higher units which have attained superior results in training and in discipline.

The sergeants are the most numerous segment of the commanders of the Soviet Army. They are the immediate leaders of the soldiers and are responsible for their indoctrination. On how well the sergeant works, and on how great his prestige is, depends to a major extent the character of service and the personal behavior of the soldier. Thus, on the sergeants depends the success or failure of units of all sizes and types.

From The Armor Branch Chief...

FAVORITES FROM LIEUTENANTS

• • The OBV II officer's favorite is "When Vietnam?"

• Answer: Normally, after ten or eleven months active duty. Such timing allows the officer to arrive in RVN with approximately 12 months remaining service obligation, which, in turn, allows release from active duty upon return to the States. This system allows maximum experience building before entering the combat zone and eliminates the 'short-timer' assignment upon return home. It is considered to be the best way for both the individual and the Army.

• • Another question is "How about Airborne Training?"

• Answer: Only if assigned to an airborne unit, Special Forces, or a job actually requiring airborne qualfications.

• • Also "What about a Special Forces Assignment?"

• Answer: Armor Branch has very few requirements for Special Forces qualified officers. It is simply a lack of demand. Moreover, the Armor lieutenant can use his first two years to best advantage in gaining full branch proficiency. Specialization, if desired, will then be built on a firmer base.

• • "Should lieutenants volunteer for Europe or Korea after arrival at their initial duty station?"

• Answer: Europe: No, if not assigned directly to Europe from OCS or AOB, a lieutenant's chances are very slim for such assignment, volunteer or not. Korea: Yes, since some officers will go to Korea following their initial CONUS duty assignment, it is helpful to know who would prefer to serve in Korea. Of those who volunteer, some may receive orders to Vietnam. Again, priority of requirements is the determining factor. It is well to remember the high priority afforded the CONUS training base and the fact that some lieutenants will not serve overseas during active duty tours of two years or less.

• • "Must a lieutenant be assigned to a tank unit to get credit for troop duty?"

• Answer: No. Armor OCS or AOB qualifies a lieutenant in MOS 1203/1204. Following this training, all troop-oriented duty, including basic training units, counts as "troop duty."

FOR ALL OFFICERS

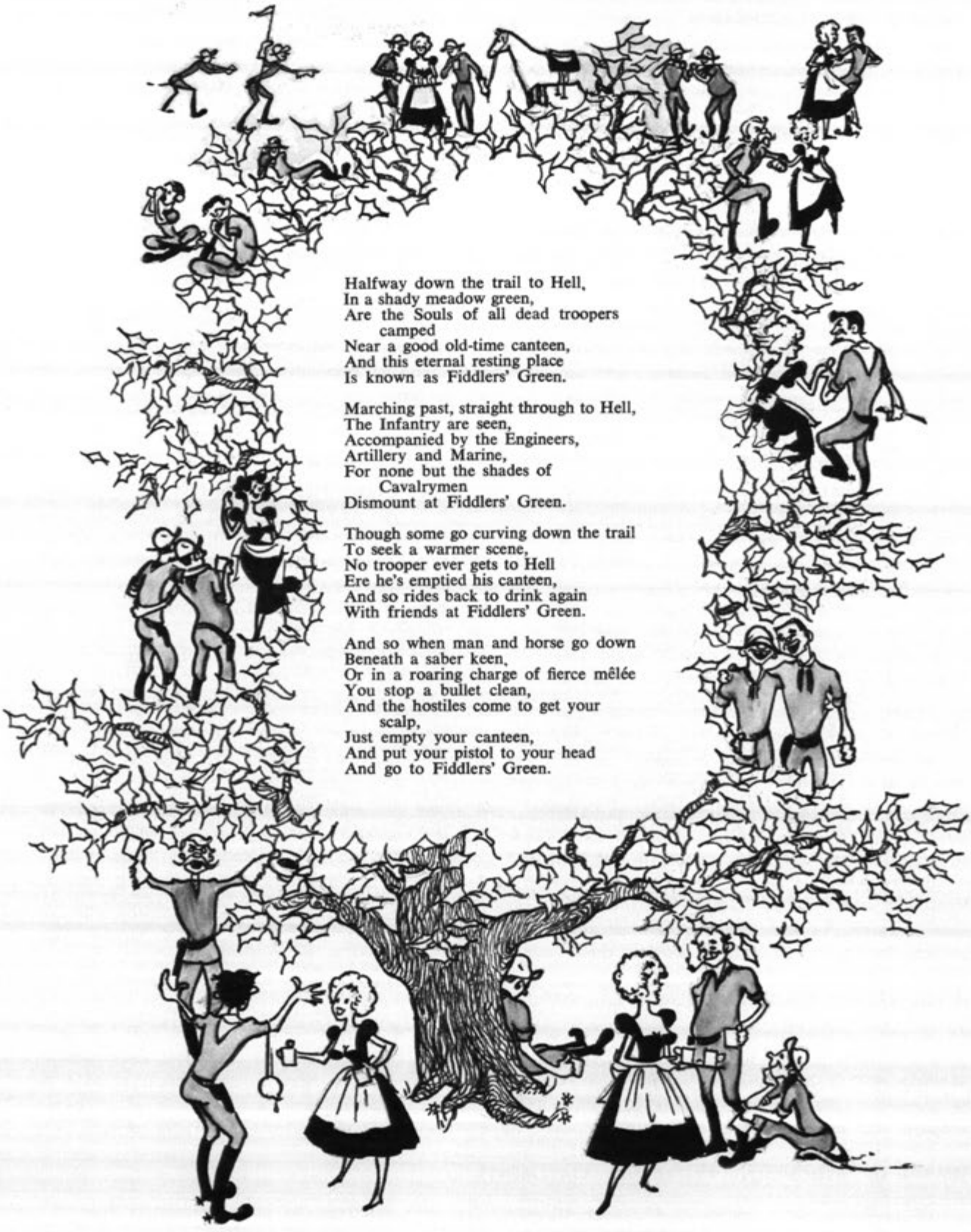
Armor Branch stresses the importance of periodically reviewing your files at Armor Branch or the Office of The Adjutant General in Washington. As it is often difficult to visit Washington, you should know about the provisions of AR 640-12, Personnel Records, 17 December 1964. Under this regulation it is possible to arrange to see your TAG file in St. Louis, Missouri. (Phone AMherst 8-7377). The regulation calls for four days notification, but a week to 10 days or more is suggested in case the TAG file is not readily available in Washington. When appointments are made, your file is forwarded to St. Louis for your review. It is suggested that when making appointments you leave a phone number where you can be contacted in case the file cannot be made available on the date requested. We hope this won't flood St. Louis, as their space for visits is limited. But it is helpful in the event you are passing thru the Midwest, want to check your file, and do not plan to visit Washington.

IF YOU ARE HOSPITALIZED

If you are hospitalized outside Vietnam as a result of service in Vietnam, we would like to hear from you. Send a postcard or letter to Headquarters, Department of the Army, Office of Personnel Operations, Armor Branch Washington, D.C. 20315. Inform us of the general nature and extent of your injury or illness and estimated date of release from the hospital. If you are to return to CONUS, this advance information will enable us to better program your next assignment in accordance with your desires and any required out-patient medical care.

TIMING OF ASSIGNMENT PREFERENCE STATEMENTS

Armor Branch again defined an up-to-date Assignment Preference Statement for officers serving in short tour areas as one which reaches Armor Branch four to six months following arrival in the short tour area. This timing allows assignment desk officers to fit the preferences to the requirements, where the requirements will permit.



Halfway down the trail to Hell,
In a shady meadow green,
Are the Souls of all dead troopers
camped
Near a good old-time canteen,
And this eternal resting place
Is known as Fiddlers' Green.

Marching past, straight through to Hell,
The Infantry are seen,
Accompanied by the Engineers,
Artillery and Marine,
For none but the shades of
Cavalrymen
Dismount at Fiddlers' Green.

Though some go curving down the trail
To seek a warmer scene,
No trooper ever gets to Hell
Ere he's emptied his canteen,
And so rides back to drink again
With friends at Fiddlers' Green.

And so when man and horse go down
Beneath a saber keen,
Or in a roaring charge of fierce mêlée
You stop a bullet clean,
And the hostiles come to get your
scalp,
Just empty your canteen,
And put your pistol to your head
And go to Fiddlers' Green.

Illustrations by Mary Burney

"FIDDLER'S GREEN"

a possible explanation

By Lieutenant Colonel Leendert Verhoeff
Royal Netherlands Army

About two years ago Lieutenant Colonel Paul M. Crosby discussed in this magazine the old legend of Fiddler's Green.[1] According to this legend there is a broad meadow about halfway down the trail to Hell, where all dead cavalrymen are gathered around campfires. They spend their days telling stories, boozing, dancing with beautiful damsels, and doing all those other non-regulation things that living troopers dream of.

Colonel Crosby gives a score of references from dictionaries, encyclopedias, song books, and novels but states that he is unable to give an explanation of the origin of the legend:

> *"It should be apparent . . . that the origin of the Fiddler's Green legend is uncertain. There is no agreement among poets and writers as to what creatures are privileged to go there . . . There seems to be no doubt that Fiddler's Green is an imaginary place, free of care, and that it is the figment of very old legends. One of the oldest references to be found (1825) describes it as the place where animals go when they die."* [1]

LIEUTENANT COLONEL LEENDERT VERHOEFF *joined the Royal Netherland Army in 1945, received his officer's training with the British Army and served as an artillery officer in The Netherlands and Indonesia. He attended the Command and General Staff College in The Hague in 1958-1960, and the United States Army Logistics Management Center at Fort Lee, Virginia, in 1967. He is now serving with the Netherland's General Staff. He is the author of many articles on folklore and is writing a book on the lore and language of the Dutch soldier.*

For several years I have been studying the folklore of Western Europe and North America. Quite recently I placed an inquiry in one of the military periodicals of the Netherlands with the object of collecting pieces of information concerning the folklore of soldiers of the Dutch speaking countries. "Folklore of soldiers" is understood as the language, songs, customs, heraldry, and stories of all military people. For comparative study I also collect the soldier's folklore of the English, French, and German speaking countries. A few months ago I came across the above-mentioned article in ARMOR and, of course, inserted a copy of it in my collection under the heading "Verenigde Staten" (United States). Upon reading the article again, it struck a familiar note, and I started some further study and research. This article is the result. It is a first attempt at an explanation of the legend. Some further study will be necessary to give the proof of the relation between the American and British *Fiddler's Green* and the remarkable parallel, *The Green Meadow*.

Let us start from the beginning. A study of the sources collected by Colonel Crosby raised two facts which I label as being conspicious. In the first place, the list of people who are said to go to Fiddler's Green—fiddlers, banjo-pickers, storytellers, ballad-singers, pedlars, tinkers, tailors, cowboys, dance-hall girls, sailors, and soldiers—belong to, what in the sociologist's lingo are styled, the marginal groups of the community.

In my country in the Middle Ages these people were named *varende luyden,* wandering people. They traveled from place to place and did not identify with the inhabitants of towns or villages, to whom they were foreign and even, in many cases, hostile. These wandering people were different in many respects, such as clothes, customs, attitude, stature and ideas. Very often they spoke a special kind of slang with many incomprehensible words.

Soldiers were often looked upon in the same way as they also had customs of their own, dressed

differently, and spoke a curious slang of incomprehensible language, especially in the time of the mercenary armies and irregular bands of hirelings. Even nowadays, one can hear stories told in the Western European countries about the terrible events that took place during the Thirty and Eighty Years Wars and in the Napoleonic Wars when Cossack, Croatian, Spanish, Swiss, Walloon, and other soldiers were a plague for Germany and the Low Countries.

The second remarkable fact is that the name Fiddler's Green and several descriptions quoted by Colonel Crosby suggest a *meadow,* a *garden,* or a *field* where rejoicings take place that are rather too naughty for Heaven but too nice for Hell. Not much attention is paid to the fiddle as I found it mentioned only once: *"Fiddler's Green. The land of the leal or "Dixie Land" of sailors; where there is perpetual mirth, a fiddle that never ceases to untiring dancers, plenty of grog, and unlimited tobacco."* [2] The location of this place is given as in another world, outside Hell.

Now bearing in mind these two features, wandering people and a meadow in another world outside Hell, let us look at some similar phenomena in mythology and folklore.

In the Greek mythology the Underworld, in its primitive conception, was a dismal place where the souls of the dead remained. The sun's rays never reached it and the only plants that grew there were black poplars, willows, and asphodel, a funeral plant. Later the Underworld came to be thought of as a place of justice where the souls were judged by Minos on the *asphodel meadow* and from there they were either cast into *Tartaros* or sent to Elysion.[3, 4]

These *Elysian Fields* (as the place of happiness was also called) were the abode of the blessed, where there were singing, dancing, and merrymaking in all eternity and where snow, rain, and tempests were unknown. Equivalents of these fields are to be found in all mythologies. The *Insulae Beatorum* of the Romans, the *Tir na nóg* of the Celts and the *Valhöll* of the Germanic people are more or less the same. All these places were thought to be in some "otherworld," situated beyond the seas, under the ground or in the skies. In these places lived the souls of those who had earned it. *Valhalla,* for instance, was the place of those who were killed on the battlefield.[3, 5]

When Christianity comes to Europe and the Christian doctrine of Heaven and Hell is preached, the old beliefs do not vanish but sink to a lower level, i.e., into legend and fairy-tales, proverbs and jocular stories. I will give a few examples, the number may be enlarged at will.

The medieval legends of Arthur and the Knights of the Round Table speak about *Avalon,* the Apple Island, where the heroes dwell after their death. Other people were believed to have vanished into mountains as did, amongst others, the German emperor, Friedrich Barbarossa (1123-1190), and the Tyrolean folkhero Andreas Hofer (1767-1810).[4, 6]

In fairytales the hero or heroine sometimes goes to another world. In a story of Grimm a girl falls into a well and wakes up on a beautiful meadow, where she is asked to take bread out of the oven, shake apples off the tree, and make the bed of an old woman. When she shakes the bed so that the feathers fly around, it is snowing on earth.[7]

Jocular stories tell of a country where laziness and gluttony are the highest virtues. *The Land of Cockaigne, Schlaraffenland* (in German) and *Luilekkerland* (in Dutch) where the rivers are filled with wine, roasted birds fly into the visitor's mouth and cakes grow on trees.[4] These stories are more or less parodies on the Christian Heaven.

Other tales are about a sort of limbo outside Hell where the not so very bad are punished, a place that is not like Heaven, but on the other hand also far remote from the horrible punishments of Hell. In Germany in the beginning of this century, for instance, it was customary among girls in the town of Breslau to say: *"Komme ich nicht in den Himmel, so komme ich doch gewiss auf die grüne Wiese"* ("If I do not go to Heaven, I will certainly go to the Green Meadow.") This *Green Meadow* was thought to be in front of Hell.[6] According to a German tale (published around 1853 in a collection of folktales), a bad parson once fell into a hole in the ground. This hole was bottomless and he finally reached a green meadow in front of Hell. There he saw a hunter trying in vain to shoot a deer, a naked girl who kept on washing herself in a brook, fiddlers who had to play continually and dancers who could not stop

dancing. All these people were mute, but he met a former friend of his, also a bad parson, who explained to him that all these people had to repeat endlessly the things they had wrongfully done on Sundays during their lives on earth. The parson succeeded in escaping and back on earth it became clear that he had been away for five centuries.[6]

Not always do the reminiscences of the pagan heaven come in the form of a green meadow. Sometimes it is more like the Germanic *Valhalla* which, as the name indicates, was a hall for the dead and is depicted as a tavern called *Nokiskroeg* (Dutch: *kroeg*, German: *Krug* = pub). This tavern is situated on the border of the other world. People traveling there get a pass for Heaven or Hell and some other people stay there to eat, drink, play cards or ninepins, and dance. The distinction between *Nobiskroeg* and the *Green Meadow* is rather vague. In Switzerland and the Tyrol it is sometimes called *Nobiskrug* or *Nobishaus* (German: *Haus* = House) but in other instances *Nobisgarten* (German: *Garten* = garden).[8] This tavern, just like the meadow, is usually a place of merriment and bliss, but in some cases is more or less equivalent to Hell. Flames lick along the walls and the guests have to drink boiling pitch and eat burning sulphur.[9] The etymology of *nobis* is not altogether clear; it may have had the original meaning of *hall* or *abyss*, or it may be connected with certain cant words, meaning "nothing" or "coition."[9]

Stories about this half-infernal, half-heavenly inn were at one time so well known in Germany and the low countries that several real taverns, usually the ones situated near a border, were called *Nobiskroeg* or *Nobiskrug*.[9] It is further known that Swiss students at one time called the city jail by this same name.[8]

To these places, garden or inn, went the souls of those who were not really bad by the old pagan standards, but who had not lived altogether righteous lives according to the standards set by

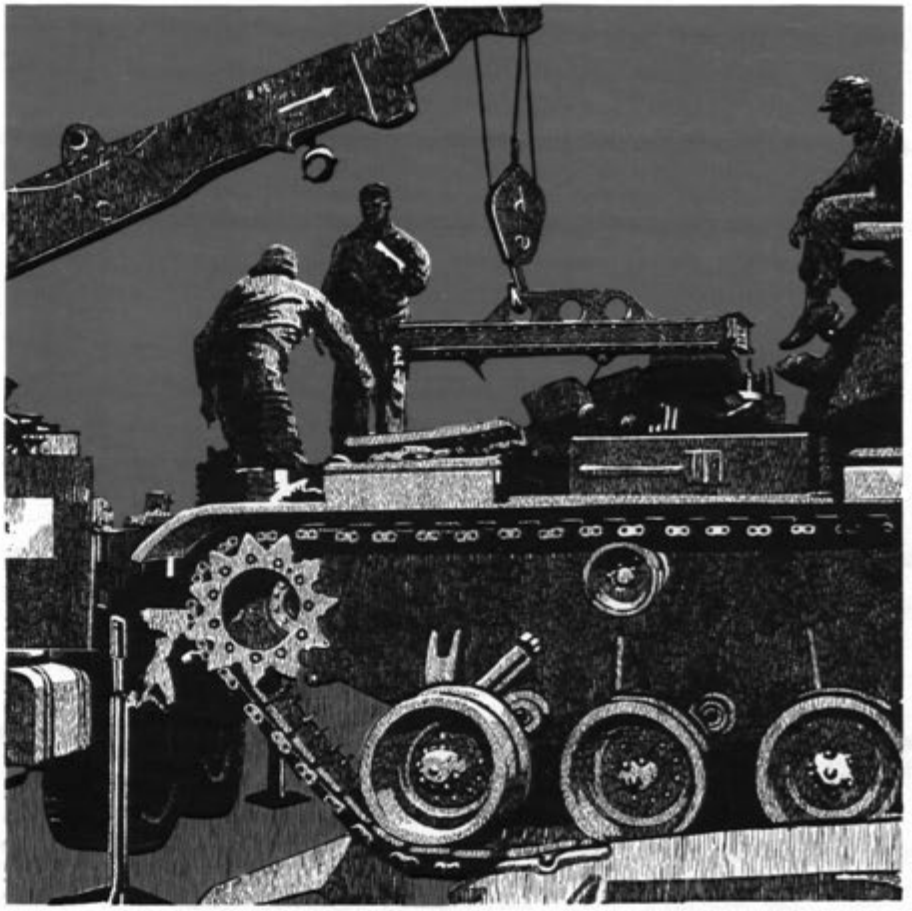
the new Christian belief. Examples of these are soldiers, vagabonds, Jews, and other members of wandering or foreign groups and also the people who had been working or playing on Sundays. In some other cases it was the place where old maids, unbaptized children and animals went. The group that is very often mentioned are the soldiers (without further specification of arm or service). Examples may be given from Dutch, German, Swiss, and Austrian sources.[6] I have been unable to find any examples of a soldiers' heaven like *Fiddler's Green* in the contemporary folklore of Dutch, French, or German speaking armies. However, I know of a rather rude joke about a Dutch soldier who went to Hell and to his amazement found a former friend of his sitting in a pub with a girl on his knee and a bottle of the famous Dutch gin in his hand! However, he was in Hell all right; a closer examination of the girl and the bottle made that perfectly clear.

Considering the similarities between *Fiddler's Green* and the *Green Meadow* or *Nobistavern* in location and characteristics, and considering the fact that to both places go much the same people, especially soldiers (sailors are seldom mentioned in our references), we may conclude that in all likelihood the Anglo-American *Fiddler's Green* is a modern version of the *Green Meadow* and *Nobistavern* and as such a relic of pagan times.

[1]P. M. Crosby, "Legend of Fiddler's Green," *Armor*, November-December 1965, pp. 7-11.
[2]E. Cobham Brewer, *Dictionary of Phrase and Fable*, (London, 1910), S. V.: Fiddler's Green.
[3]*Larousse Encyclopedia of Mythology*, (London, 1959), S. V.: Celtic Greek, Roman, and Teutonic mythology.
[4]*Meyers groszes Konversations-Lexicon*, (Leipzig und Wien, 1909), S. V.: Asphodelos, Cocagna, Friedrich, Hofer, Schlaraffenland.
[5]E. B. Koster, *Mythologisch woordenboek*, (Amsterdam, s.a.), S. V.: Insulae Beatorum, Valholl.
[6]H. Bächtold—Stäubli, *Handworterbuch des deutschen Aberglaubens*, (Berlin und Leipzig, 1927-1942), S. V.: Asphodeloswiese, Holle, Nobiskrug, Paradies, Totenreich.
[7]F. Panzer, *Die Kinder-und Hausmärchen der Brüder Grimm*, (Wiesbaden, s.a.), No. 24: Frau Holle, p. 122-124.
[8]O. A. Erich und R. Beitl, *Worterbuch der deutschen Volkskunde*, (Stuttgart, 1955), S. V.: Nobiskrug.
[9]J. J. Mak, *De Nobiskroeg in mythe en cultus*, (Volkskunde, 1948), pp. 11-21.

HOW WOULD YOU DO IT ?

US ARMY ARMOR SCHOOL PRESENTATION



SITUATION

You are a tank battalion maintenance officer observing your repairmen attempting to remove the power plant from an M60 tank with an M543 wrecker truck.

During the operation you note that the repairmen are having difficulty obtaining sufficient boom height to clear the power plant from the tank hull for removal. You also observe the repairmen referring to figure 2-72 in TM 9-2350-215-20, the M60 tank organizational maintenance manual, dated February 1965. This manual cautions the mechanics not to extend the boom more than 10½ feet overall; and states that if the power plant cannot be raised enough to clear the tank hull, lower it back on its mounts and raise the bed of the wrecker truck with the outriggers to obtain additional lifting height of 3 to 5 inches.

One of the repairmen reports to you and—

informs you—that the procedure of raising the wrecker truck bed with the outriggers to obtain additional lifting height is not the best solution.

advises you—that the power plant weighs 8,500 pounds, and the factor of primary concern to safely lift loads with the wrecker truck is boom radius and not boom length.

shows you—figures 20 and 51 in TM 9-2320-211-10, the M543 wrecker truck operators manual, dated March 1963. These figures are the safe load chart and boom safe load radius as illustrated in figures 1 and 2.

requests your—approval to extend the boom greater than 10½ feet in length, and, maintaining a 10½ foot boom radius through boom elevation, to obtain the additional lifting height.

AUTHOR: MR. F. GRENSING

ILLUSTRATOR: JOE WARD

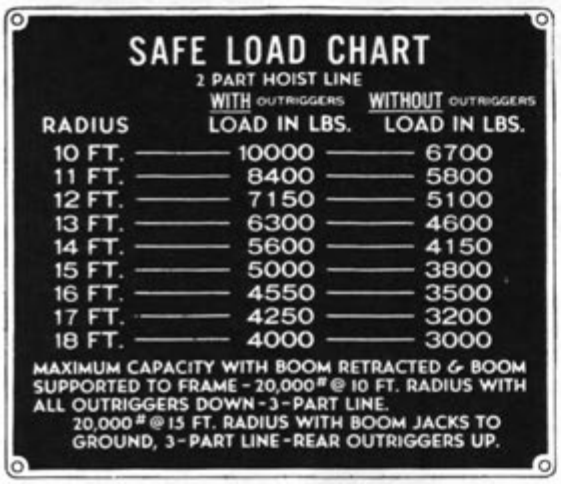
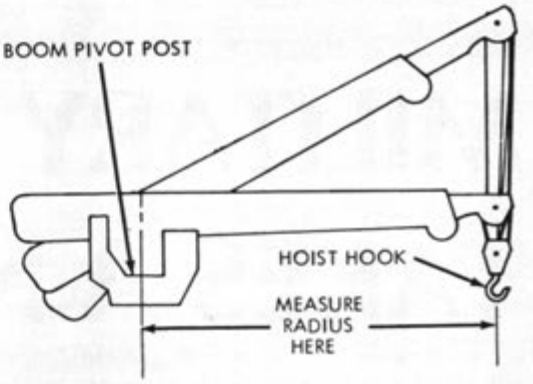


Figure 1. Safe load chart.



NOTE: SAFE LOAD RADIUS FOR OPERATING THE CRANE IS THE HORIZONTAL DISTANCE BETWEEN THE PIVOT POST CENTER LINE AND THE HOIST HOOK REGARDLESS OF THE BOOM ANGLE OR LENGTH.

Figure 2. Boom safe load radius.

SOLUTION

Advise the repairman that his solution is correct provided he does not exceed a boom radius of 10½ feet during the power plant removal.

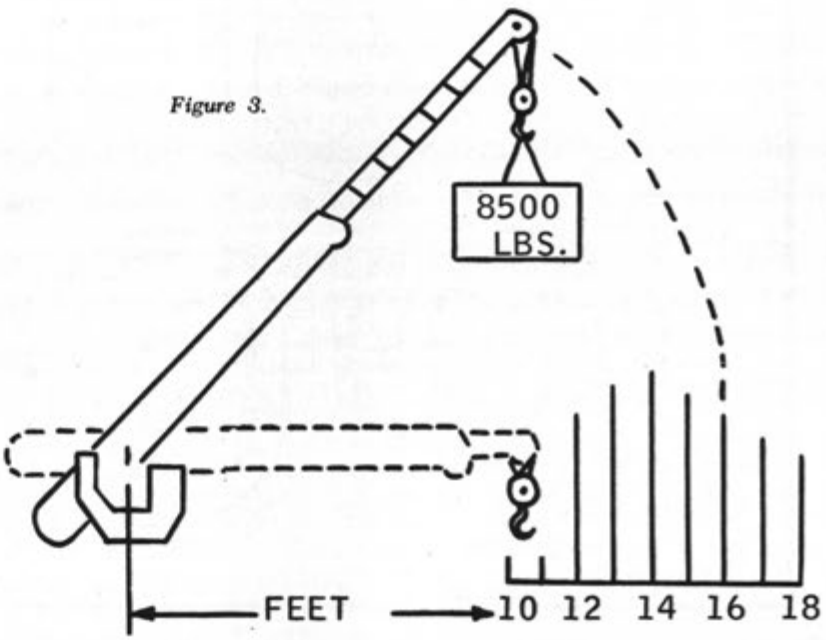
With the boom elevated to the maximum of 45 degrees and extended to 16 feet overall length (figure 3), it is possible to maintain a boom radius of 10½ feet and obtain about 26 inches additional lifting height over that obtainable with the 10½ feet overall boom length suggested in the manual.

However, be sure to caution the repairman that the power plant must be lowered to the ground by lowering the hoist hook, in lieu of decreasing the boom elevation, to prevent overloading the boom.

CAUTION

With the boom extended 6 feet (overall length of 16 feet) and lowered from a 45 degree elevated position to a horizontal position with a 8,500 pound load, would cause the boom to be overloaded by 3,950 pounds (see safe load chart). Overloaded booms usually result in bent booms and inoperative wrecker trucks.

Figure 3.



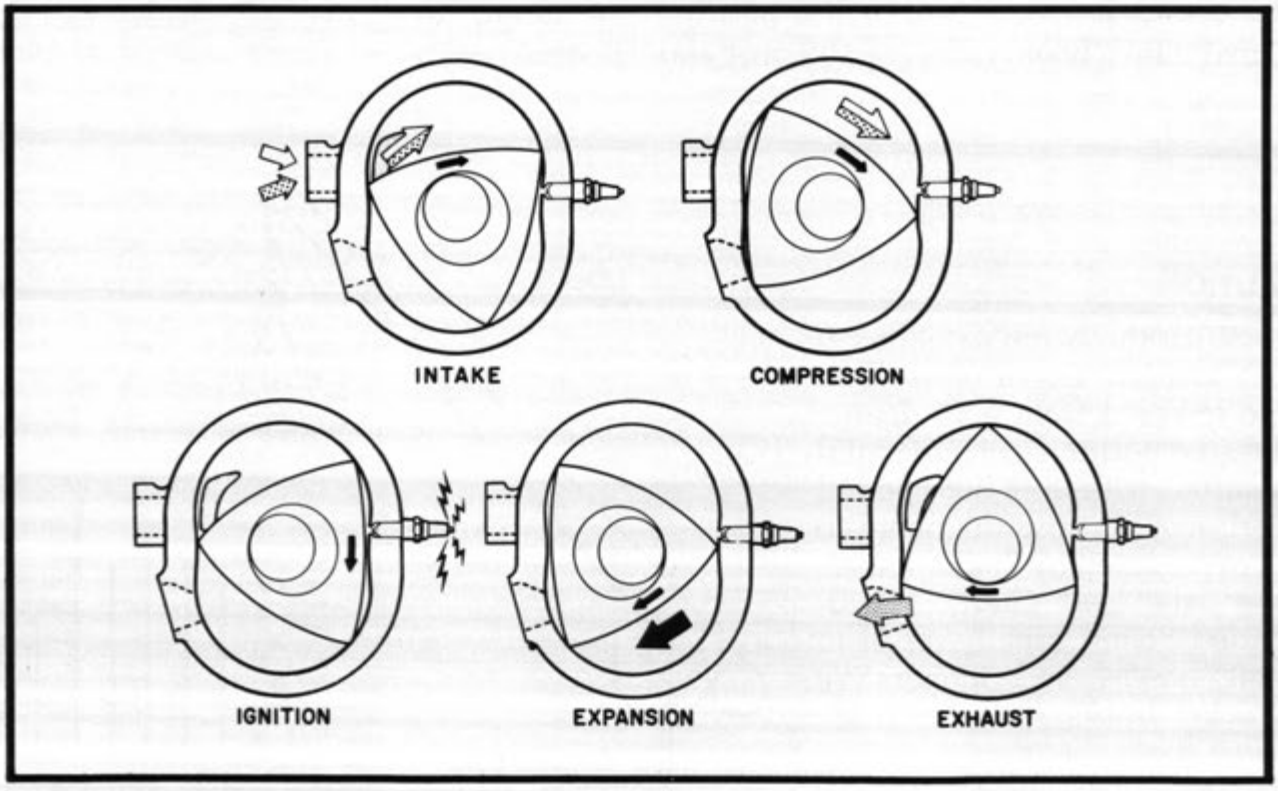
MILITARY POWER TAKES A NEW SHAPE

The year 1901 marked the beginning of research on the principles of rotating internal combustion (RC) engines. Studies by a number of scientists and engineers continued through the years. Felix Wankel then built and tested an RC engine in 1957. In 1958, after concluding a licensing agreement with Wankel and NSU (Motorenwerke AG, Neckarsulm, West Germany), Curtis-Wright Corporation began further work on RC engines based on Wankel's design.

The major mechanical components of the Curtiss-Wright RC engine and the comparative reciprocating engine parts are a mainshaft (crankshaft), a triangular shaped rotor (piston), and a rotor housing (cylinder). The inner surface of the rotor housing is a two-lobed configuration known as an epitrochoid. Seals in the apexes of the rotor are in contact with the epitrochoid surface at all times. The combustion chamber is the area formed by each face of the rotor and the epitrochoid surface. During operation, each of the three combustion chambers rotate past the intake port, the spark plug, and the exhaust port.

The rotor is mounted on an eccentric of the mainshaft, and by simple gearing the rotor is timed to rotate at one-third the mainshaft speed. The two-lobed configuration results from the mainshaft rotating three times the speed of the rotor. Since the center of gravity of the rotor is coincident with the center of the eccentric or mainshaft, all rotating mechanical forces can

Rotating Combustion Engine Cycle Diagram



The 185 horsepower, 5000 rpm vehicular version of the RC2-60 engine installed in a US Army M35 2½ Ton Truck.

be completely balanced thereby permitting a high shaft rpm and resulting in a larger power output.

There are three firing impulses per revolution of the rotor, and since the mainshaft rotates at three times the rotor speed, there is one power impulse for every revolution of the mainshaft. This gives the RC engine the characteristic of having a power impulse of 270 degrees of shaft rotation compared to 180 degrees for reciprocating engines.

The RC engine concept makes possible a broad range of engine sizes through variation in the diameter of the rotor chamber, variation in compression ratio, increase in rotor chamber width, or the use of multiple rotor chambers on a common shaft. It is possible to build an engine, of the desired horsepower, to fit the shape and size of the engine compartment. Curtiss-Wright has demonstrated 3 to 1000 horsepower in single chamber engines having different rotor sizes. A power output range can also be achieved with a common rotor size by varying the number of chambers in the engine.

The combination of four cycle operation, a power stroke every revolution of the shaft for each rotor, increased duration of power impulses, and high shaft speed in the RC engine yields a very high ratio of power to displacement. The size, weight, and smoothness of operation approach that of turbine engines.

The small number of moving parts and inherent simplicity of the RC engine decreases maintenance costs. This engine concept makes possible a family of engines to satisfy various mission requirements, while maintaining a high degree of commonality. The number of engine parts is smaller, thereby reducing inventory and logistical problems. For example, a 90 cubic inch family of air-cooled engines could be developed covering a power range of 120 to 1240 horsepower with a common rotor size. Ninety percent of the power section parts for such a family would be common.

RC engines have a potential for aircraft, power generation, marine, and vehicular applications. Curtiss-Wright is experimenting with air-cooled and JP fuel combustion engines for small aircraft. Others are experimenting with diesel fuel combustion.

The RC2-60 engine is currently being tested in the 2½-ton truck by the Army Tank and Automotive Command in Warren, Michigan. The RC2-60 has two rotor chambers and develops the same horsepower as the engine normally installed in the truck. Its small size and compact shape would allow the engine compartment to be made smaller. Possible size and weight reductions, up to 50 to 80 percent, make the RC engine an attractive possibility for air-droppable or air-transportable combat and general purpose ground vehicles.

U. S. ARMY ARMOR SCHOOL TRENDS

ORGANIZATION OF OFFICE OF DOCTRINE, MATERIEL, AND LITERATURE

With the rapid development of complex equipment for use in the Army of tomorrow, the requirement for new doctrine and training methods has assumed larger proportions. Understandably, the Armor School plays an active part in the development of these for its staff and faculty are acutely aware of the need for trained soldiers to ensure that equipment is effective on the battlefield.

Increased activity in these areas has resulted in the provisional formation of a new organization at the Armor School—the Office of Doctrine, Materiel, and Literature. Initially formed from the Policy and Training Literature Division of the Office of the Director of Instruction, the new office reports directly to the Assistant Commandant.

The Office of Doctrine, Materiel, and Literature assists in the development of Armor doctrine, organization, materiel and tacts; prepares Armor training publications; and supervises the Military Occupations and supervises the Military Occupational Specialty (MOS) development and evaluation program.

The office consists of Doctrine, Materiel, and Literature Divisions, together with an Administration and Operations Division to process correspondence, prepare manuscripts for printing, schedule trips and visits, and conduct management studies for improving office operation.

The Doctrine Division provides imput for the Combat Developments Command for developing Armor organizational structure, MOS requirements, tactics, and techniques. The division can conduct studies of future training needs brought about by changes in personnel factors, introduction of new equipment, or development of new concepts of employment. Additionally, the Doctrine Division will coordinate the Armor School position on new or changing doctrinal proposals. It will also review interservice and international agreements concerning its areas of interest.

The Materiel Division provides the Armor School with a completely new capability to monitor closely the development of new equipment. This division will assist in the development and introduction of new equipment by providing advice to developing agencies, information to the authors of training literature, and recommendations to the Assistant Commandant on the smooth introduction of the equipment into the Armor School. Preparation for, and participation in, the Department of the Army Combat Vehicle Program Review is a function of this Division.

The Literature Division monitors the many Department of the Army training publications used in instruction at the school. This division coordinates, and participates in, the review of Department of the Army training literature produced by other U.S. Continental Army Command Schools and by agencies within the Combat Developments Command. Information provided by the Doctrine and Materiel Division is incorporated into appropriate publications to ensure that these arrive in the field in phase with the introduction of new equipment.

Within this division *ARMOR* Magazine is represented at Fort Knox. All copy prepared for *ARMOR* by the Armor School is reviewed here. Those at Fort Knox who desire to submit items for publication in *ARMOR* can receive assistance from the division in preparing and submitting the articles.

The Office of Doctrine, Materiel, and Literature gives the Armor School a new capability to participate in the development of future concepts and equipment as well as in the review of present doctrine and materiel.

SHERIDAN WEAPONS SYSTEM TRAINER, XM40

1968 will find a new training device being employed at Fort Knox. Designated the *XM40* Weapons System Trainer, this device was developed by the Army Materiel Command in conjunction with the U.S. Navy Training Device Center.

The *XM40* simulates the turret configuration of the *M551 Sheridan* vehicle. It consists of a basket suspension from a 360 degree rotating simulated turret. This assembly is mounted on a base fitted with casters. Access to the turret interior is gained through the commander's and loader's entry hatches.

The purpose of the device is to train individual *M551* crew members in target acquisition, loading, firing and associated subsystems operations. It is also used as a training aid for *Sheridan* organizational turret maintenance techniques.

The interior of the device resembles the interior of the turret of the *M551*. Gunner and loader trainees find it has the same controls, indicators, and surroundings as the turret of the *Sheridan*.

For the gunner realistic training in acquiring and tracking targets is made possible by a visual presentation system which presents sequences through the medium of 35mm film. The gunner trainee views this display through the operational telescope.

The commander/instructor occupies a position similar to that occupied by the vehicle commander in the *Sheridan*. In addition to the controls and indicators normally available to the vehicle commander, the commander/instructor station contains a problem and assessment panel and a TV monitor. This repeats the display viewed by the gunner and permits evaluation of his performance.

Initially, 29 of these devices are planned for training at the Armor School, the Armor Training Center and the Combined Arms School at Vilseck, Germany.

ARMOR NCO CANDIDATE COURSE

On 5 December 1967 a new concept of training became a reality with the arrival of students for the first Armor Non-Commissioned Officer Candidate Course at the Armor School. In all, 16 such classes of 60 students each are programmed for this fiscal year.

Emphasizing the long recognized fact that the junior NCO leader is a key factor in combat success, the Army initiated this new course to give him the best possible preparation. Through successful completion of this course selected enlisted men will become qualified tank commanders (MOS 11E40).

Students enter from Advanced Individual Training or as volunteers from field units. Those chosen who are below grade E4 will be promoted to that grade when they begin the course.

The NCO Candidate Course is divided into two phases. The first 12 weeks at the Armor School are devoted to leadership training and intensive practical instruction on Armor hardware. Hands on equipment classes and training in the field predominate. Students who are graduated from this phase are promoted to sergeant (E5). However, the top five percent who have excelled in both leadership and the other instruction may be promoted directly to staff sergeant (E6).

The second phase of 10 to 12 weeks consists of on the job training with a unit in the United States. Here again the top five percent of those completing this phase may be promoted to staff sergeant (E6) without a quota.

Sixteen classes of 60 students each are programmed for this fiscal year. The Armor Noncommissioned Officer Candidate Course will identify and prepare outstanding key junior leaders and get them to units more rapidly than has been possible with other systems of junior NCO selection and training.

ARMOR OCS TO END

On 24 February 1968, Armor Officer Candidate training will again be terminated. An Armor OCS at the Armor School produced thousands of officers during World War II and again during the Korean War. In September 1965, such training was reinstituted at Fort Knox to meet the demands of Vietnam.

Since then over 4000 graduates have successfully completed the 23 week course and won commissions at Fort Knox. They have gone on to serve in units throughout the world. In addition, in the early days of the Vietnam program, the Armor School gave over 800 ordnance, quartermaster and transportation officer candidates 13 weeks of Phase I training prior to their receiving 10 weeks branch material training at their respective officer candidate schools.

GOOD ANTECEDENTS MAKE A FINE FIGHTER

According to the words of the song there was an Irishman who went to Philadelphia carrying a shillelagh under his arm. That was many years ago, but now there are reports of another shillelagh. The original shillelagh was a weapon of destruction, and some claimed a very powerful one, but by no stretch of the imagination is it on a par in the destructive field with its present-day namesake. The current shillelagh is the U.S. Army's first guided missile to be launched from a tank cannon.

It is interesting to note that the *Shillelagh* should be paired with a *General Sheridan* tank, because if the shillelagh came from Ireland, there is a little house in the County Cavan hills that is often pointed out as the birthplace of General Phil Sheridan of American fame. With such antecedents the *Sheridan/Shillelagh* partnership should be a formidable combination.

Adapted from AN COSANTOIR—*The Irish Defence Journal, September 1967*

Fashions For Fighters

By Private First Class Howard G. Perlin

For many years there has been lively informal discussion by Armor people about what would constitute a suitable field uniform for armor. Many remember the armored combat suit (with its popular "tanker's jacket") and coveralls with nostalgia. Few have had a kind word for the poncho or the "hang-ups" of various subsequent uniforms. "Clothes for Armor" by then Captain Raymond E. Bell, Jr., (May-June 1964) and "Tanker's Togs" by Lieutenant Colonel John C. Burney, Jr., (March-April 1966) suggested improvements. This article indicates that substantial progress is being made toward military clothing designed to afford the mounted soldier of today comfort, efficiency and safety. EDITOR.

"Tankers have been looking for something like this since World War II," said Major William McLarty, a project officer for the Army's Combat Developments Command Armor Agency at Fort Knox, Ky., where a new uniform is scheduled to undergo service tests in the near future.

Armor leaders have consistently posed the need for a uniform designed specifically for the steel confines of an armored vehicle—a uniform that would permit easier movement in a cramped tank turret—that would allow swift entry and exit through narrow hatches and that was free of loops and baggy folds which catch on the many projections in and on an armored vehicle.

Since the inside of an armored vehicle isn't noted for comfortable temperatures, wouldn't it be fine to maintain the mounted man's cool in the summer with a lightweight suit and give him another to don

PRIVATE FIRST CLASS HOWARD G. PERLIN, *is an information specialist in the Information Office of the U.S. Army Armor Center, Fort Knox, Kentucky. He is a November 1966 graduate of the 10-week Basic Military Journalism course at the Defense Information School. Since then, he has served in various journalistic capacities at Fort Knox except for a two-month tour as editor of the Camp Drum, New York newspaper.*

The winter version of the new tanker's uniform.

The summer uniform is a polymide twill.

in the winter which would keep him warm without wearing numerous bulky layers?

The Army now has the answer. Keeping in mind the above questions and other problems peculiar to the armored environment, the U.S. Army Natick Laboratories in Massachusetts has developed two models of a one-piece coverall that will clothe armored vehicle crewmen.

One of the best things about the uniforms is a built-in safety feature—it's fire-resistant. This feature could save soldiers' lives by shielding them from flames as they scramble from a burning vehicle.

The fire-resistant fiber employed in both the summer and winter weaves bears the tradename *Nomex*. It was developed by the E. I. DuPont Co. Its life saving qualities have already been tested by Gran Prix and stock car drivers.

The Natick Laboratories took into consideration another combat hazard when conceiving the new gear. How do you evacuate an injured and perhaps unconscious crewman from a disabled tank? Here's the novel answer—you reach into the Velcro fastened pouch across the back of the shoulders, grab the integral retrieval survival strap and literally pull him out by his uniform.

The retrieval strap follows the man's center of gravity. Because of this design, one man is able to lift an injured soldier without assistance.

This was demonstrated at a recent showing of the new armor fashions when Sergeant First Class

Richard A. Haywood easily lifted Specialist 4 John G. Hall from the gunner's hatch of an M60A1E1 tank.

Two versions of the uniform have been developed. The summer coverall completely replaces the fatigue uniform and is worn over regular issue underwear. The summer cloth is a polyamide twill which allows the suit to "breathe."

SP4 Hall's comment when he modelled the uniform for the first time was a positive "very comfortable." Comparing the lightweight suit to his usual tank crewman's outfit, he said: "It feels better than fatigues. There is more cooling air getting through the cloth."

When SFC Haywood was asked how the winter model he was wearing felt, he echoed: "Comfortable." The sergeant, who is service tests project NCO at Knox, reported no binding in the form-fitting uniform and praised the coverall as easier to work in. He also pointed out that it is a time saver when you are getting dressed.

SFC Haywood spoke with authority on one feature of the winter suit, a durable water repellent treatment. "I do know for a fact that it's water repellent because I wore the suit for five hours in the rain" exclaimed SFC Haywood. The uniform kept the sergeant dry while he was in Washington, D. C. to display the uniforms at the Annual Meeting of the Association of the United States Army.

The cold weather uniform is worn as an outer garment over the OG 108 woolen field uniform and regular winter long underwear. In addition, special quilted thermal liner has been developed for use with the new suit at extremely low temperatures. This lighter weight liner weighs but 80 percent of the one currently in use. Armor crewmen currently use regular cold weather field uniforms that are bulky in comparison to the new uniform.

The Nomex uniforms have several other noteworthy features. The elasticized self-adjusting design avoids bulk and snagging. Two items which will give long uniform life are zippered pockets and closures, and reinforcing patches underneath the seat, knees and elbows. The uniforms can be washed by laundries or on a do-it-yourself basis in the field.

The new uniforms do not require any special accessories. "They are designed to be compatible and worn with standard clothing and equipment items to include present gloves and foot and headgear." For example, in the winter a standard insulated cold weather boot would be worn. Tropical footgear now in use would complement the summer suit.

Armored vehicle crewmen have long wanted a uniform designed with Armor in mind. Tentative plans call for issue of the new uniforms, three winter and three summer, to crew members of all armored vehicles. These include not only tanks but self-propelled artillery, armored personnel carriers and tracked reconnaissance vehicles such as the *M114* and *M551 General Sheridan.*

SFC Richard Haywood demonstrates the survival strap for evacuating an injured crewman by lifting SP4 John C. Hall from an M60AE1 tank.

NEWS NOTES

General William C. Westmoreland pins the Distinguished Service Cross on Lieutenant Colonel Sidney S. Haszard.

ARMOR OFFICER WINS DISTINGUISHED SERVICE CROSS

Caught in the middle of an ambush, Lieutenant Colonel Sidney S. Haszard began a series of exploits which led to his award of the Distinguished Service Cross.

While he was commander of the 9th Infantry Division's 3d Squadron, 5th Cavalry, the Viet Cong launched a massive attack against a fire support base some six kilometers from his base camp. Colonel Haszard responded immediately, departing base camp with medics aboard armored cavalry assault vehicles. A few moments later the group was caught in the middle of a vicious Viet Cong ambush. Colonel Haszard jumped to one of the vehicle's machineguns and, while firing back at the Viet Cong, he ordered his driver to "get on the way." His decisive action and heavy volume of fire opened a path through the ambush and the vehicles sped on to the attack site.

Upon reaching the base camp, Colonel Haszard found the Viet Cong were attempting to overrun the position. He ordered his driver to head into the greatest concentration of them. Two antitank rounds knocked out his vehicle and wounded him. He held his firing position until another vehicle towed his vehicle from its vulnerable position. Jumping from his disabled carrier, he raced from vehicle to vehicle and position to position, encouraging the outnumbered troops and directing their fire for six hours despite his wounds.

KENTUCKY CAVALRYMAN EARNS THE DISTINGUISHED SERVICE CROSS

Sergeant Lawrence R. Taylor, a Kentucky cavalryman, recently received the Distinguished Service Cross at Fort Gordon, Georgia, for defending his wounded comrades in Vietnam.

Sergeant Taylor was cited for heroic action last April while serving with Troop B, 3d Squadron, 4th Cavalry, 25th Infantry Division in Vietnam.

While Sergeant Taylor's platoon searched for a Viet Cong unit known to be in the vicinity, it entered a heavily mined and booby trapped area. When one of the platoon's tanks hit a mine, the men dismounted to search the area and disarm the enemy mines. A few minutes later, they received a sudden outburst of rifle and machinegun fire from a bunker 30 meters away. Six men were wounded immediately and remained exposed to hostile fire. Sergeant Taylor unhesitatingly ran 30 meters through the mined field, ignoring the intense Viet Cong barrage, to lay down heavy fire to protect the casualties. When his ammunition ran out, he charged the enemy bunker, armed with only two grenades, and threw them into the emplacement. The insurgents were silenced, but only momentarily. Then, Sergeant Taylor ran to a machinegun on a nearby truck. He fired on the hostile fortification until his machinegun would no longer fire, then once again charged directly at the enemy weapons to throw two grenades at the Viet Cong. After his own assault, he directed a tank to engage the insurgents.

"I'm not a hero. I just did my job," Taylor said of his action. In another action a month later, he lost his right arm when he was wounded by an exploding antitank mine.

ARMOR ASSOCIATION SABER AWARDED

Major General A. D. Surles, Jr., Commanding General of the Armor Center and a Vice President of The United States Armor Association, recently presented one of the two Armor Association sabers awarded annually by the Association to an outstanding Army ROTC Distinguished Military Graduate commissioned in Armor. First Lieutenant Larry G. Smith, now assigned to Troop D, 3d Squadron, 17th Air Cavalry, received the saber award. Lieutenant Smith was graduated from Western Kentucky University in 1966. In addition to his wife; his parents, Lieutenant Colonel, USA-Retired, and Mrs. Grover G. Smith; university officials and unit officers witnessed the ceremony.

First Lieutenant Larry G. Smith and his wife Anne admire the saber presented to him by The United States Armor Association.

SHERIDAN-SHILLELAGH DEVELOPMENTS

The U.S. Army **Shillelagh** guided missile system, mounted aboard the **M551 Sheridan,** is headed "down under" for Australian Army testing and evaluation. As a part of the American, British, Canadian, Australian (ABCA) Standardization Loan Program, the Australian government is being loaned two **General Sheridan** armored reconnaissance airborne assault vehicles and 20 **Shillelagh** guided missiles for the trials. Included will be exercises under tropic climatic conditions.

In the United States Army, **Shillelagh** missiles have been issued to the 1st Battalion, 63d Armor, at Fort Riley, Kansas, where combat crew training with this new weapon continues.

Gunners who score hits with the deadly **Shillelagh** guided missile will now have something to show for their accomplishment besides the hole in the center of the target. Aeronutronic Division of Philco-Ford has initiated a program to award a wallet-sized certificate and a lapel pin to each Army gunner who scores a hit with the missile.

The **Shillelagh** is fired from the same 152mm gun tube mounted in the turret of the **Sheridan** vehicle that fires conventional rounds of ammunition, which can be interchangeably fired on combat missions. The gunner fires the missile and then guides it to the target, following the target during the missile's flight up to the point of impact and destruction. Utilization of this guidance system gives the missile extreme high-kill probability against tanks, armored vehicles, and field fortifications.

In addition to being standard armament on the **General Sheridan** and **MBT70,** the **Shillelagh** is being adapted to the Army's **M60A1E1** tank.

NEW LANDING VEHICLE

A new Marine Corps amphibious prototype landing vehicle has been unveiled by the FMC Corporation.

Designated the LVTX12, this latest improvement of the World War II Alligators **and** Water Buffaloes **has lightweight aluminum alloy armor, the first use of this metal in an armored assault amphibian. This vehicle also has a totally enclosed hull with cargo hatches and an underwater return track system with center guide tracks. A unique water jet propulsion system and a rugged, specially designed transmission system, are two features which make the LVTPX-12 one of the most advanced amphibians ever developed. This armored vehicle travels at speeds of over 8 mph afloat and 40 mph on land.**

LASER'S USE BY TANK GUNNERS GETS ARMY GREEN LIGHT

Army tank gunners will now be able to improve their accuracy without having to move to the range and fire costly ammunition. Laser "guns" that simulate tank cannons are being introduced into Army units to save training time and money.

Lasers fire brief, brilliant beams of light along the path a 105mm projectile would take, permitting highly efficient target practice even inside buildings. The laser weapons fire simulator replaces the more expensive. .30 caliber and 7.62mm machinegun trainers commonly used for sub-caliber fire on **M48** and **M60** tanks. The Weapon Firing Simulator (Laser) can also be used on the **M551 Sheridan.**

Laser cannon simulators may cut training time as much as 20 percent and at the same time improve gunner accuracy. In use at the Armor Center for some time, the device is now standard equipment for tank units. National Guard and Reserve tank gunners, whose training may be limited by availability of sub-caliber and tank ranges, can use the laser for indoor target practice.

When firing a machinegun trainer, the gunner lines up his target in an optical sight, squeezes off a round and checks his accuracy by glancing at the distance between the bullet hole and the intersection of his gunsight crosshairs. He should then make a mental note of how far off he was, make the proper sight correction, re-aim and fire again. However, many trainees make a shortcut sight correction by zeroing the crosshairs of the sight on the previous bullet hole—a habit impossible to practice under battlefield conditions where a miss leaves no mark, and targets may keep moving.

The laser simulator prevents this since it emits a burst of light that endures only for microseconds. To the gunner's eye, this burst persists for a fraction of a second as a half-inch spot of light on his target. Then it disappears, just as a tracer bullet would do in combat. This forces the gunner to make a quick mental note of needed corrections with battlefield speed and techniques—another contributing factor to increased accuracy in combat.

"MR. BLACKHORSE"

An Army sergeant presently serving in Vietnam holds the distinction of being the only trooper presently in the 11th Armored Cavalry Regiment to have served with the unit for seven consecutive years.

Sergeant First Class David L. Harper, Jr., of the Bronx, New York, has reenlisted twice to be with the Blackhorse Regiment. During this time the unit has traveled three quarters of the distance around the world.

"Back in 1960," reminisced Sergeant Harper, "I was sent to Regensburg, Germany, where I was stationed with Company M of the 3d Squadron as a platoon sergeant. For four years I had the best tank platoon in the regiment." The 11th Cavalry and Sergeant Harper left Germany in June 1964 for Fort Meade, Maryland, where they trained until August 1966.

Later that month, when the 11th Cavalry arrived in Vietnam, Sergeant Harper was in the lead vehicle as the unit moved for the first time along Viet Cong infested roads to their new base camp in Long Giao.

Extending his tour to stay with the Blackhorse, he has been on almost every operation of the regiment. Sergeant Harper wants personnally "to see the cavalry progress in the war, to be a deciding factor in it, and to stay long enough to see the final outcome of the war, even if it means extending again."

Sergeant Harper would like to see his son, Marion, now 12, go to West Point, become an Armor officer, and serve with the Blackhorse Regiment.

FORT HOOD IS DESIGNATED TWO-DIVISION POST ON 25TH ANNIVERSARY

During the post's 25th anniversary celebration, Lieutenant General George R. Mather, III Corps and Fort Hood commander, announced that Fort Hood has been designated officially as a two-division post. Although two divisions, the 1st Armored and 2d Armored, have been stationed there for several years, Fort Hood was considered to be only a one division installation. The huge Texas post is planned for an average troop strength of 38,000. It will have the largest armor unit concentration in the Free World.

PATTON PORTRAIT UNVEILED

A new likeness of General George S. Patton is now hanging in Gaffey Hall at the Armor School. It was unveiled by General Bruce C. Clarke, USA-Retired and Captain John K. Waters, Jr., a grandson of General Patton who is presently a student in the Armor Officers Advanced Course.

On behalf of the donor, the 4th Armored Division Association, General Clarke arranged for the true-to-life Patton painting to be executed by Richard Essig, one of America's foremost portrait painters.

The new portrait is titled "Go East" and shows General Patton with his back to the setting sun. In his remarks at the ceremony, General Clarke recalled how, when he was leading a combat command in the 4th Armored Division following the breakthrough in Normandy, his command was ordered to advance from Avranches to Rennes some 60 miles distant. The command arrived at its objective much sooner than expected and had to wati for further orders. Later, in a conversation with General Patton, General Clarke referred to the Rennes incident and asked, "If I ever again find myself in a situation where I have no orders, what should I do?" General Patton replied, "Go East!"

The portrait will occupy a prominent place in the new Patton Museum when it is completed.

HONOR UNITS

FIVE YEARS

☆ 1st Bn(Mech), 114th Inf, NJARNG

FOUR YEARS

☆ Hq, Hq Co, 2d Bde, 27th Armd Div, NYARNG
☆ Hq, Hq Co, 1st Bde, 49th Armd Div, TEXARNG
☆ 1st Bn, 149th Armor, 49th Inf Div, CALARNG

THREE YEARS

☆ Hq, Hq Co, 3d Bde, 30th Armd Div, TENNARNG
☆ 1st Bn, 112th Armor, TEXARNG
★ 2d Bn, 142d Armor, NYARNG

TWO YEARS

☆ Hq, Hq Co, 2d Bde, 30th Armd Div, TENNARNG

NEW HONOR UNITS

★ 2d Sqdn, 9th Cav, 24th Inf Div
★★ 2d Bn, 67th Armor, 2d Armd Div
★ 2d Bn(Mech), 108 Inf, NYARNG

☆ 100 percent Officer Members
☆☆ percent Officer and Senior NCO Members
★ 100 percent Officer members and Unit Fund Subscriptions
★★ 100 percent Officer and Senior NCO members and Unit Fund Subscription

NEW LIGHTWEIGHT ASSAULT BRIDGE

A new lightweight assault bridge has been designed for operation in the marginal terrain of the Vietnam rice paddies and swamps. The folding welded aluminum alloy bridge is being developed by the U.S. Army Mobility Equipment Research and Development Center at Fort Belvoir.

Mounted on the M113 armored personnel carrier, the bridge weighs 2700 pounds. It can be emplaced where heavier bridge equipment would bog down. It can support 15-ton loads over spans up to 33 feet.

The bridge is positioned hydraulically in less than two minutes without exposing personnel. After manual hookup of two hydraulic connections, it can be retrieved by reversing the launching procedure. The bridge is transported in the folded position at convoy speeds of 35 mph and has the same 3.5 mph swim capability as the unmodified personnel carrier.

The bridge has an extruded orthotropic plate deck, rather than the traditional stringer floor beam design. Thus the roadway surface is the primary load carrying member. The three link launching mechanism is constructed of an aluminum alloy and pin connected to the vehicle at six points.

ARMOR SCHOOL SERGEANT MAJOR

Sergeant Major Donald L. Tefft is the new Armor School Sergeant Major. A World War II veteran of the 1st Division, SGM Tefft served for five years in the 3d Armored Cavalry, fought in the Korean War and subsequently served with the 11th Airborne and 3d Armored divisions in Europe. His last assignment was as Chief NCO of the Weapons Department.

STATEMENT OF OWNERSHIP, MANAGEMENT AND CIRCULATION
(Act of October 23, 1962; Section 4369, Title 39, United States Code)

Publisher: File two copies of this form with your postmaster.
Postmaster: Complete verification on page 3

Form Approved. Budget Bureau No. 48-R029

1. DATE OF FILING: 30 October 1967
2. TITLE OF PUBLICATION: ARMOR - The Magazine of Mobile Warfare
3. FREQUENCY OF ISSUE: Bi-monthly
4. LOCATION OF KNOWN OFFICE OF PUBLICATION (Street, city, county, state, ZIP code): Suite 418, 1145 19th Street, N. W. Washington, D. C. 20036
5. LOCATION OF THE HEADQUARTERS OR GENERAL BUSINESS OFFICES OF THE PUBLISHERS (Not printers): Same as #4
6. NAMES AND ADDRESSES OF PUBLISHER, EDITOR, AND MANAGING EDITOR
PUBLISHER (Name and address): The United States Armor Association, Same address
EDITOR (Name and address): LTC C. W. MARTIN, Jr., U. S. Army, Same address
MANAGING EDITOR (Name and address): None
7. OWNER (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding 1 percent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a partnership or other unincorporated firm, its name and address, as well as that of each individual must be given.)

NAME	ADDRESS
THE UNITED STATES ARMOR ASSOCIATION	Same as #4
An unincorporated, non-profit, educational and scientific association. ARMOR is its journal. No paid advertising accepted.	

8. KNOWN BONDHOLDERS, MORTGAGEES, AND OTHER SECURITY HOLDERS OWNING OR HOLDING 1 PERCENT OR MORE OF TOTAL AMOUNT OF BONDS, MORTGAGES OR OTHER SECURITIES (If there are none, so state)

NAME	ADDRESS
None	

9. FOR COMPLETION BY NONPROFIT ORGANIZATIONS AUTHORIZED TO MAIL AT SPECIAL RATES (Section 132.122, Postal Manual) (Check one)
The purpose, function, and nonprofit status of this organization and the exempt status for Federal income tax purposes: [X] Have not changed during preceding 12 months [ ] Have changed during preceding 12 months (If changed, publisher must submit explanation of change with this statement.)

10. EXTENT AND NATURE OF CIRCULATION	AVERAGE NO. COPIES EACH ISSUE DURING PRECEDING 12 MONTHS	SINGLE ISSUE NEAREST TO FILING DATE
A. TOTAL NO. COPIES PRINTED (Net Press Run)	8916	8185
B. PAID CIRCULATION 1. SALES THROUGH DEALERS AND CARRIERS, STREET VENDORS AND COUNTER SALES	4	25
2. MAIL SUBSCRIPTIONS	7097	6628
C. TOTAL PAID CIRCULATION	7102	6653
D. FREE DISTRIBUTION (including samples) BY MAIL, CARRIER OR OTHER MEANS	1130	923
E. TOTAL DISTRIBUTION (Sum of C and D)	8232	7576
F. OFFICE USE, LEFT-OVER, UNACCOUNTED, SPOILED AFTER PRINTING	684	609
G. TOTAL (Sum of E & F—should equal net press run shown in A)	8916	8185

I certify that the statements made by me above are correct and complete. (Signature of editor, publisher, business manager, or owner) ▶ RICHARD G. HOEHNER, SFC, Army, Bus. Mgr.

POD Form 3526 Aug. 1967

FROM THE BOOKSHELF

A DIFFERENT KIND OF WAR: The Unknown Story of the U.S. Navy's Guerrilla Forces in World War II China by Vice Admiral Milton E. Miles, USN. 629 pp. **$7.95**

There are at least two kinds of books that convey valuable lessons on military techniques. There are those that make their teaching points very directly—one, two, three, etc.—and now you know. Others tell a good story in such a way that the reader inevitably learns much that is useful and thanks the author for a pleasant evening or two of painless professional reading.

Some years ago this reviewer was a very young second lieutenant fresh from the Armored (such it was then) OCS when late one night he joined a reconnaissance platoon actively engaged in maneuvers. The platoon sergeant was a fascinating White Russian who had wangled his way into the World War II American Army with guile and some rather inexact statements about his date of birth. An obvious aristocrat, he had been a noncommissioned officer in the World War I Imperial Russian Cavalry and had later fought the Reds as a member of Admiral Kolchak's Far Eastern Army. He was one of the finest of soldiers.

The next morning, with a wry smile that revealed fully his partial descent from the Khans, he stated: "Sir! The lieutenant will want to read the *platoon* manual." At this point he withdrew from beneath his poncho, with a flourish befitting Mandrake, a much worn copy of C. S. Forester's *Rifleman Dodd,* a truly great historical novel of Wellington's Peninsula Campaign—the campaign which gave birth to the term guerrilla. "The Lieutenant" read and reread that book and, to this day, discovers new lessons in it.

A Different Kind of War is not a novel, but, it reads somewhat like one. It sets forth in detail the experiences of Commander, later Rear Admiral, Miles in conceiving, setting up and operating jointly with our Chinese allies a network to gather meteorological data for the World War II United States fleets in the Pacific. Named the Sino-American Cooperative Organization (SACO), this unusual Navy enterprise grew to include training, equipping and employing sizable guerrilla units against the Japanese. These operations, as well as some understandable conflicts with Chinese Communist forces, are graphically described.

The reader of this review is probably thinking at this point, "Well fine, but why in the world should I include a book about some curious World War II Navy types and their Terry and The Pirates Chinese colleagues in my limited reading time?" The answer is that this is one of the finest texts on the challenges and problems of unconventional operations and on understanding the Chinese (and other Asians) that we have ever seen. It also makes some very perceptive comments on the workings of our own bureaucracy and its sometimes baleful lack of understanding of the need for novel and unusual approaches in achieving the goals of national policy.

A Different Kind of War is no field manual on how to fight a war in Vietnam or Timbuktu or anywhere else, but it has a lot of valuable background and think material which will stand any soldier in good stead when he is called upon to participate in operations at any level to be conducted in a cultural environment differing widely from our own.

Those who pass this book by are needlessly depriving themselves of both pleasure and useful knowledge.—OWM, JR.

LAST REFLECTIONS ON A WAR by Bernard B. Fall. 288 pp. Illustrations. **$4.95**

On February 1967 a mine exploded on "The Street Without Joy" and settled the pen of Bernard Fall for all time. Thus ended a series of excellent, perceptive and frequently controversial books from a scholarly activist who abjured an ivory tower and preferred to study revolutionary warfare at first hand.

Last Reflections was compiled by widow Dorothy Fall and editor Stewart Richardson. It includes a taped television interview which constitute's Fall's autobiography and an interesting one at that. The bulk of the book consists of magazine articles and lectures which appear to deserve compilation and preservation in the more convenient and enduring form of a book. Several unpublished pieces and transcripts of tapes made as Fall accompanied the Marines in Vietnam combat complete the work.

Taken as a whole, this collection offers little that is new but it does present an overview of the results of long continuing thorough research and the independent opinions of one who probably came as close to being an "expert" on Vietnam as there has been. Most of those whose interest in the Vietnam conflict has run deeper than merely following events there in the daily newspaper have read each of Bernard Fall's books on this military-political confrontation. These readers will find *Last Reflections* of interest too.—OWM, JR.

PEACEFUL CONFLICT by Edward Bernard Glick. 187 pp. **$6.50**

The reluctance of the military in any country to beat swords into plowshares is as wise as it is proverbial. Too many times have soldiers been called upon to fight with farm implements while swords were being forged. In both World Wars, for instance, our generals have had to overcome the difficulties of rearmament before they could fight the enemy.

Can armies, while retaining a ready sword, actively work to better the socio-economic development of nations? The answer to this question is the object of this year's Stackpole Award winning book, *Peaceful Conflict*. The author, Doctor Edward B. Glick, associate professor of political science at Temple University asserts that not only can they, but that they have been doing so for some time.

The author cites the activities of armies from ancient times to the present day to point out that their accomplishments were far from being solely "military." He shows that armies have been engaged in peaceful civic action to better their nations since recorded time.

Civic action in South America, the Middle East, Africa and Asia is examined. Interesting examples of civic action in Israel and the Philippines are reviewed. In addition, much of the book treats American experiences in Southeast Asia. Pitfalls and tactics are elucidated.

Doctor Glick is not a utopian, his arguments are based on premises that international conflicts will continue.

However, he declares that the use of military forces to eliminate, or at least alleviate, social and economic conditions which breed war and revolution deserves even more attention than it is now getting. In view of increased emphasis on the peaceful uses of the military by our own government, *Peaceful Conflict* is timely and deserves reading now. An extensive bibliography is included. J.E.K.

THE GI WAR: 1941-1945 by Ralph G. Martin. 402 pp. **$8.95**

For anyone who seeks to understand the American fighting man better, this is the book.

Ralph Martin, a former combat correspondent for "The Stars and Stripes" and *Yank*, brings war to life as only those who have experienced it themselves can. From the time you enter the induction center and raise your hand to take the oath to the day you are issued your "Ruptured Duck," you're in the war. Many who read this book will see themselves or their buddies revealed by the detailed interviews. Others will insist they know many of the cast.

While it is written about World War II soldiers, *The GI War* goes a long way in telling the story of the American enlisted man in any modern war.—R.G.B.

A PICTURE REPORT OF THE CUSTER FIGHT by William Reusswig. 184 pp. **$8.50**

A well-researched account of the famous Battle of the Little Big Horn that features 101 drawings —17 of them in two-color and one in full color—of the soldiers and the hostile Indians in swirling action. A unique presentation of the pictorial history as it must have been.

TAKING COMMAND by Colonel Samuel H. Hays and Lieutenant Colonel William H. Thomas. 317 pp. **$6.95**

For leaders of all ranks. Based both on scientific studies and practical experiences. Has a high degree of practical application.

MANAGING INSURANCE AND PERSONAL FINANCE by The Associates in Social Sciences, USMA. **$6.95**

This is an authoritative, up-to-date, nonpartisan advisor on managing one's finances in order to get the most for the dollar while avoiding pitfalls.

THE KOREAN WAR by General Matthew B. Ridgway, USA-Retired, 291 pp. **$6.95**

General Ridgway relates objectively how, in 1950, he took over a dispirited Army in Korea and rebuilt it into a victorious Army. The President Truman and General MacArthur dispute is discussed. Many photographs.

APPLICATION FOR MEMBERSHIP OR SUBSCRIPTION

TO: THE UNITED STATES ARMOR ASSOCIATION
1145 19th Street, NW, Washington, D. C. 20036

NAME_____ ☐ NEW

ADDRESS_____ ☐ RENEWAL

CITY_____ STATE_____ ZIP_____

PLEASE FILL IN ALL APPLICABLE SPACES IN 1, 2 OR 3 BELOW

1. ACTIVE DUTY MILITARY MEMBER
   ☐ REGULAR ☐ RESERVE ☐ ARNG ☐ USMA
   _____ (grade) _____ (service) _____ (branch)
   _____ (service number) _____ (unit)

2. OTHER MILITARY MEMBER
   ☐ REGULAR ☐ RESERVE ☐ ARNG ☐ ROTC ☐ RETIRED ☐ VETERAN
   _____ (grade) _____ (service) _____ (branch)
   _____ (service number) _____ (unit) (if veteran or retired indicate former unit)

3. SUBSCRIBER
   ☐ DOMESTIC ☐ FOREIGN
   ☐ INDIVIDUAL (FOREIGN MILITARY INDICATE RANK, BRANCH, ETC. IN 2. ABOVE)
   ☐ MILITARY UNIT
   ☐ BUSINESS, INDUSTRY, ETC.
   ☐ LIBRARY, EDUCATIONAL INSTITUTION

Dues for military members (including veterans) $8.50 for two years; $4.75 for one year. Cadets only—$4.00 per year. Dues include subscription to ARMOR.
Subscriptions—Domestic $12.00 for two years; $6.50 for one year. Foreign $15.00 for two years; $8.00 for one year.

FOR YOUR LIBRARY

BIOGRAPHY

AT EASE, Stories I Tell to Friends by Dwight D. Eisenhower 6.95
HENRY CABOT LODGE by W. J. Miller 8.50
BEFORE THE COLORS FADE by Fred Ayer 6.00
WARRIOR—The Story of General George S. Patton, Jr.
by Editors of THE ARMY TIMES 5.95

WORLD WAR II

HITLER'S LAST GAMBLE, The Battle of the Bulge
by Jacques Nobecourt 8.95
1942: THE YEAR THAT DOOMED THE AXIS by H. H. Adams .. 8.95
CORREGIDOR—The Saga of a Fortress
by J. H. Belote & W. M. Belote 6.95
THE MARCH TO TUNIS by Alan Moorehead 8.50
PANZER BATTLES by Von Mellenthin 5.95
THE ROMMEL PAPERS edited by B. H. Liddell Hart 8.50
KASSERINE PASS by Martin Blumenson 5.95
THE FOXES OF THE DESERT by Paul Carell 5.95
THE BATTLE FOR ITALY by W. G. F. Jackson 8.50
THE BATTLE OF THE FALAISE GAP by Eddy Florentin 7.50

SOUTHEAST ASIA

THE TWO VIET-NAMS by Bernard B. Fall 7.95
HO CHI MINH ON REVOLUTION by Bernard B. Fall 6.95
FIRE AND MOVEMENT by Jac Weller 6.95
THE LOST REVOLUTION by Robert Shaplen 6.95
BATTLES IN THE MONSOON by BG S. L. A. Marshall 6.95
HOW TO STAY ALIVE IN VIETNAM by COL R. B. Rigg 1.95
HELL IN A VERY SMALL PLACE by Bernard B. Fall 8.95

GENERAL

GUIDELINES FOR THE LEADER & THE COMMANDER
by GEN Bruce C. Clarke 1.00
THE OFFICER'S GUIDE by R. B. Reynolds 6.95
THE TANK COMMANDER'S GUIDE by Warnick, Cook & Baker ... 3.95
TANK COMPANY COMMANDER'S GUIDE,
by Brier, Moore & Bahnsen 1.25
A PICTORIAL HISTORY OF THE U.S. ARMY by Gene Gurney . 15.00
THE HISTORY OF THE U.S. ARMY by Russell F. Weigley 12.95
WEAPONS & TACTICS by Jac Weller 6.00
HORSEMANSHIP by Waldemar Seunig 8.50
CAVALRY MANUAL OF HORSEMANSHIP & HORSEMASTERSHIP
by Gordon Wright 4.95
THE OFFICER AS A LEADER by BG S. L. A. Marshall 6.50

VIETNAMESE LANGUAGE

READ VIETNAMESE by Nguyen-Dinh Hoa 3.75
SPEAK VIETNAMESE by Nguyen-Dinh-Hoa 5.00
VIETNAMESE-ENGLISH DICTIONARY by Nguyen-Dinh-Hoa 6.50

COUNTERINSURGENCY

CHE GUEVARA ON GUERRILLA WARFARE 4.50
MAO TSE-TUNG ON GUERRILLA WARFARE 4.50
PEKING AND PEOPLES WARS
by BG Samuel B. Griffith, II, USMC-Ret 4.95
THE ART OF COUNTERREVOLUTIONARY WARFARE
by John J. McCuen 8.50

CAVALRY AND THE AMERICAN WEST

CUSTER FELL FIRST by J. C. Ryan 3.95
SPURS TO GLORY by James M. Merrill 6.95
THE YELLOWLEGS by Richard Wormser 6.50
FAINT THE TRUMPET SOUNDS
by John Upton Terrell and COL George Walton 6.95
THE MILITARY CONQUEST OF THE SOUTHERN PLAINS
by William H. Leckie 5.95
THE COMPACT HISTORY OF THE INDIAN WARS by John Tebbel 5.95
THE BUFFALO SOLDIERS by William Leckie 5.95
THE BATTLE OF THE LITTLE BIG HORN by Mari Sandoz 4.50
SOLDIERS ON THE SANTA FE TRAIL by Leo E. Oliva 4.50

MILITARY WEAPONS

AGE OF GREAT GUNS by Frank E. Comparato 11.95
CANNONADE by Fairfax Downey 6.50
THE WEAPONS OF WORLD WAR III by John S. Tompkins 5.95
SMALL ARMS OF THE WORLD, Smith & Smith 17.95
PAGEANT OF THE GUN by Harold E. Peterson 5.95

FOR THE LADIES

THE ROLLING KITCHEN by Ruth Patton Totten 3.95
THE ARMY WIFE
by Nancy Shea/revised by Anna Perle Smith 5.95
WHAT EVERY ARMY WIFE SHOULD KNOW
by Betty Kinzer and Marion Leach 4.95
SERVICE ETIQUETTE by Harral & Swartz 6.50
LADY IN ARMS by Virginia Weisel Johnson 4.50

COMING IN ARMOR.....

- *Richard M. Ogorkiewicz reports his findings on the S-tank during a recent visit to Sweden*

- *A close look at where armored vehicles can and can not go in Vietnam*

- *Some down-to-earth ideas on leading American soldiers from Colonel "Red" Reeder*

- *Thoughts on air cavalry operations in Vietnam with original photographs by the author*

- *A report on The First Regiment of Dragoons past, present and future*

- *Details on the 79th Annual Meeting of The United States Armor Association scheduled to be held at Fort Knox in May*

- *A long, exhaustive, thoroughly footnoted article featuring many pages of solid type uninterrupted by illustrations on . . . . . (Tentative: to be used only in the event that the item YOU are writing fails to arrive in time or if the budget falls short by the number of new members and subscribers YOU were going to sign up)*

- *News on all significant developments in the entire field of mobile mounted combat*

- *Articles, thought-provoking target pieces, and stimulating Letters to the Editor that YOU will submit*

. . . AND MUCH MORE

ARMOR

March-April 1968

THE UNITED STATES ARMOR ASSOCIATION

Established 1885 as *The United States Cavalry Association*

"To disseminate knowledge of the military arts and sciences, with special attention to mobility in ground warfare; to promote the professional improvement of its members; and to preserve and foster the spirit, the traditions and the solidarity of Armor in the Army of the United States"—Constitution.

ARMOR

The Magazine of Mobile Warfare

Volume LXXVII **March-April 1968** **No. 2**

ARTICLES

FEATURES

DEPARTMENTS

COVER

THE 1833 UNITED STATES REGIMENT OF DRAGOONS HELMET ON DISPLAY AT THE SMITHSONIAN INSTITUTION. ORIGINAL PAINTING FOR ARMOR BY TOM YUSKIW, AN INDUSTRIAL DESIGN GRADUATE OF THE UNIVERSITY OF WASHINGTON AND MILITARY HISTORY BUFF NOW WORKING IN WASHINGTON, D. C. THE ORANGE COLOR THROUGHOUT THIS ISSUE COMMEMORATES THE DRAGOON TRIMMINGS WHICH BECAME CAVALRY YELLOW IN 1861.

ARMOR Magazine is published bimonthly by the United States Armor Association, Suite 418, 1145 19th Street, N.W., Washington, D. C. 20036, to stimulate interest in, provoke thought on, and provide an open forum for decorous discussion of professional matters. Articles appearing herein represent the personal views of the contributors. Unless otherwise stated, they are neither expressions of official policy nor do they represent the position of the publisher. Unless credited, photographs are official Department of Defense releases.

MEMBERSHIP DUES (including ARMOR): $4.75 one year, $8.50 two years. Active or associate membership is open to all active, reserve, retired or honorably discharged members of the U. S. Armed Forces.

SUBSCRIPTION RATES: Individuals not eligible for membership, unit funds and institutions may subscribe to ARMOR. **Domestic:** $6.50 one year, $12.00 two years. **Foreign:** $8.00 one year, $15.00 two years. Single copies $1.50.

CORRESPONDENCE: All correspondence should be addressed to ARMOR, Suite 418, 1145 19th Street, N.W., Washington, D. C. 20036 (Telephone: (202) 223-2161).

POSTMASTER: Second-class postage paid at Washington, D. C. and at additional mailing offices.

ARMOR may be forwarded to persons in the United States Service whose change of address is caused by official orders (except to APO addresses) without payment of additional postage (157.4 Postal Manual).

LETTERS TO THE EDITOR

AVE, ET VALE, RANGERS

Dear Sir:

It gave us great pleasure to see HHC, 1st Brigade, 49th Armored Division, Texas Army National Guard, honored as a Four-Year Honor Unit for 100 percent officer members in the Association in the November-December issue of ARMOR.

We have prided ourselves on our total participation in the Armor Association over the years, not only because it was proper to do as Armor officers, but also because membership in the Association gave us many benefits in our military careers.

Unfortunately, on Janury 15, 1968, HHC, 1st Bde, 49th Armored Division is being inactivated as part of the current reorganization of the National Guard. Our personnel will be scattered among several newly created units within Texas, with the bulk of them going to HHC, 71st Airborne Brigade in Houston. Our colors will be retired, and we cease to exist as an Armor unit.

While Armor units in the Texas National Guard are being drastically reduced, it is my sincere hope that the individual Armor officers will continue to maintain their membership in the Association in the future.

It has been a pleasure for me to work with the Association in securing members from our unit and assisting in securing members within the Division. I plan to continue my membership and to help with your membership campaigns in Texas.

GUY C. JACKSON III
Major, Armor
Texas Army National Guard

It has been a great pleasure for us to have such solid support from the "Texas Rangers" brigade. Though we understand the reasons for, and recognize the necessity of, the current reorganization designed to increase the readiness of our reserve components, we are saddened that this will mean the extinction of some mighty fine armor units. We salute their members and wish them well as they take their great spirit and dedication to new assignments. And we might add, we know that they join with us in wishing the many armor units in the new Army National Guard and Army Reserve structure a great future. THE EDITOR

ONE TANK, TWO CREWS

Dear Sir:

The question, "Could the practice of a blue and gold crew of the Navy be used?" raised by Lieutenant Colonel DeAngelis in his recent article *"MBT-70"* recalls a stimulating visit I had with the late J. F. C. Fuller in 1962. Fuller had frequently advocated the use of two or more crews for each tank and brought the subject up when we were discussing the coming of night vision devices that would permit sustained, around-the-clock operations by armor.

He was vehement in saying that it was "ridiculous" to let a tank stand idle because the crew had to sleep, eat, etc., or to commit a tank to action with a crew that was fatigued from prolonged fighting and moving. He said we should discard the old cavalry concept of one man-one horse and adopt the aviation concept of having more than one pilot (crew) per vehicle. Only in this way could the full potential of armored units be realized in future combat operations.

Brig. Gen. USMC—Ret
F. P. Henderson
Moorestown, New Jersey 08057

LOOKING AHEAD

Dear Sir:

I have committed an unforgivable sin. I have allowed my membership in the Association to lapse. I am still on active duty and now intend to apply for a Regular Army commission.

Inclosed are my dues for two years. I am looking forward to a long and happy membership in the Association.

First Lieutenant, Armor
Fort Jackson, S.C.

Dear Sir:

I am now a cadet with a four year ROTC scholarship. I am much interested in Armor and have long been a great admirer and avid reader of ARMOR which certainly appears to be the finest periodical on armored warfare now published. I intend fully to be commissioned in the "Combat Arm of Decision" upon graduation.

Inclosed are my dues as a cadet member. I hope to remain a member of your fine organization for many years to come.

ROTC Cadet
Johns Hopkins University

Letters such as these are especially gratifying because they show the very real interest of those in whose hands lies the future of our Association and its professional magazine. It looks like a great future. THE EDITOR.

ON SUBSCRIPTION PRICES

Dear Sir:

One hundred percent of the officers and noncommissioned officers in grade E7 and above are now Armor Association members. However, none of the unit funds have subscriptions.

We would like to know why the unit fund subscription rate is $6.50 per year. I believe if the rate were lower the funds would participate more and the magazine would be available in dayrooms for the troops.

Harold D. Carr
Sergeant Major
2d Battalion, 67th Armor
2d Armored Division

Dear Sergeant Major:

Thank you for your letter.

It is good to learn that there is such support of the U.S. Armor Association by the senior NCOs and officers of your battalion. Such a fine record reflects real interest in their profession by the leaders of your organization.

You asked why ARMOR *is $6.50 per year for unit funds. That is a legitimate question which deserves an answer.*

Members dues of $4.75 were set on 1 June 1950. The current subscription prices were established in 1964.

The Association has long tried to keep costs low for members to make it possible for a maximum number to belong without undue financial strain. We well realize that they have other professional obligations also.

At this time the members dues fall short of covering the actual pro-rata expenses of running the Association and publishing ARMOR. *If we can get and keep more members we should just about break even on them. That is the way we want it.*

Subscriptions enable us to keep the operation running on a sound basis. However, the surplus we must earn to buy needed new equipment comes almost entirely from book and print sales. We have no outside income.

When you consider the number of potential readers and the cost per unit member, $6.50 is not so much for a unit fund.

Can you encourage the submission of some articles on practical subjects? We need these badly. We are looking for good ideas, not literary masterpieces. We can always edit things a bit.

We are always glad to hear from you and to have your suggestions. Keep them coming. THE EDITOR.

Reconnoitering

"The word, even the most contradictory word, preserves contact—it is silence which isolates"
—THOMAS MANN

March 1968 marks the 81st Anniversary of the first publication of the *Cavalry Journal* which evolved into *ARMOR* in 1950. Coincidentally, March also brings the first anniversary of our editorship. While we are a bit grayer and necessity causes us to be somewhat less vain about wearing our spectacles, we think the oldest military professional journal looks younger than ever.

It seems to us that essentially *ARMOR* has that youthful vision, mental mobility, and elan so necessary for the branch it represents. And at the same time, there is an undertone of wisdom and common sense which comes with years of experience acquired during long and faithful service under able commanders.

In sum, *ARMOR* pretty much reflects Armor—forward-looking but not radical, aggressive but not rash, colorful but not bizarre, well turned out but not foppish, focused on the now and the future but not unmindful of the solid foundation of hard-won tradition.

We love *ARMOR* deeply. We hope that you do too. At times we do not like it. And, we feel sure that the same is true of you. It is a hard taskmaster demanding the best from each, and all, of us. When we fail to give it our best in thought, writing, illustration and so forth, our sins appear hard, cold and uncancellable on the printed page. When it has remained silent when it should have spoken, it reflects our own laziness or lack of thought.

But *ARMOR* is ours. It is always ready to put forth our best ideas, our hopes and aspirations; and to record for posterity our nobler deeds. And these then endure, thanks again to the agency of the printed page.

Looking back over our year of stewardship as 29th in the long line of editors, we note some things with what we hope is pardonable pride, and some real disappointments.

On the plus side is the conversion to modern offset printing with its infinite possibilities for attractive typography and more and better graphics. Many of our appeals to potential authors, whom we knew to have important things to say, have been heeded. Some fine artists have responded to entreaties to assist in making *ARMOR* more attractive. The Armor Center, the Mecca and Medina of Armor, has harkened to the call to keep Armor people world-wide informed about important developments there. A few loyal supporters in Vietnam have made it possible to make it widely known that Armor is making a very real contribution to eventual victory there.

Despite the "main battle bank" goof in the November-December issue we have almost convinced ourselves and our printers that *ARMOR* should be literate, though not necessarily literary. We have put much more of your money into *ARMOR* and have stayed afloat financially even though the picture here resembles an overloaded PC swimming a river with all aboard thankful for their lifejackets and a VTR poised on the bank like a jackal awaiting fallen prey.

On the minus side, we have failed to convince a legion of Armor leaders returning from Vietnam that they should share their experiences with our readers to the professional gain of all. Despite some thought provoking articles we have failed to stimulate that sort of rewarding professional discussion in the form of letters to the editor or follow-on articles for which *ARMOR* is designed. And, we have failed to find the key to spurring more Armor people into paying their dues and insuring that their unit funds subscribe to the end that *ARMOR* will have the wherewithal to speak out strongly for another 81 plus years.

On balance it was a rewarding year. Now, we intend to charge hard to make *ARMOR's* 82d its best ever. Can we count on you to help make this possible by giving of your time, talent and a small bit of your fortune?

the Editor

UNIT ASSOCIATION 1968 REUNIONS

1st Armored Division Assn.—22-25 August — Kentucky Hotel, Louisville, Kentucky
John W. McNutt, 12 Greymore, Chesterfield, Mo. 63017

2d Armored Division Assn.—1-4 August — White House Inn, Chicopee, Massachusetts
Colonel R. F. Perry, Box 2115, Satellite Beach, Fla. 32935

3d Armored Division Assn.—25-27 July — Ft. Des Moines Hotel, Des Moines, Iowa
Paul W. Corrigan, 38 Exchange St., Lynn, Mass 09101

4th Armored Division Assn.—11-13 July — Deauville Hotel, Miami Beach, Florida
Lieutenant Colonel Risden L. Fountain, 4414 Volta Pl. N.W., Washington, D.C. 20007

5th Armored Division Assn.—15-17 August — Sheraton Chicago Motor Inn, Chicago, Illinois
Mrs. Roy S. Watrous, 8549 Lowell St., St. Louis, Mo. 63147

6th Armored Division Assn.—24-27 July — Statler-Hilton, Detroit, Michigan
Edward F. Reed, Box 492, Louisville, Ky. 40201

7th Armored Division Assn.—15-17 August — America Hotel, Washington, D.C.
William E. Jones, Box 361 Ronda, N.C. 28670

8th Armored Division Assn.—5-7 July — Shoreham Hotel, Washington, D.C.
Henry B. Rothenburg, 134 N. La Salle St., Chicago, Ill. 62305

10th Armored Division Assn.—31 August-2 September — Statler-Hilton, Detroit, Michigan
E. L. Loiacono, Box 1025, Langley Park, Indiana 20787

11th Armored Division Assn.—15-18 August — Los Angeles, California
Ray S. Buch, Box 108, Pittstown, N.J. 08867

14th Armored Division Assn.—26-28 July — Hotel Savery, Des Moines, Iowa
John B. Williams, 6036 Christian St., Philadelphia, Pa. 19143

Combat Command B, 14th Armored Division Assn.—16-18 July — Columbus, Ohio
Paul Cleary, 269 Reed Avenue, Syracuse, N.Y. 13207

16th Armored Division Assn.—9-11 August — Chicago, Illinois
Lester Bennett, 5820 Recamper Drive, Toledo, Ohio 43613

1st Cavalry Division Assn.—15-18 August — El Paso, Texas
William J. Hennig, 204 S. Kennicott Ave., Arlington Heights, Ill. 60005

2d Cavalry Regiment Assn. — 6 Regional Conventions
Louis T. Hotz, 726 Mancil Rd., Stafford, Pa. 19087

4th Cavalry Regiment Assn.—August — Cedar Rapids, Iowa
Myloe J. Loberg, Annandale, Minn. 55302

6th US Cavalry Veterans Assn.—15-17 June — Read House & Motor Inn, Chattanooga, Tennessee
Major John A. Everett (Ret.), Box 716, Virginia, Minn. 55792

8th Cavalry Regiment Assn.—May — Dayton, Ohio
Phillip V. Moore, YMCA, Lawrence, Mass. 01843

70th Tank Battalion Assn. — Philadelphia, Pennsylvania
James W. Vance, 2307 M St., N.W., Washington, D.C.

609 Tank Destroyer Assn.—20-22 September — Greenville, South Carolina
George Funke, 3260 Oakford Rd., Trevose, Penn.

Veterans of the 755th Tank Battalion—2d week July — Houston, Texas
R. M. Moore, 2701 Louisiana, Houston, Tex. 77006

817 Tank Destroyer Battalion—1-2 June — Rochester, New York
Raymond J. Banks, 116 Laurel Ave., Pittsburgh, Pa. 15202

Information on reunions not shown above had not been sent to ARMOR at press time. It would be appreciated if association secretaries would send details as soon as available.

BLACKHORSE REPORT II

by Colonel Roy W. Farley

The Blackhorse Regiment landed at Vung Tau, South Vietnam, on 7 September 1966. Since that time, there have been three regimental commanders. Eight lieutenant colonels have taken their turns commanding the three squadrons, and more than 9000 troopers from private to sergeant major have passed through the ranks.

In the March-April, 1967 *ARMOR*, Colonel William W. Cobb, then regimental commander, rendered the first "11th Cavalry Report." This, the second Blackhorse report to the readers of *ARMOR*, is an attempt to summarize the further progress to date as well as to present some of the lessons learned by the 11th Cavalry during its service in Vietnam.

When the initial decision was made to commit the 11th Armored Cavalry Regiment to Vietnam, there was a wide body of opinion among the professional Army establishment—for the most part

---

COLONEL ROY W. FARLEY, Armor, was graduated from the United States Military Academy in 1945. He commanded a company in the 37th Tank Batallion, a troop in the 37th Constabulary Squadron, and a troop in the 3d Cavalry. In 1963-64, he commanded the 1st Battalion, 34th Armor at Fort Lewis. He is a graduate of the Command and General Staff College where he subsequently served on the faculty, the Armed Forces Staff College and the Army War College. He holds a Master of Science degree from the George Washington University. In the critical years 1961-63, he was Assistant Military Attache in Indonesia. Colonel Farley returned recently from Vietnam where he commanded the 11th Armored Cavalry Regiment and is now assigned to the Office of the Secretary of Defense.

non-Armor types—who questioned the utility of a large armored formation in the deltas and jungles of Southeast Asia. We feel that this doubt has been fully answered in the past 15 months by the outstanding combat record of the Blackhorse as well as its sister division cavalry squadrons and the tank battalions. Not only have terrain limitations been minimal but, almost without exception, when the Blackhorse has been placed under operational control of a division headquarters, it has been used with outstanding success as the main attack force in the division plan of operations.

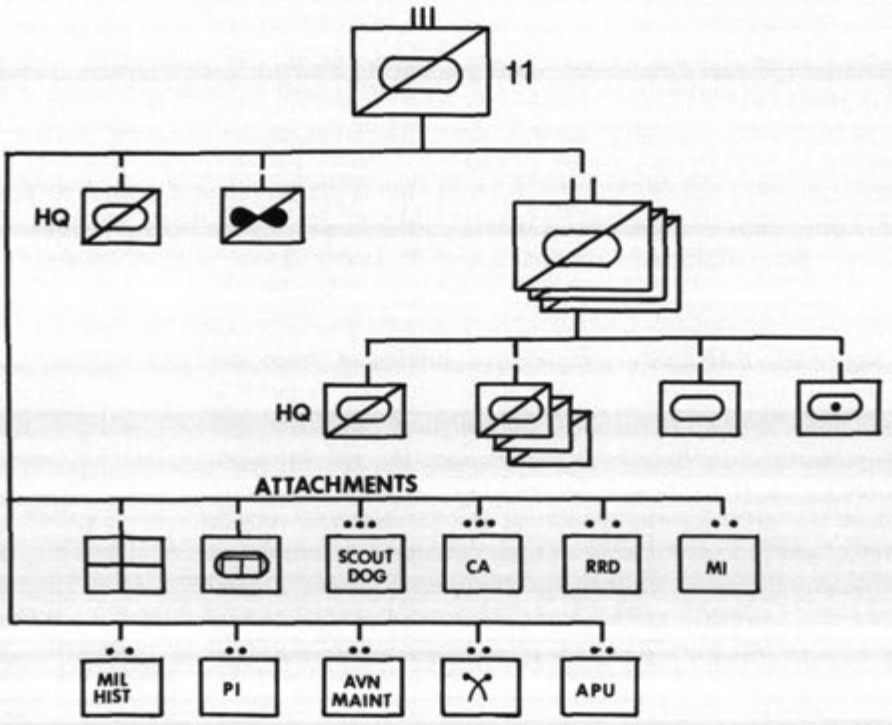
ORGANIZATION OF THE REGIMENTS

Prior to deployment, major equipment changes were made to better suit the tactical units for operations in the jungles and rice paddies expected to characterize the area of operations. The major change involved replacing the main battle tanks and the *M114* reconnaissance vehicles of the reconnaissance platoon with armored personnel carriers. The net effect was to reduce the tank strength of the regiment from 132 to 51 and increase the *M113* density from 83 to 320. The *M113s* were modified further by the addition of armored shields and *M60* gun kits to convert them from their designed function of infantry carriers to combat vehicles which we have named the Armored Cavalry Assault Vehicle (ACAV). Changes in the personnel area, generated by the aforementioned equipment changes as well as other additions deemed necessary to flesh out the regiment's combat support activities, resulted in an increase in strength from 3040 officers and men in TOE 17-51E to the currently authorized total of 3672. In addition, various companies and detachments were attached to the regiment bringing the total for the entire combat team up to 4112 officers and men.

Based on our experiences since arrival in Vietnam, the regiment has recently submitted recommended changes to the organization of the three armored cavalry squadrons. In developing these changes we were limited by the Department of the Army to the current authorized strength ceiling per squadron of 1104 officers and men. The recommendations, together with a brief explanation of the rationale behind each, are summarized in the accompanying table.

We hope by these changes to equip the regiment more suitably for its mission. Other changes we would have liked to have made were precluded by the aforementioned personnel ceiling limitation.

The Air Cavalry Troop of the regiment has undergone several internal reorganizations since arrival in the country. One of these involved the trading of six light observation helicopters (LOH) for the six UH1-C gunships organic to the squadrons. Reasons for this change lay in the requirement to give each squadron commander the capability to keep a command and control ship continuously airborne during operations. It was found that with only two LOHs available it was impossible to meet this requirement. With the four *H23s* now organic to each squadron this requirement can be met. The Air Cavalry platoons have been reorganized so that each of the three platoons has six gunships. One of these pla-



RECOMMENDED ORGANIZATION CHANGES

PROPOSED CHANGE	COMMENT
Replace two of the ACAVs in each reconnaissance platoon with two medium tanks.	Almost 90 percent of the time the regiment has been in action the reconnaissance troops have been reinforced by tanks from the tank companies. The tank, in addition to its heavy firepower, has two prime advantages. It is an outstanding jungle buster and affords superior protection against enemy mines. With few exceptions, the tanks have been able to keep up with the ACAVs when operating cross country.
Eliminate one tank platoon in each tank company and replace it with one rifle platoon mounted in ACAVs.	This would give the tank companies a combined arms capability without reinforcement from the reconnaissance companies.
Consolidate as a platoon the troop 4.2 mortars under each howitzer battery.	Fire control problems and training requirements have dictated this change. It has been seldom that platoons have been operating out of range of artillery support. The recommended change will give each squadron the elements for an additional organic fire support base when needed.
Replace the **M578** retrievers in the troops with **M88s.**	The **M578** has been generally unsatisfactory in Vietnam. The addition of tanks to the reconnaissance troops either by the next MTOE on cross reinforcement necessitates an **M88** recovery capability at the troop level.
Consolidate the Ground Surveillance Teams under squadron control.	The ground surveillance section has marginal effectiveness at troop level because of terrain and weather conditions in Vietnam. Because of their limited application, smaller consolidated squadron ground surveillance sections could meet requirements better.
Increase combat support elements such as forward observer and medical teams to support four maneuver elements. Add an **M577** command post vehicle to each tank company TOE.	Each tank company is used continuously as a maneuver element cross reinforced with the reconnaissance troops rather than being held in reserve. Consequently, the tank companies require the same command and control and support means as the reconnaissance troops.

toons operate normally in direct support of each squadron. An added benefit of the change has been a simplification of the maintenance requirements with the squadrons being concerned only with the *H23* and the Air Cavalry Troop the "Huey." The Aero-rifle platoon has been given the additional mission of functioning as the Long Range Reconnaissance Patrol for the regiment—a mission which takes the majority of its time.

COMBAT OPERATIONS

Initial combat operations were confined to patrols and preparation of ambushes around the staging area. These were break-in operations, designed to introduce the men to the terrain and weather conditions of field activities in Vietnam. The troops learned their initial lessons quickly and, by mid-October, were partcipating in squadron and troop-sized operations with the 173d Airborne Brigade and the 1st Infantry Division.

The first regimental operation, *Atlanta,* was initiated on 20 October 1966 when orders were issued by II Field Force Vietnam directing the regiment to establish the Blackhorse base camp 12 kilometers south of Xuan Loc, the capital of Long Khanh Province, and to clear and secure lines of communication in portions of Bien Hoa, Long Khanh and Phuoc Tuy Provinces. Operations were confined initially to securing National Highway 1 from Bien Hoa to Xuan Loc and Interprovincial Route 2 south to the area of the new base camp. Concurrently, security was provided for work parties of the 27th Engineer Battalion (Combat), which were preparing the base camp for occupancy. The area was sufficiently developed by mid-November for the Regimental command group to depart the Long Binh staging area for relocation at Blackhorse.

The ambush is the most common form of guerrilla attack, and the Viet Cong have honed it to perfection. It is based on thorough intelligence, detailed planning and is executed with surprise, shrewdness and violent determination. Commanding ground, concealment and camouflage are fully utilized so that the attacks can be made at close range to gain maximum effect. Advance vehicles of the element to be ambushed are permitted to pass through the killing zone, then the front and rear are fired on in an attempt to canalize the column and deny relief forces access to the killing zone.

Within one month of the Command Group's arrival at Blackhorse, the regiment had experienced two major ambushes. The first occurred on 21 November (See "The Blackhorse Kicks Back" by Captain John F. Votaw, *ARMOR,* July-August 1967) when two battalions of the Viet Cong 274th Regiment ambushed a convoy moving men, supplies and equipment from the Long Binh staging area to the base camp. VC losses totalled 30 killed in action with American losses at seven killed in hostile action, eight wounded in hostile action and six vehicles damaged.

Eleven days later, on 2 December 1966, the Viet Cong 275th Regiment tripped an ambush against a supply convoy returning to a troop forward security base from Blackhorse (See "Ambush" by Captain George L. Gunderman, *ARMOR,* May-June 1967). The convoy, consisting of three ACAVs, two *M48A3* tanks and two 2½ ton trucks, was ambushed on Highway 1 in an area where the vegetation extended to the very edge of the road. The enemy defeat in this case cost him 99 killed in action while American losses were one killed and 22 wounded by hostile action, and two vehicles damaged.

The defeat of this numerically superior enemy force was a result of the firepower resources of the vehicles initially ambushed, the rapid reaction of reinforcing elements and the artillery and air strikes which were immediately employed.

In these and similar engagements within the regiment's tactical area of interest, the Viet Cong have shown that they have the ability and the forces to attack aggressively when and wherever they have the advantage and an avenue of escape. The firepower, shock effect and mobility inherent to Armor have defeated the aggressiveness, timeliness,

speed, surprise and mobility so vital to the success of every Viet Cong mission.

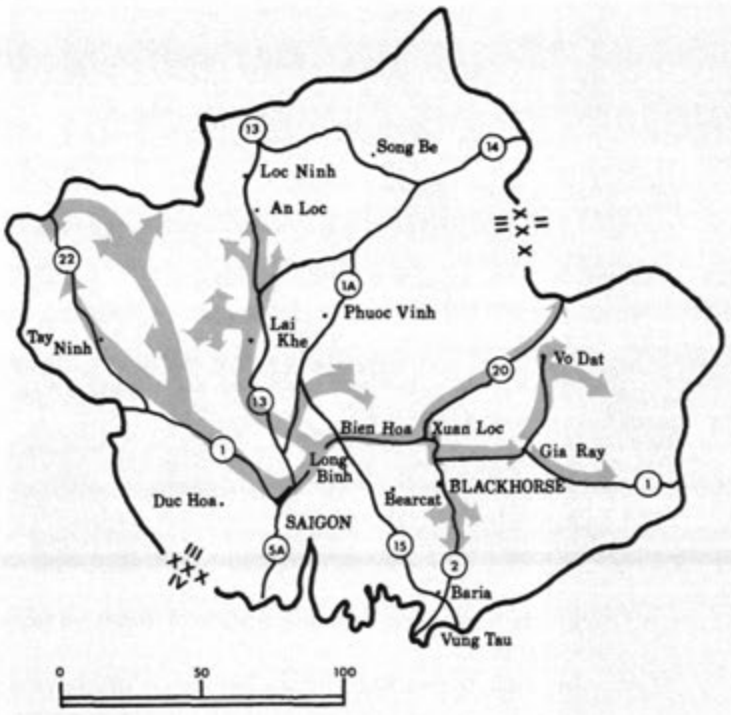
From January through June 1967, the 11th Cavalry was engaged in large scale search and destroy operations under the operational control of the 1st, 9th and the 25th Infantry Divisions. During these search and destroy operations, which ranged from the Iron Triangle, west of Ben Cat, to the western portions of War Zone "C" near the Cambodian border, the regiment had operational control of infantry battalions, divisional cavalry squadrons and artillery battalions. As a result, the regiment was, at times, controlling four maneuver battalions plus supporting artillery.

The flexibility of the Blackhorse Regiment was further demonstrated during Operations *Cedar Falls, Junction City I, Junction City II, Manhattan* and *Akron.* In six months, the regiment conducted these five operations under the control of three separate commands and over an area of six provinces. Rapid maneuver, search and destroy, screening blocking and security missions were conducted. The discovery of 60 tunnel complexes, destruction of more than 1800 fortifications plus the capture of 621 tons of rice during these operations attested to the 11th Cavalry's ability to conduct effective search and destroy operations.

During all these operations, one squadron was required to remain at Blackhorse as security for the base camp and tenant units. In April, United States Army Vietnam directed that a squadron be moved to the I Corps Tactical Zone to provide cavalry support for Task Force *Oregon.* The 2d Squadron was detached during Operation *Junction City II* and left for Chu Lai on 22 April 67. The departure of the 2d Squadron reduced the regiment's operational capability since the remaining two squadrons could not participate in coordinated operations unless another unit was moved to Blackhorse to provide security.

With the start of the summer monsoon in May of 1967, the 11th Cavalry concentrated, with excellent results, on operations in Long Khanh Province. During the past six months, these operations have been extremely fruitful and have resulted in a close working relationship with both the 18th ARVN Division and with the Province and District officials.

The 18th ARVN Division, stationed in Xuan Loc, has provided units of battalion and regimental size to work in close coordination and cooperation with the regiment. These have assisted in search and destroy operations and have conducted vigorous reconnaissance while the squadrons secured engineer road clearing parties. In turn, the regiment has given the 18th ARVN Division artillery support, base security and reaction forces to assist ARVN operations in Long Khanh Province. Of particular significance was an airmobile operation conducted recently in support of one of the squadron operations. Organic aircraft of the regiment airlifted two companies of the 52d ARVN Ranger Battalion to landing zones where they conducted operations in conjunction with the remainder of that battalion which had been inserted via ground transportation. The ease with which this operation was conducted further points out the high degree of cooperation between the Blackhorse Regiment and the 18th ARVN Division. This cooperation has added another highly mobile strike capability to the regiment.



III CORPS TACTICAL ZONE

During the past six months, the regiment experienced two more ambushes, on 21 May and 21 July 1967, which were similar to the two ambushes previously discussed both in execution and results. However, the assault on the 3d Squadron Command Post on 19 June was the only attack of its kind which the regiment has experienced. A detailed account of this operation is in the article "The Affray at Slope 30" by Captain Ronald A. Hofmann (ARMOR, January-February 1968).

As a result of these three serious defeats, the two ambushes on 21 May and 21 July and the 19 June battle, the 274th Viet Cong Regiment has not initiated any major offenses since the 21 July ambush. The 11th Cavalry has conducted extensive search and destroy operations in the Secret Zones where these units are known to hide. However, minor contacts, and discovery of base camps and

weapons have been the only results of these numerous searches.

In order to preclude future ambushes of convoys on the main roads of Long Khanh Province, extensive road clearing operations were initiated in July. These operations were designed to clear the vegetation 100 meters from each side of all the major lines of communication in the tactical area of interest. This was accomplished during July, August and September 1967. The results are four-fold: elimination of ambush sites where the Viet Cong had concealment at the very edge of the road, free access for the civilian population to the highways within the province, denial of Viet Cong taxation opportunities, and severance of a supply route between two of the major base areas of the Viet Cong 5th Division.

The road clearing operations, search and destroy operations, operations in conjunction with the 18th ARVN Division and the civic action effort in Long Khanh Province have produced notable results. This province, which little over a year ago was completely Viet Cong dominated, is now relatively safe. During the Vietnamese national election on 3 September and the national election for the lower house on 22 October, province and 18th ARVN Division officials requested that the 11th Cavalry Regiment work in cooperation with the Vietnamese to protect routes to the polls and to preclude Viet Cong harassment of civilians who were voting. This was done and as a result there were no major incidents. Nearly 85 percent of the local Vietnamese voted in the 3 September election, while 78 percent of those eligible voted on 22 October. These figures speak for themselves and point out the degree of effective cooperation between the officials of the province and the Blackhorse Regiment.

PERSONNEL

During the accomplishment of its mission in Vietnam, the 11th Cavalry has been faced with many problems. One of these, common to all units arriving in Vietnam, is overcoming the strain of a personnel rotational "hump." An infusion program, designed to relieve the pressure of 100 percent rotation of experienced personnel one year following arrival in-country, must be forced on units. This can be accomplished by timely transfers of personnel between in-country units at the rate of 10 percent per month. The strain of losing trained personnel before their tour of duty is completed is a difficulty for the individual unit commanders. However, the disorganization resulting from a 50 to 75 percent turnover at one time is considerably more crippling to the entire command.

Another problem in the personnel area is the need for more clerks and typists than is realized during peacetime training. Historical activities, public information, awards and decorations, S2 and S5 activities blossom in the combat theater. Outside the Republic of Vietnam many of these functions are non-existent or negligible.

TRAINING

Another important problem faced by the regiment was to acclimate replacements to their new environment. A six day replacement training program was established designed to provide refresher training and orientation on the regiment's equipment and tactics. Officers and noncommissioned officers are given a three day orientation which emphasizes troop leading procedures, tactics and safety practices. This has been highly effective since it gives the new regimental members, especially those who have just completed basic and advanced individual training, the opportunity to ask questions, receive further training in weapons and other military fundamentals and to gain further confidence in themselves.

The squadrons schedule refresher and proficiency training quarterly to review lessons that have been learned and to perfect techniques. Formal training is sometimes precluded by operations. However, during lulls in activity, small unit leaders have been able to conduct critiques, revise tactical SOPs and conduct training while in fire support bases. On-the-job training is also used extensively.

A special problem in the replacement training area was a direct result of the rotational hump. During July and August 1967, the normal six day program was shortened to a four day accelerated course of instruction in order to train almost 1700 enlisted replacements. Though necessary, this abbreviated program was undesirable since troopers were not able to attain the same degree of proficiency

that would have been possible with an evenly distributed rotation system.

LOGISTICS

In the logistical area, the regiment has had severe challenges caused by the lack of logistical and maintenance support at the regimental level. The organization of the regiment gives each squadron the capability to deal directly with the agencies of the 1st Logistical Command. However, the logistical support activities desire to conduct business with the regiment on a one customer, wholesale basis in the same way they do with separate brigades and larger units which do have an organic supply and transportation organization.

In establishing the Blackhorse base camp the lack of a support battalion was a never ending source of problems. At this point, I should make it clear that the 551st Light Maintenance Company and the 506th Supply and Service Company have always given excellent support. However, the problem lies in the administration of their support for the regiment and the base camp, which with the tenant units, has a population of over 6000.

In effect, the regimental executive officer has to function as the support battalion commander and the deputy post commander in addition to his many duties as second in command of the regiment. Similar additional duties extend to the entire staff: the S3 must plan, supervise and control perimeter defense and operate a tactical operations center for base camp security even when the regiment is in the field; the S4 must plan, supervise and control post maintenance, logistical convoys, the regimental maintenance program, the ammunition supply point, requisition and distribute ammunition and process hold baggage; the S1 must function as the post adjutant general and finance officer. Other regimental post-like activities include an airfield, water point, sanitary fill and post signal facility.

A study conducted during September and October 1967 determined the impact that the base camp requirements had on the regiment's combat capabilities. It was found that 244 essential positions were required for base camp administration and services. These ranged from a deputy base commander and his staff to personnel needed to operate the post exchanges. As a result of this study, a camp TDA was submitted on 9 November 1967 to Headquarters USARV requesting authorization of personnel to augment the regimental staff sections and additional personnel to operate the necessary post services.

The solution to the base camp problem is not the organization of a support battalion for the 11th Cavalry. A support battalion would necessitate a base camp of its own with the attendant security

and other problems. The ideal solution is to let the 11th Cavalry function as it was designed—as a highly mobile strike force. Then using a "motel" concept, if you will, it would stop at a base camp for maintenance and rest. During operations it would be supported by the nearest logistical facilities. This system would allow the regiment to operate freely whenever and wherever an armored strike force is needed.

SUMMING UP

The 11th Armored Cavalry Regiment has had a very successful year. It has proved that it can operate effectively over terrain once thought inaccessible to armored vehicles. It has shown clearly that Armor has that firepower and reaction capability necessary to command Viet Cong respect.

The 2d Squadron completed a difficult move to the I Corps Tactical Zone, operated most successfully there with the Americal Division and returned all without encountering any insurmountable difficulties.

These accomplishments have been attained because each officer, noncommissioned officer and trooper appreciates fully the value of the fundamentals learned in service schools and Armor units throughout the world. The importance and soundness of these is magnified by the weather, terrain and continuous stress of the Vietnam combat zone.

I would like to congratulate the previous commanders, officers and men of the Blackhorse Regiment for its proud history and state my great admiration for those who have served with the regiment in Vietnam. I am proud to have commanded the 11th Armored Cavalry Regiment. I wish my successor in command, Colonel Jack MacFarlane, well and know that under his leadership the Blackhorse will add further to its laurels.

UNCLE SAM WANTS YOU

by Marion F. Leach

Remember those recruiting posters? Attractive things!—all red, white and patriotic looking with the serious eyed, goateed gentleman and that inevitable pointing finger. And under that picture, the words "U. S. Army." You probably never thought that Uncle Sam was pointing at you but if you're an Army wife, he most certainly was!

The United States Army not only wants your husband but you too. When you marry a soldier or when your civilian husband goes military, you become a part of an all-American team. You join the legions of ladies who have moved through history at the side of their cavalry troopers, artillery gunners or infantry doughboys. You follow in their footsteps, complete tasks they began and carry on the traditions and customs they nurtured. You attain your own luster as you follow the illustrious Army wives of yore who served beside their men.

Just as true as the fact that you serve the Army as an Army wife is the fact that Army wives are special people possessing special qualities. It's great if you come equipped with all the virtues an Army wife needs but few do. Most Army wives have learned from others. They have grown in maturity and the ways of the Army with each assignment and move their husbands have had. The end result is that specialness which makes the Army wife unique among wives the world over. The Army wife gives more of herself, shares more with others, and experiences more fully her husband's occupation than most of her civilian counterparts do. She does so because she *is* a part of a team. Her special qualities make her a valuable team member. What are these?

Loyalty comes first. The Army wife pledges her devotion to a number of things. But her family has priority and she tries in every way possible to create a happy home, raise a family, work constantly for the general welfare of those she loves; and she packs, crates and moves around the world at the same time. From her family, the Army wife extends her fealty to the service her husband has chosen. He has dedicated himself to his country so can she as his partner do less? She is loyal to country—and to company, troop or battery; battalion or squadron; regiment or brigade; division, corps, army and Army. Where her soldier's loyalties lie so do hers. She fills with pride for "her" unit as the troops pass in review and shares with them their joy in accomplishment.

The true Army wife is not resentful of her husband's devotion to duty. Perhaps this is the single most important thing an Army wife gives, or gives up would be better! She relinquishes her number one position to her husband's profession and she learns to feel that being number two to the Army is a pretty prestigious position. Somehow all those extra duty hours and those days in the field making for lonely hours are compensated for by a feeling of pride that the man she chose is making a very real contribution to the well-being of his country.

MARION F. LEACH is the wife of Colonel James H. Leach, Armor. Following graduation from Furman University and graduate work at Duke University she taught school at Fort Knox. There a career as an Army wife beckoned and she signed up. Motherhood, Leavenworth, the Army War College, scouting, more teaching and volunteering for anything that needs doing have not deterred her from an occasional return to a great love—writing. She is co-author of *What Every Army Wife Should Know* which deservedly has been one of *ARMOR*'s leading sellers since it was published in 1966.

ANGIE CUNNINGHAM, the illustrator, is married to Lieutenant Colonel Alfred J. Cunningham, Artillery. When she was a student at the University of Oklahoma she never realized that she would be "illustrating" everything from World War II barracks through cavernous ballrooms to wives clubs cookbooks concurrently with raising her family as she followed a scarlet and gold guidon around the globe.

Next to loyalty comes adaptability, that marvelous ingredient which adds the spice to Army life and without the Army wife would be miserable. (There are few such creatures, none Armor though!) The ability to adjust serves the Army wife well and often too, for moves may be frequent and living conditions diverse. Army life is full of the unexpected and to be able to rise to the occasion graciously is one of the greatest attributes a wife can possess. The Army wife readily and happily accepts the challenge of change however inconvenient it may seem. She adapts herself quietly and efficiently to the new situation. Change strengthens her fibre, stimulates her mentality, satisfies the gypsy in her and most important of all keeps her young in heart.

Capacity for management is another quality possessed by the Army wife. Necessity is a good teacher and the Army wife learns quickly how to make decisions. It is a certainty that sooner or later she will be left behind with the bewildering job of packing, storing, organizing and relocating. She is expected to meet all kinds of emergencies under all kinds of conditions and in all parts of the world. The Army wife does so with such aplomb that big business managers express amazement and admiration and her civilian sisters look on both exhausted and a bit envious.

The Army wife is creative. Perhaps more than any other group, Army wives are called upon frequently to express their creative abilities. It may be to transform, overnight, a bare set of quarters into a home with charm and then immediately have a party. Or, it may be to conjure up from thin air a program and decorations for a luncheon of huge proportions. Whatever the challenge, Army wives have great resources of creativity. One only has to look around at all the really "clever girls" who are Army wives to realize that soldiers choose wives who have creative talent as well as the ability to get a job done.

Loyalty, adaptability, capability and creativity are all excellent characteristics but there is one other quality which the Army wife possesses in abundance. That is the ability to give of herself. This she does freely and willingly. She shares, she joins, she belongs, she participates. She doesn't get involved in everything, no one could. But she does participate enough to make a contribution and to make herself a more interesting person. She works to make her post her community. She knows the importance of supporting the activities that involve her children; the schools, chapels, youth activities and scouting. She knows the value of working cooperatively and arguing constructively so she joins the wives clubs and enjoys those activities which are of special interest to her. She realizes the necessity for, and real value of, volunteer groups. So she assists with Army Community Service, Red Cross or the Thrift Shop. Thus she does her part to make her community a better place in which to live. She gives because giving becomes her and is second nature to her. She doesn't wait until "next year" to make her contribution because "next year" she well may be elsewhere. She lives in the "here and now" and makes the most of every situation. A little of everywhere she lives goes with her and a lot of her stays everywhere she goes.

Yes, "Uncle Sam Wants You," dear Army wife. See what he gets when you join his team. If he only knew all you have to offer, he'd stop that pointing and salute—and maybe he'd even whistle.

STRV 103

the unconventional swedish battle tank

by Richard M. Ogorkiewicz

Swedish Army

The Swedish *S tank* is, in many ways, the most remarkable of the current generation of battle tanks. As a result it has already attracted much attention and has been the subject of an article by the writer in the November-December 1964 *ARMOR*. However, it well deserves further attention particularly since the production version presented at Bofors, Sweden on 7 September 1967 embodies several new features.

Although its general characteristics have been described before it might help to recall that the *S tank* is a turretless vehicle with the mounting of its gun fixed in relation to the hull. In consequence, the gun is elevated or depressed by altering the pitch of the hull and traversed by turning the whole vehicle. Both aspects of gun laying posed major problems whose solution involved several years of painstaking work.

Work on the *S tank* originated with a proposal made in August 1956 by Sven Berge, head of the tank section in the Vehicle Division of the Swedish Army Ordnance. During the following two years the feasibility of developing a tank with a gun aimed by traversing the vehicle was explored using an *IKV 103* turretless assault gun fitted with a "crowbar" steering system of rods operating directly on the tracks. The results proved satisfactory. Accordingly, in mid-1958 the Swedish Army placed a contract with the Bofors Company, world-famous for its anti-aircraft and other guns, to develop a new type of turretless tank which came to embody such novel features as an adjustable hydro-pneumatic suspension, a new type of steering mechanism and an engine installation combining diesel with a gas turbine.

All these features were first incorporated in two prototypes whose testing started in 1961. In the meantime, in mid-1960, following satisfactory experiments with conventional tanks modified as closely as possible to the configuration of the *S tank,* the Swedish Army placed an order for 10 pre-production vehicles. Then, in 1964, while the two prototypes were still being tested, Bofors received from the Swedish Army a 90 million dollar production order which began to yield results in 1967.

The production version, called *S tank type A* by Bofors and designed *Strv 103* by the Swedish Army, incorporates several improvements on the preproduction models described earlier. At the same time it demonstrates more clearly than its forerunners the basic advantage of its design.

A. B. Bofors

S tank compared with a conventional turreted tank

As will be noted from the photographs, the most obvious advantage of the *S tank,* which results from its turretless layout, is that it has a lower silhouette than more conventional turreted tanks. Thus it presents a much smaller target to enemy gunners and its probability of getting hit is, therefore, considerably reduced.

Other, less obvious advantages results from the adoption of a fixed gun mounting which has eliminated the need for the space required hitherto within the armor envelope by the movement of the breech end of the gun. The new mount has also made it possible to install a relatively simple automatic loading mechanism, since there is no relative angular movement between the gun and the ammunition magazine. This, in turn, has made it possible to dispense with the leader and thus save a considerable amount of space within the tank, making it more compact still.

Apart from reducing its silhouette, the compact design of the *S tank* has also helped to keep its weight down to 37 metric (41 US) tons, combat loaded. This makes it lighter than most of the recently developed battle tanks. At the same time it is well protected, particularly against frontal attack. The unusual combination of a relatively light weight with a high degree of protection results partly from the small size of the frontal area of the *S tank* and partly from its configuration which permits the frontal armor to be exceptionally well sloped. In part it is also due to the adoption of a novel type of ribbed armor which gives greater protection in relation to its weight than solid armor plate.

Like the pre-production vehicles, the first of the production models are powered by a 240 bhp *Rolls-Royce K 60* diesel and a *Boeing 502-10MA* 330 bhp gas turbine. The two engines are geared together to a common output and are capable of operating independently. This feature greatly reduces the risk of immobilization due to an engine failure. Moreover, under extreme cold weather conditions, the gas turbine being very much easier to start can be used as a starter for the diesel. In many situations, when the power demand of the tank is low, the diesel only can be used. This procedure takes maximum advantage of its fuel economy.

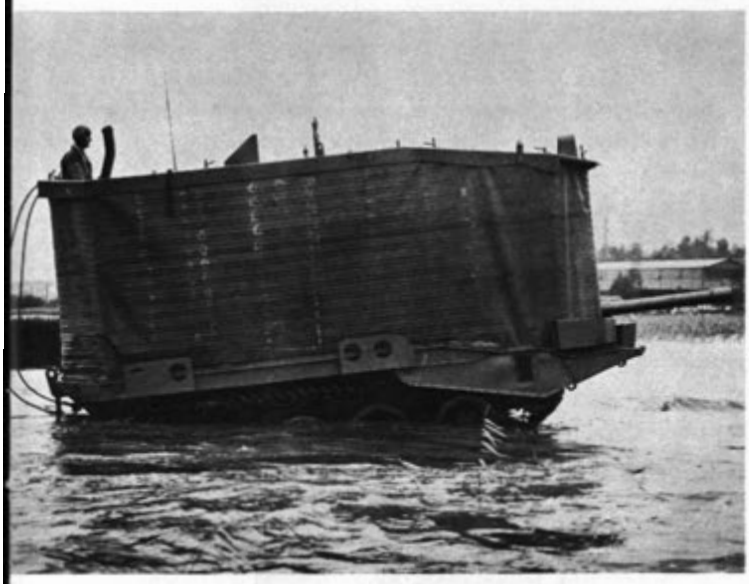
Later production vehicles will be powered by the *Boeing 553* gas turbine which develops 490 bhp. Experimental vehicles have already been fitted with this more powerful engine. Driving one of them, as the writer was able to do, leaves no doubt about the resulting improvement in performance which inclues a maximum road speed of 31 mph.

An important new development is represented by the *Jungner OPS-1* combination periscope and sight. One of these is provided for the commander and one for the driver/gunner, who sit behind the engine compartment one on either side of the 105 mm gun. The periscope/sight gives an exceptionally wide, 102 degree field of view through a unity magnification prismatic periscope. The binocular sight combined with it can be set to 6X, 10X or 18X magnification by the movement of a small selector lever. The driver/gunner's instrument is fixed. The commander's is gyro-stabilized in elevation and in azimuth. As a result, the commander can observe on the move far more easily than in any other tank built to date. And when he has acquired a target, he can turn the tank to face this target while retaining it in his sight.

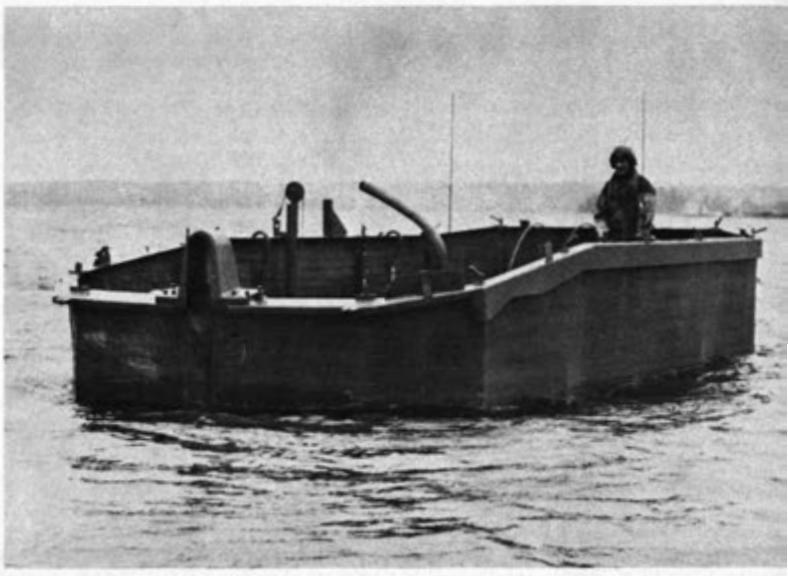
A 7.62 mm machinegun fired from within is mounted on top of the commander's cupola. There are two other 7.62 mm machineguns mounted in a box on the left of the frontal armor plate which are fixed to fire parallel to the 105 mm gun.

S tank excavating a firing position with its bulldozer blade

Swedish Army



Swedish Army



S tank with flotation screen erected and swimming

Like recent British tanks, the pre-production models of the *S tank* were fitted with a caliber .50 ranging machinegun but this was discarded some time ago. Instead, work is now proceeding on a laser rangefinder and provision has already been made for installing it on the production vehicles.

In addition to the *OPS-1* periscope/sight there are four other periscopes in the commander's cupola and three others for the other two crewmen, giving complete all-round vision. All periscopes are fitted with armored visors which are operated from within the tank by levers. The visors not only provided protection from accidental damage when the periscopes are not in use but they can also be used to eliminate reflections from the periscope glasses which might prematurely give away the position of the tank at night.

Behind the crew compartment, at the rear of the hull, is the magazine for 50 rounds of 105 mm APDS and HE ammunition. Integrated with the magazine is a hydraulically-operated automatic loading mechanism. This enables the *S tank* to fire at a rate of 15 rounds per minute, or almost twice the rate of other tanks with manually loaded rounds of the same caliber. Moreover, it can fire successive rounds not only rapidly but accurately because the hydro-pneumatic suspension is automatically locked out at the instant of firing thereby reducing the jump of the gun.

Empty cartridge cases are ejected automatically through a small hatch in the rear hull plate. This, together with the bore evacuator on the gun tube, virtually eliminates fumes from the crew compartment. The location of the ammunition magazine at the rear of the hull also greatly simplifies the problem of reloading it. This is accomplished from the outside by opening two hatches in the rear hull plate. In fact, the crew can reload the entire magazine in 10 minutes, which is considerably less than the time required to reload other tanks.

As announced earlier, production models of the *S tank* are permanently fitted with a flotation screen. When erected, the screen enables the *S tank* to cross inland water obstacles without assistance since it provides sufficient buoyancy for the tank to float while its tracks can propel it in water up to 3½ mph.

Each *S tank* can also be fitted with a bulldozer blade which enables it to dig itself in for extra protection, or to clear a patch through obstacles. The blade is stowed under the nose of the tank and is swung into its working position manually. This takes the crew about 5 minutes, but once there its depth of cut is simply controlled by altering the pitch of the hull.

Having described the advantages of the *S tank* it is only fair to mention its limitation. This is its inability to move in one direction and fire its main armament in another. The importance of this is, however, open to argument since all tanks must stop to fire *accurately*. Therefore, it would be wrong to conclude that the *S tank* is a limited-purpose tank destroyer, incapable of fulfilling the role of a battle tank, simply because it has no turret.

Its characteristics certainly do not correspond to the traditional "battleship" concept of tanks, which would have them firing broadsides while steaming under the orders of commanders/captains perched high up in their cupolas/bridges. It does, however, fit in with the more modern concept of the tank as a mobile weapons platform. As such it offers, clearly, many advantages.

"A Man Will Do More For Company A"

by Colonel "Red" Reeder

The author says that Major James C. Burris of the Military Psychology and Leadership Department, United States Military Academy helped with references.—THE EDITOR.

"Soldier" Adams, heavyweight boxer, football tackle, and a hero of my boyhood, wrote about a book I labored on, *Born At Reveille*. "Your stories about soldiers," he said, "hit me like a hammer, because they make me think of my own Captain Landis, of the First Company. He was just like one of us, yet he was the boss. You could talk to him on any subject. He gave our company a real square deal. He cared for us."

Captain Landis, fortunately, is nothing new. Homer, earliest of surviving Greek writers, who probably lived in the tenth century before Christ, wrote in the *Odyssey* of Odysseus, King of Ithaca, a lion in the ten years' siege of Troy. You read about Odysseus and his soldiers "concealed in the Horse, which the Trojans had themselves dragged into the citadel." You hear of the difficult return journey of this leader and his loyal followers. Homer talks of ". . . some true friend who knew his way to your heart. For a sympathetic friend can be quite as dear as a brother."

The greatest rank in our army is captain, for the captain has the opportunity to be a "sympathetic friend . . . quite as dear as a brother." the Germans, in discussing life in small units before World War II, said, "The first sergeant is the mother of the company, the captain is the father."

To have your men feel like a band of brothers you must be willing to work and assume responsibilities related to the job. Unfortunately, men in command are not always this leadership type. For instance, prior to the Battle of Buna in New Guinea, in 1942, Major General Robert Eichelberger walked down a

---

COLONEL RUSSELL P. ("RED") REEDER graduated from the U. S. Military Academy where he was one of the great cadet athletes in 1926. He returned there to instruct on the football and baseball coaching staffs. He served in the Operations Division, War Department General Staff, from 1942-1944. His work there was crowned when he wrote, at General Marshall's request, Fighting on Guadalcanal. *This pamphlet, stressing leadership of small units, was used as a training guide by the U. S. Army, the U. S. Marine Corps and the British and Chinese armies.*

During the World War II invasion of Europe, Colonel Reeder led the 12th Infantry Regiment, 4th Infantry Division ashore on D-Day, 1944, winning the Distinguished Service Cross. On the sixth day an enemy shell severely wounded him. He recovered, after long hospitalization, to command the 2d Regiment, United States Corps of Cadets. While in this position he was instrumental in developing the first formal leadership course presented at the United States Military Academy.

Following retirement from the Army for wounds, Colonel Reeder continued to serve the Army and his alma mater in a key position with the Army Athletic Association at West Point. The author of over 24 books, many of them for teenagers, Colonel Reeder now lives at "Home Plate," Garrison On Hudson, N.Y., and devotes nearly full time to his writing.

sloppy jungle trail, crowded with dejected men in our uniform. It was the trying time: just before entry into combat. Fighting would be at ranges from six feet to one hundred yards, and because of this all insignia had been removed.

"Who's in command here?" Eichelberger asked.

The only sound came from a monkey scolding the soldiers from a banyan tree.

The officers in this poorly-fed, forlorn group alongside the jungle path had long lost their sense of obligation. No one answered. To get the demoralized soldiers to go forward, General Eichelberger led them personally through the swamps, at times wading up to his neck.

War is bad enough even with leaders in command like Landis, Odysseus, and Eichelberger. When you fight, you want to be in the best unit possible, under the best leadership available.

In the *Combat Psychiatric Supplement* for November, 1949, Major R. Sobel presented a study on mental stability under battle stress. He found that individuals who collapsed but "who had been most resistant to personality [deterioration]" seem to be protected by five defensive layers. He lists them in the order in which they broke down. Distant ideals (such as 'Democracy' and the 'Four Freedoms') went first, then hatred of the enemy, short-term military objective, pride in self, and lastly loyalty to the group.

In a shaky outfit, the spirit that binds men together disappears with the shades of night. Chinese "brainwashers" capitalized on this. In prison camps, our leaders unfortunate enough to be there were transferred by the Chinese away from the men of their units. *Isolates* with little morale and no esprit de corps were grouped together. Object: to concentrate on the weaker men of the unit, taking away their strength to resist and making them vulnerable to bridges and threats of punishment. The Chinese worked to make esprit de corps disappear.

In the British Eighth Army near Alexandria, Egypt, the division commander employed a factor of esprit in an almost reverse manner to curb drunkenness. When the culprit was sober, the general took out his pen knife and cut the division's patch from the offender's shoulders, divorcing the man from his major unit. Can you imagine a sterner punishment?

The British leader was demanding that his soldiers behave. He believed in the tenets of the psychologist James C. Coleman, who wrote, "It has been found particularly important to maintain good group identification and esprit in combat troops." Coleman went on to say that soldiers who cannot take pride in their unit lack feelings of "we-ness." Like Ardant du Picq, he writes "They stand alone, . . ." Such individuals are the ones who lead panics and who break when nothing seems certain except that the enemy appears to be winning.

German patrols in World War II, when near the enemy, sometimes talked it up in thick woods to reinforce "we-ness." *"Kommen sie, Fritz!" "Bist du da, Hans?" "Ho, Hermann!"* And so on.

Soldiers in our tanks, even though the tanks are buttoned up, can hear the voice radio from allied tankers. The three-shot signal is even more heartening. When lives are at stake, and when the situation is obscure because of night or other factors, everyone wants comradeship.

On a happier field, I have seen the Navy football squad enter Kennedy Stadium on Friday for practice before the Army-Navy game yipping like Cree Indians. Of course each player was strengthening his teammates by vocal evidence of the squad's "we-ness."

Every unit possessing morale treasures stories illustrating its high esprit. The 12th Infantry Regiment, 4th Infantry Division, loved its Sergeant Herman Mott, of Tioga, Louisiana—part humorist, part preacher, and a whole soldier. He is built like an All-America blocking back and is almost as rugged. Sgt. Mott suffered a wound in Normandy and a second one in the Heurgten Forest. He said of his experience after his second recovery, "When the medics okayed me, they shipped me to the front with a bunch of ignorant replacements. They disgorged us out of a truck. I just couldn't believe my orders! They called for me to go to another regiment, not the 12th Infantry!

"I saw a little sign, alongside the road, that had an arrow on it along with our Ivy Patch. I scampered down the trail and run smack into General R. O. Barton, our division commander.' See here, General,' I said, 'they're shippin' me to another outfit. I want to go back to my Company B. That's where I belong.'

" 'Give me those orders,' the general said. He turned to his aide and says, 'Here! Fix these up.' Then the general give me his jeep, and I rolled back to Company B like a king."

We all want "Sergeant Motts" around. They are natural leaders, encouraged by other leaders, and they help group esprit.

Perhaps one of the most perceptive sentences ever written on esprit de corps came from the brain of Major General Hanson E. Ely, a division commander in the United States Army in World War I. He wrote, in the Fort Leavenworth *Military Quarterly*, "A man will do more for Company A than he will for General So-and-So."

But a proviso appears. For the highest esprit, Company A must be a unit in which the leaders *work* to give their men devoted attention and care.

GO or NO GO in VIETNAM

by MAJOR GENERAL ARTHUR L. WEST, JR.,
and COLONEL DONN A. STARRY

Last year, US Army mechanized and armor combat operations in Vietnam were the subject of extensive field evaluation by a group of over seventy field grade officers under the direction of Major General Arthur L. West Jr. Among the tasks assigned the Mechanized and Armor Combat Operations, Vietnam (MACOV) study group by the Department of the Army was a detailed evaluation of doctrine, tactics, techniques, organization and equipment of mechanized infantry, tank, armored cavalry, and air cavalry units assigned to United States Army Vietnam (USARV). On the ground the MACOV study group examined operations of mechanized infantry battalions, tank battalions, armored cavalry squadrons (both divisional and those of the 11th Armored Cavalry), the air cavalry squadron of the 1st Cavalry Division (Airmobile), cavalry troops of separate brigades, and the separate airborne brigade tank company. The study group produced a seven volume classified report, a one volume unclassified report, a training film of combat footage taken during the evaluation period, and a training text for air cavalry operations.

Indications are that many on the Armor leadership team have not had the opportunity to examine these reports. Therefore ARMOR will present a series of articles setting forth highlights of the study considered to be of value to its readers who are, or may be in the future, serving in Vietnam. THE EDITOR.

The character of the war in Vietnam varies a great deal from region to region, reflecting terrain, weather, enemy, and other factors individually peculiar to each of the four Corps Tactical Zones (CTZ). There are yet some rather widespread misconceptions about the effects of weather, terrain, and the enemy on the utility of mechanized equipment in Vietnam. Hence any study of military operations, especially those involving armor or mechanized units, must begin with a description of the more important factors of the environment which have an effect on the employment of these units.

Forty-five miles wide at the 17th parallel, South Vietnam has almost 1500 miles of South China Sea coastline to the east, and about 950 miles of ill-defined border with Laos and Cambodia to the west. The first map shows the geomorphic regions of South Vietnam. Also shown are mean annual rainfall figures for some selected areas.

The climate of Vietnam is dominated by two monsoon seasons—the summer or southwest monsoon, and the winter or northeast monsoon, each characterized by prevailing winds from the directions indicated by its title. The Annamite Mountains generally form the dividing line of monsoonal influence. The southwest monsoon, beginning in May, lasts until September with a transition period as late as December, and brings onshore southwest winds. The warm moisture laden sea air rises as it moves inland and pushes against the highlands. As it cools its moisture condenses into heavy highland rainfall, with lesser amounts falling to the south and southwest. The northeast monsoon begins in September, is firmly established by November, and tapers off into February after bringing heavy rains to the northeast coast.

Trafficability is influenced by these monsoons, as well as by landforms—delta, paddy, and moun-

tain, and by vegetation patterns. Technically, trafficability in Vietnam presents a bleak picture for vehicular movement which is not borne out by experience. The MACOV study approached trafficability from a standpoint of "going"; that is, where experience shows tracked vehicles have gone and can go with organic support. Trafficability studies tend to be conservative; the more favorable MACOV estimate generally reflects actual capability, and the general optimism of commanders who have used tracked equipment with normal engineer and other movement support.

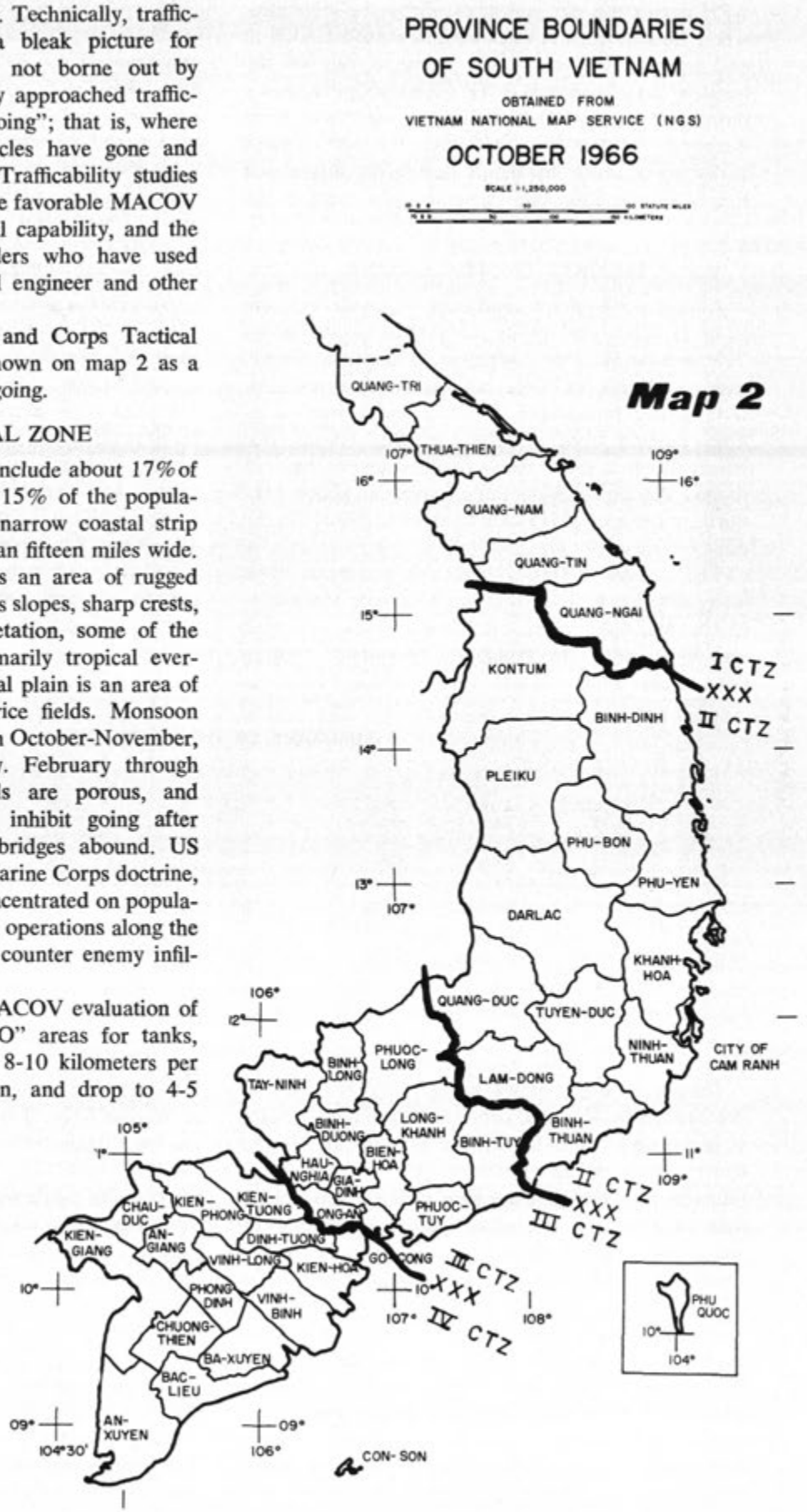
Province boundary outlines and Corps Tactical Zone (CTZ) boundaries are shown on map 2 as a basis for further discussion of going.

I CORPS TACTICAL ZONE

The five provinces of I CTZ include about 17% of South Vietnam's land area and 15% of the population, most of whom live in a narrow coastal strip of rice growing land no more than fifteen miles wide. The hinterland of this region is an area of rugged mountains, rocky and precipitous slopes, sharp crests, and deep narrow valleys. Vegetation, some of the densest in the country, is primarily tropical evergreen forest. The lowland coastal plain is an area of sandy beaches and extensive rice fields. Monsoon rains begin in September, peak in October-November, and slacken off into February. February through August are dry months. Soils are porous, and heavy rains do not seriously inhibit going after a few sunny days. Class 20 bridges abound. US Marine Corps units, following Marine Corps doctrine, tactics, and techniques, have concentrated on population stability in this area, and on operations along the Demilitarized Zone (DMZ) to counter enemy infiltration from the north.

Maps 3 and 4 outline the MACOV evaluation of going in this area. In the "GO" areas for tanks, movement rates average about 8-10 kilometers per hour (KPH) in the dry season, and drop to 4-5

GOING MAPS
ON
PAGES 24 & 25



KPH during the wet season except in the highlands, where tank movement rates seldom exceed 1 KPH in any event, and wet season going is out of the question. In areas marked "GO" for APC, dry season movement rates of 10-12 KPH drop off to 4-5 KPH during the wet season. Although the APC enjoys better going in the highlands during the dry season than does the tank, like the tank, movement in the area during the wet season is not possible.

II CORPS TACTICAL ZONE

Almost 45% of the land area of South Vietnam is in II CTZ, and in its 12 provinces live about 2½ million of the country's 17 million people, over two-thirds of these in the coastal provinces. II CTZ is a broad area with extreme terrain variations ranging from heavily populated coastal rice plains in the east, through the central belt of rugged Annamite Mountains, covering about two-thirds of the zone, to thickly forested highlands in the west.

The coastal lowlands here are traversed by a series of rivers flowing from the Annamite Mountains to the sea, with wide, flat-floored valleys, marshes and rice fields. The Annamite Mountains form a crescent anchored on Laos in the north, and on Cambodia in the south, and feature steep boulder covered slopes, deep narrow river valleys, and dense tropical evergreen forest. The plateau region extending from the mountains west to the Cambodian border is an area of rolling terrain, some cultivated fields, high grass, bamboo, and secondary or scrub forest growth.

Influence of the monsoon in II CTZ is largely determined by the landforms just described. Southwest monsoon rains fall on the plateau, and in the western half of the mountains. Its moisture gone, fallen as rain, the air mass rises over the mountains, then descends on the other side bringing dry air and clear weather to the eastern mountains and coastal lowlands. By a reverse process, northeast monsoon rains fall on the coastal lowlands and eastern mountain slopes, leaving the western part of the zone relatively dry. In addition to the Viet Cong, II CTZ hosts strong North Vietnamese Army (NVA) units which gain access along infiltration routes through Laos and Cambodia. Enemy and terrain combine in this area to present a major requirement for mobility and friendly forces.

Maps 5 and 6 sketch going in this area as seen by MACOV. Dry season movement rates for tanks vary from 10-12 KPH in the lowlands to not more than 1 KPH in the mountains, and give way to 15-25 KPH on the plateau. These figures drop to 4-5 KPH for lowland movement, zero in the mountains, and 8-15 KPH on the plateau during the wet season. With minor variations the same conditions generally apply to movement of the M113 in this area.

III CORPS TACTICAL ZONE

With eleven provinces, III CTZ encompasses about 18% of the land area, and about 25% of South Vietnam's people, concentrated primarily in and around Saigon, the political heart of the Republic. The land is an extensive piedmont region bounded by a small segment of highland on the north, by coastal lowlands with flat sandy beaches, wide valleys and rice fields on the east and southeast, and by portions of the Mekong Delta on the south. The Rung Sat Special Zone, southeast of Saigon, is a dense, salt water, mangrove swamp, inundated year-round, with interior movement generally restricted to water craft. The main shipping channel to the port at Saigon traverses the Rung Sat.

The wet season in III CTZ begins in May and lasts through November, but going for tracked vehicles does not deteriorate seriously until late July or early August. Maps 7 and 8 show the MACOV going estimate for this area. In the dry season tanks can make 15-20 KPH in the open, and 2-4 KPH through jungle. The monsoon reduces this capability to 8-15 KPH in the open and not more than 2 KPH in jungle. M113 movement rates are but slightly better than for tanks, with the exception that the M113 can move about in swamps, most importantly in the wet season. Main force Viet Cong units have here established a complex structure of underground facilities and installations in base areas, and they enjoy a deeply intrenched political infrastructure.

IV CORPS TACTICAL ZONE

Almost one-fifth the land area and one-third the population of South Vietnam are in the fifteen provinces of IV CTZ—the famous Mekong Delta. The Delta is an extensive, flat, poorly drained river plain, interlaced by an intricate network of rivers,

SUMMARY OF GOING BY CTZ

CTZ	DRY SEASON TANKS	DRY SEASON APC	WET SEASON TANKS	WET SEASON APC
I	44%	44%	36%	44%
II	55%	55%	54%	55%
III	92%	93%	73%	93%
IV	61%	87%	NO	87%

streams, and canals. Rice paddy, swamp, and marsh predominate, with mangrove swamps along coasts and major streams. Rainfall is not too heavy, the flooded condition of the area resulting more from controlled flooding for rice cultivation, than from monsoon floods. The U Minh Forest is a fresh water mangrove swamp in which movement is restricted to water craft and vehicles with swim capabilities. The Nam Can forest is a salt water swamp similar in other respects to the U Minh. The Plain of Reeds is a perpetually inundated area blanketed with reeds and grasses up to four meters in height.

Maps 9 and 10 show MACOV evaluations of going in IV CTZ. While tanks can move about during the dry season, such movement as is possible requires extensive engineer support due to the weak bridges and extensive canal network. Wet season movement for tanks is, of course, out of the question. The M113 can move about with relative freedom assisted by ground anchors, capstan kits, push bars, and other field expedients to aid in negotiating paddy dikes and canals. APC movement in this area is generally easier in the wet season when high water levels reduce the obstacle potential of banks and dikes. Clay base soils on paddy floors provide sufficient tractive base for M113 going under high water conditions at rates of about 4-6 KPH.

IV CTZ has been primarily an area of operations for the Army of the Republic of Vietnam (ARVN), although US units are now entering into a joint effort in the area. The dense population, extensive paddylands from which come the bulk of South Vietnam's rice crop, the heavy mangrove swamps, and an extremely complex enemy infrastructure make Delta operations uniquely different from those in any other zone.

HINTS TO KEEP GOING

Red clay soils, common to the Tay Ninh area of III CTZ, on the plateau in II CTZ, and found locally elsewhere, tend to break down when wet, making tracking and sharp turns with tracked vehicles unwise practices. Armor-mechanized unit crews frequently test going in these areas using a push rod (such as the rod found in a box of tank ammunition) to make a few test holes in the ground surface. If standing surface water drains through these holes, clay is usually present beneath.

The water buffalo is a good indicator of going; he does not go where he cannot stand on the bottom. Generally if the bottom will support the buffalo, it will support the M113.

THE VERDICT—MOSTLY GO

One striking feature of US Army operations in Vietnam is that in a tropical land with high mean annual temperatures, a monsoon climate, extensive inundated areas, and a rice cultivation agriculture, mechanized equipment enjoys a much greater utility than many thought possible at the outset, and greater than previously existing weather and terrain data would indicate possible. This fact is highlighted by the MACOV finding that tanks can go with organic support in about 60% of South Vietnam during the dry season, and 45% during the monsoon while the M113 can go in about 65% of the country year-round.

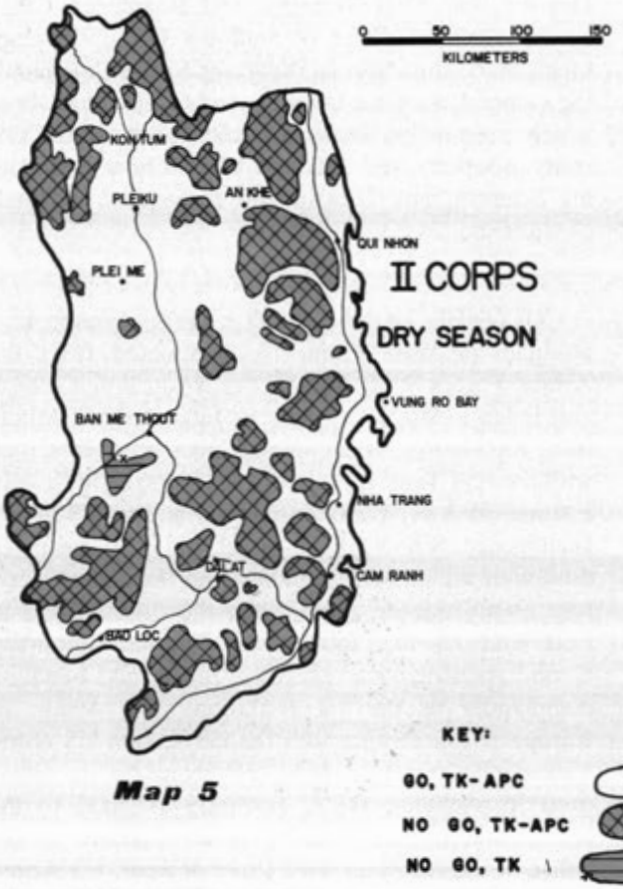
The Authors . . .

MAJOR GENERAL ARTHUR L. WEST JR., retired in 1967 for physical disability after a distinguished career in Armor. A 1940 graduate of Oklahoma State University, he is also a graduate of the Armed Forces Staff College, the National War College, and holds a Master of Arts in Political Science from Georgetown University. He served as a battalion commander with the 4th Armored Division in World War II, as a member of the G3 section, X Corps (Group), and Eighth US Army in Korea from 1953-54, three times as a member of the Army General Staff, and in the office of the Joint Chiefs of Staff. He commanded Combat Command "A," 3d Armored Division in 1962-63 and was Assistant Division Commander (Maneuver) of that division in 1963-64. After an assignment as Director of Organization, Unit Training, and Readiness, Office of the Assistant Chief of Staff for Force Development, he became Special Assistant to the Commanding General, Combat Developments Command, from which position he organized and led the MACOV study group in 1967. General West is now a Managing Scientist with Dunlap and Associates, research consultants.

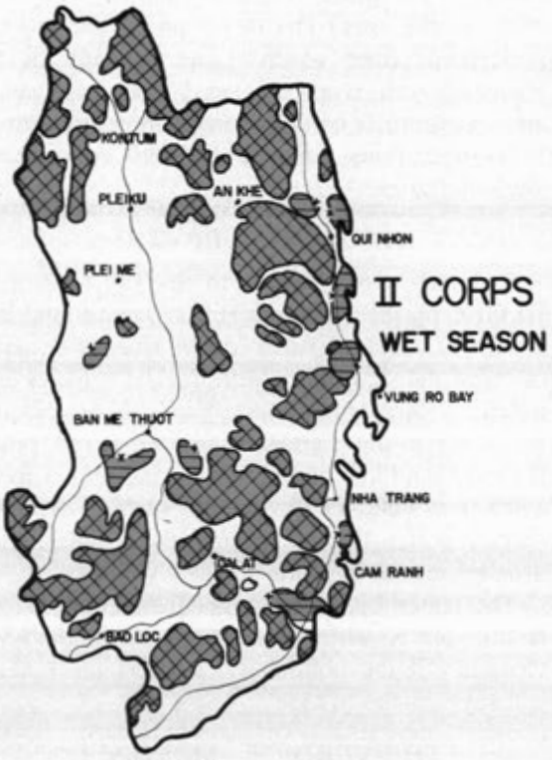
COLONEL DONN A. STARRY, Armor, is a graduate of West Point, has graduated from the Armed Forces Staff College, the Army War College, and holds a Master of Arts in International Affairs from the George Washington University. He served with the 63d Tank Battalion, 1st Infantry Division in Europe, and as Armor instructor at the US Army Intelligence School, Fort Holabird. Five years of duty with the 3d Armored Division include an early tour as an aide de camp when the division was at Fort Knox, a later tour as S3, Combat Command C, and assignments as executive officer and battalion commander of the 1st Battalion, 32d Armor in Europe. While serving with the G3 section US Army Vietnam he joined the MACOV group for its operations in Vietnam. He is currently assigned to the Directorate of Weapons Systems Analysis in the Office of the Assistant Vice Chief of Staff, US Army.

Map 3

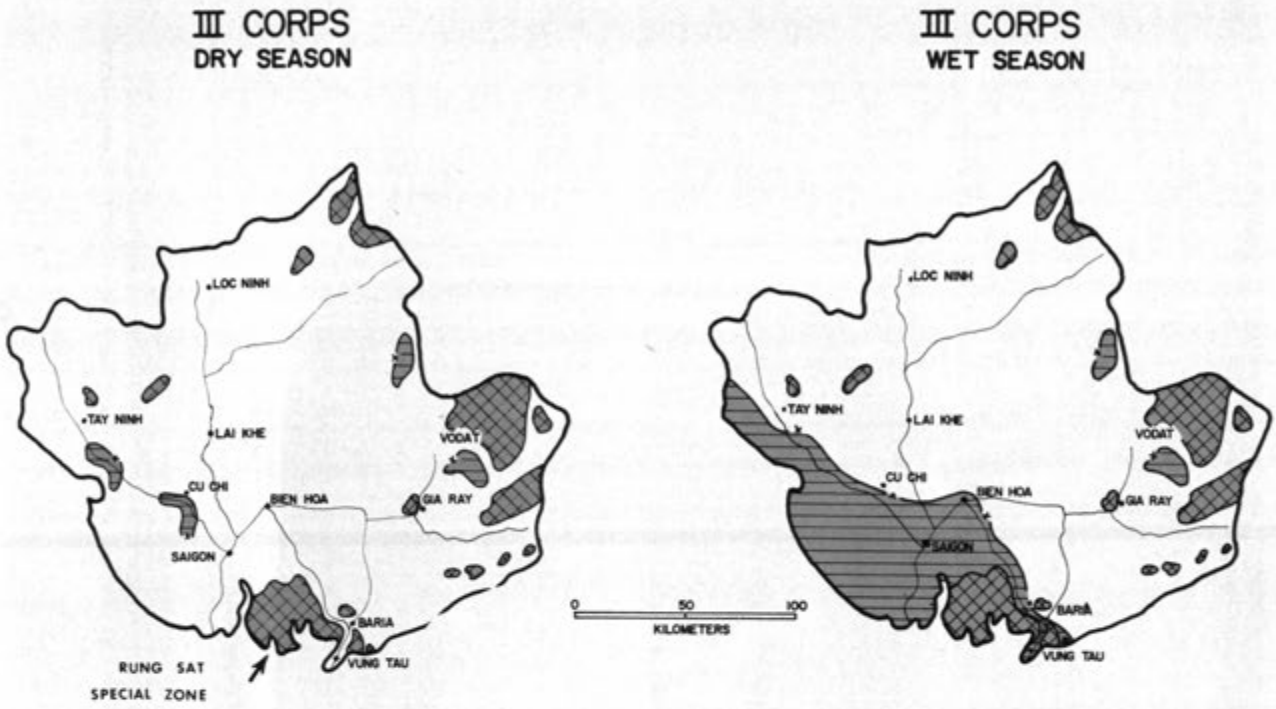
Map 4



Map 5

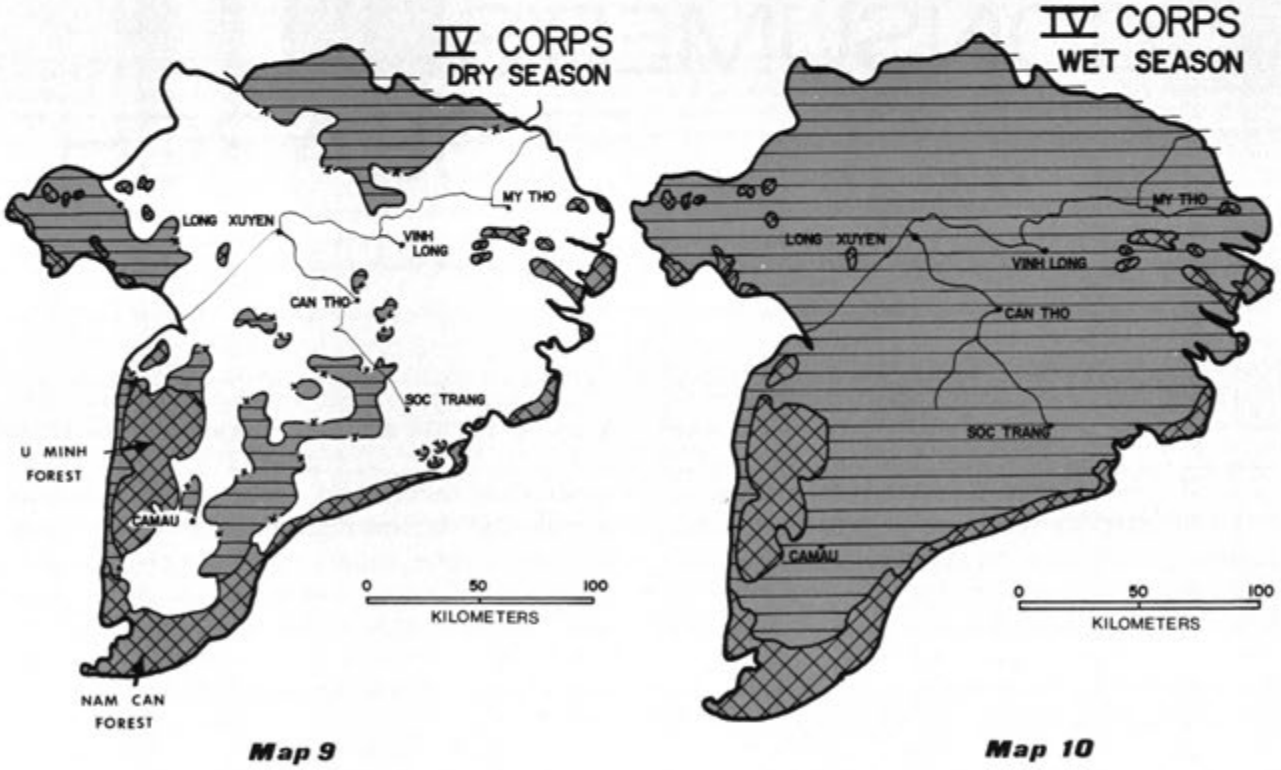


Map 6



Map 7 **Map 8**

KEY:
GO, TK-APC
NO GO, TK-APC
NO GO, TANK



Map 9 **Map 10**

ARMOR'S "CONSUMER'S RESEARCH"

AN ARMOR CENTER INFORMATION OFFICE PRESENTATION

Throughout time, military commanders have been faced with the problem of logistics. This was rather simple back in the days when ordnance consisted of a sword, a spear, some armor, and for transportation, the horse. Moving parts were few and maintenance presented hardly any difficulties.

All this has changed through technological evolution. In the last half century, the task of supplying soldiers with what have become the basic necessities has expanded so vastly that it would bewilder the commanders of the past. Military equipment must be in the right place at the right time and in the proper amount. Most important, it must meet the requirements of the users.

To assure that Armor equipment entering into Army use fulfilled user requirements, a Mechanized Cavalry Board was established at Fort Knox in 1938. Subsequently reorganized under Army structural changes, today's Armor and Engineer Board (USAARENBD) has a primary mission to plan, conduct and report on various tests in order to provide supporting agencies and developers with the necessary data for further equipment development or to evaluate whether or not the Army should adopt an item.

For example, in the near future the Board will receive such diverse equipment as the highly publicized US/FRG *Main Battle Tank 70,* a 1¼-ton

ambulance/utility truck, a plastic assault boat, a medium girder bridge and a 300 watt Hydrazine-Air Fuel Cell for testing.

Within the United States, the Department of the Army has three major commands: the Combat Developments Command (CDG), the Army Materiel Command (AMC), and the Continental Army Command (CONARC). The Board falls under the AMC and its subordinate Test and Evaluation Command (USATECOM). Its functions are carried out by three divisions—Armor, Engineer and Maintenance.

The Armor Division is responsible for that part of the Board mission concerned with combat and combat support items, associated weapons and equipment designed to support combat units. The Engineer Division has the responsibility for testing combat engineer vehicles and equipment, topographical and surveying equipment and construction equipment. The Maintenance Division supports the maintenance portions of armor and engineer tests and conducts tests of maintenance vehicles.

The primary emphasis of the Armor and Engineer Board is on the user test as differentiated from the engineering test which is conducted by other agencies such as the proving grounds. The engineering test takes the technical "white coat" approach to end items with special emphasis on safety.

The user test is designed to determine an equipment item's functional suitability, dependability, reliability, and maintainability. Actual field testing of the equipment is done by average MOS-qualified soldiers who are typical of those who will use the item when it is issued to line units. The tests are made under conditions simulating as closely as possible those in which the equipment is expected to operate.

The user test includes service, check, confirmatory, preproduction, initial production, product improvements and military potential detailed sub-tests.

Testing tanks, armored personnel carriers, track and wheel vehicles and related components normally is done at the Fort Knox Carpenter Test Area. It it here that the cross-country course, with its hills, swamps, eroded ditches, dusty roads and mine fields is located. There is also an electric generator test site.

In addition to the Carpenter Test Area, the Board has exclusive use of McFarland-Oliver Range. At

The Mobile Floating Assault Bridge under test by the Armor and Engineer Board. The MAB will support 60-ton loads when employed either singly as a ferry or as a bridge element. As a ferry it can move at 8 mph with a full load. Interior bay unit roadway segments of each vehicle are 26 feet long.

this range conventional ammunition as well as small arms and missiles can be evaluated. To supplement McFarland-Oliver, which has a 2000 meter maximum range, the Board occasionally uses the Rolling Forks Range with its longer and larger impact zone. Board members also participate in environment testing at such places as Yuma Proving Grounds in Arizona, Fort Greely, Alaska, and Panama.

A natural by-product of the testing process is training. In some instances, a prototype piece of equipment may call for an MOS not found, or rare, in the Army. To provide a reliable test crew, one man with an MOS calling for similar qualifications is selected. He is then sent either to a school or to the developer to gain firsthand knowledge about the particular item to be tested. On his return, this trained man then becomes responsible for instructing others assigned to the project.

Board members stress the fact that any qualified soldier with the required MOS is used in the testing "whether he be fat or tall, thin or small." In this way a test is conducted that yields realistic results for the Army and for the developer.

Fulfilling the third part of the slogan "Dependability, Reliability, Maintainability" is the Maintenance Evaluation Branch (MEB) of the Maintenance Division. The two-section MEB is the first of its kind anywhere and the only Army organization of its type.

The Organizational Maintenance Section is composed of average Army mechanics and acts as the company/battalion level motor pool for project vehicles. It is in this section that scheduled, non-scheduled and in-test maintenance is performed.

On the other hand, the Maintenance Evaluation Section has highly-skilled civilian and military mechanics. These evaluators guarantee that the equipment technical manuals furnished by the developer have readily sufficient understandable data to permit the organizational mechanics to make required repairs and normal maintenance adjustments.

Evaluation Section members correct discrepancies in the manuals and recommend improvements. They also insure that the special tools list is kept to a minimum by determining common tool set items that will do the job. These experts also determine the adequacy of the proposed Prescribed Parts List (PLL) to support operations of the future using units.

If a piece of test equipment needs direct or general support work, an evaluator accompanies the item to the DS GS shop of the Maintenance Division. It is his job to determine if manuals prepared for that level are explicit enough to enable the mechanic to make the repair.

With only minor variations, a standard procedure is followed in the test and evaluation of an item. Initially, a commodity command or developer requests that a piece of equipment be tested. USATECOM issues a test directive to the USAARENBD which in turn prepares a test plan. The Board coordinates this plan with all interested agencies. Then it conducts the test in accordance with the agreed-upon plan. Upon completion of the test, the Board prepares the report of test and submits it to its next higher headquarters, USATECOM.

The *XM561 Gama Goat*, a 1.5-ton cargo carrier being tested by USAARENBD. The Gama Goat's two bodies are connected by an articulated joint which allows them to follow the surface of the terrain and keep all six power-driven wheels on the ground.

Field testing of the equipment is done by average MOS-qualified soldiers. Tests are made under conditions simulating those in which the equipment is expected to operate. Here the *M551 Sheridan* plunges through a mud hole.

The "Proof of Dependability" lies in the final report on an item found satisfactory. The Army Materiel Command must assign an item a rating of "suitable" before it can be adopted and distributed to the troops in the field. The Board report is the basis for that rating.

A total of 104 projects are currently assigned to the Board. Of these, 13 presently in progress are designed to improve the *M60A1* tank. Other tests under way include—

- the *XM35* Conduct of Fire Trainer for the *Shillelagh* missile system of the *M551 Sheridan*
- *M656* 8x8 5-ton cargo truck scheduled to be used as the prime mover for the *Pershing* missile system
- the *M715* 4x4 1½-ton cargo truck designed to meet the Army's urgent need for a ¾ to 1¼-ton truck
- the *XM553 GOER* wrecker
- the *M48A1E3* tank with related equipment

Recently completed or current Engineer Division tests include—

- *XM63* firing device demolitions
- the *AN/PDR63* radiac set
- the 20-ton rough terrain crane
- a radiographic pipeline weld inspection equipment set
- the Mobile Floating Assault Bridge Ferry (MAB)
- various diesel engine driven (DED) generator sets

The Engineer Division is working closely with the Armor Division in connection with two of its projects which involve the clearing of mine fields for Armor vehicles. These are the *M173* Projected Charge Demolition Kit and the *L3A1C Giant Viper* antitank mine clearing system. Both use rocket motors to project a flexible hose containing plastic explosive across the field. The hose is subsequently detonated and a path cleared. The Giant Viper was developed by the United Kingdom and its performance is being evaluated for potential use by United States forces.

Another project handled by the Engineer Division involved the test and evaluation of a prefabricated aluminum landing mat for runway surfacing. In order to confirm all that was claimed for the interlocking mat sections, the engineers built a 95 by 6000 feet runway at Dyess Air Force Base, Texas. Then 600 aircraft of varying classes were actually landed on this novel runway.

The Board's testing activities vary in size and dimension from the tank crewman's helmet with its built-in electronic gear to such extremely sophisticated items as land navigational equipment and a coaxially mounted LASER gunnery trainer for the *M60* series tank.

The US Army Armor and Engineer Board is proud of its sterling reputation as the "Consumer's Research" for Armor. It continues to insure that equipment items within its field of responsibility are the finest and most dependable that can be issued to the American fighting soldier.

"FOR THE MORE PERFECT DEFENSE OF THE FRONTIERS . . .

A REGIMENT OF DRAGOONS"

—*ACT OF CONGRESS March 2nd 1833*

The dragoon units of the Revolution and the War of 1812 were soon disbanded. But, as the frontier moved westward, a mounted force was found to be necessary to protect the settlers and to quell Indian uprisings such as the then raging Blackhawk War. Therefore, in 1832, Congress authorized a six-company Mounted Ranger Battalion to be raised for one year. The Rangers proved to be an effective force. Hence, on 2 March 1833, the United States Regiment of Dragoons of 10 companies was authorized.

Companies were trained at Jefferson Barracks, Missouri and Fort Gibson, Oklahoma. In 1834, the entire regiment assembled briefly at the latter prior to spreading along the frontier from Oklahoma to Minnesota and pushing as far west as Wyoming on marches of exploration.

In 1836, when the 2d Dragoons were authorized, the regiment was redesignated the 1st Regiment of Dragoons. During the Mexican War, the 1st Dragoons won their first honors and helped to secure New Mexico and California for the United States.

From 1848 to 1861, companies were again fanned out over the southwest and now, in addition, the Pacific northwest. By 1861, the United States Cavalry had been expanded to six regiments which were somewhat confusingly designated as the 1st and 2d Dragoons, The Regiment of Mounted Riflemen and the 1st through 3d Cavalry Regiments. A reorganization act redesignated these the 1st through 6th Cavalry Regiments and prescribed yellow as the color of their facings. Yet, the orange trim of the Dragoons and the green of the Mounted Riflemen was still to be seen on an occasional veteran for some years.

The 1st assembled near Washington, D.C. in 1862. Throughout the Civil War the regiment served gallantly in the Eastern Theater. Its actions at Brandy Station, Gettysburg, Spotsylvania, Yellow Tavern, and Winchester were particularly noteworthy.

Then, the 1st Cavalry returned to the west where its companies were distributed singly over Arizona, Nevada, California, Oregon, Idaho and Washington. For about twenty years there was to be nearly incessant engagement with hostile Indians. In 1883, cavalry companies were redesignated as troops. In June 1884, after Little Big Horn, the regiment was transferred to the Dakotas. There it was to remain until the Indian Wars ended, it returned to the southwest to maintain order and patrol the Mexican border.

During the Spanish-American War, the 1st Cavalry initially went to Cuba where the 1st Squadron, with a squadron of 10th Cavalry "Buffalo Soldiers," assisted the Rough Riders in capturing Las Guasimas Ridge. From Cuba the Dragoons were redeployed to the Philippine Islands to participate in numerous engagements against the *insurrectos*. In 1903 the regiment again returned to the United States to garrison Forts Sam Houston and Clark in Texas. Following the 1906 San Francisco earthquake, the 1st Cavalry served as a relief force.

January 1908 saw the return of the 1st to the Philippines where it remained until 1910. Then came new stations at the Presidio of San Francisco and various northwest posts. However, the regimental returns indicate that the troopers and their mounts enjoyed no prolonged garrison life. Detached squadrons and troops found themselves again guarding the Mexican border. During 1916 the entire regiment moved to Arizona, and, in 1917, all troops of the regiment assembled at one location for the first time since the Civil War. Curiously, America's oldest, most honored and probably widest travelled Cavalry regiment participated neither in Mexico during 1916-17 nor in World War I.

Then on 16 January 1933, on the eve of its 100th anniversary, the 1st Cavalry Regiment was mechanized. Having exchanged horses for a variety of experimental vehicles, the Dragoons pioneered new tactical concepts. Other units were later to join the 1st at Fort Knox to form the 7th Cavalry Brigade (Mechanized). Here the tank was to have its role as an infantry support weapon transformed to that of a key element in a highly mobile combined arms force having the traditional firepower,

maneuver and shock action of cavalry.

On 1 July 1940, the 1st and 2d Armored Divisions were born. The 1st Cavalry, now renamed the 1st Armored Regiment (Light) was assigned to the former. November 1942 saw Dragoon tankers begin a series of actions that added new chapters of hard fighting entitled North Africa, Anzio, Rome and Northern Italy. A 1944 reorganization reduced the active elements of a proud regiment to the 1st Tank Battalion.

In May 1946, that battalion crossed the Alps to become the 1st Constabulary Squadron in the occupation of Germany and to so remain until December 1948. There followed a series of reorganizations and redesignations as the post-World War II Army accommodated to changing conditions. In 1951, the 1st and 100th Medium Tank Battalions, both wearing the Blackhawk insignia, were among the units of the 1st Armored Division. Then 1957 saw the introduction of the Combat Arms Regimental System (CARS) and the return of the 1st Cavalry designation. The 1st Medium Tank Battalion, 1st Cavalry remained in the 1st Armored Division and the 2d Medium Tank Battalion, 1st Cavalry, joined the 3d Armored Division in Germany. The 100th Tank Battalion designation found a deserved oblivion.

On 1 July 1963, the Dragoons became cavalrymen again. The 1st Squadron, 1st Cavalry, became the cavalry element of the 1st Armored Division, and the 2d Squadron of the 2d Armored Division. The 4th Medium Tank Battalion, 1st Cavalry, activated at West Point in May 1958 with no personnel, remained solely an historical entity.

Following recent activations, today the 1st Cavalry Regiment is among the largest CARS regiments. And unlike the Mexican affair, World War I and Korea, when fate prevented the Dragoons from adding to their laurels, 1968 finds the Regular Army's oldest and most decorated Armor unit again well represented where the action is—in Vietnam. As in times past, members of the First Regiment of Dragoons continue to be "Animo et Fide" (Faithful and Courageous).

For 100 years the horse was the Dragoons' mount. Above, a mounted inspection at Fort Grant, Arizona in 1893.

In 1933 the 1st Cavalry was mechanized. Above, an M1 armored car. Below, M1 "Combat Cars." Tanks were then an infantry weapon.

AT EASE—1863

Dragoons in war and peace. Above, a World War II M5A1 moves up in North Africa in 1943. Below, M48s advancing to contact during Exercise *WINTERSHIELD* in Germany.

1st CA
(1st REGIMENT
HON

MEXICAN WAR
Buena Vista
Coahuila 1846
New Mexico 1846
New Mexico 1847
Chihuahua 1848

INDIAN WARS
Modocs
Apaches
Nez Perces
Bannocks
Pine Ridge
California 1846
California 1852
California 1860
California 1868
New Mexico 1849
New Mexico 1850
New Mexico 1851
New Mexico 1854
New Mexico 1855
New Mexico 1856
Oregon 1851
Oregon 1853
Oregon 1855
Oregon 1856
Oregon 1860
Oregon 1866
Oregon 1867
Oregon 1868
Colorado 1855
Arizona 1857
Arizona 1859
Arizona 1866
Arizona 1868
Arizona 1869
Arizona 1870
Arizona 1871
Arizona 1872
Arizona 1881

ACTIVE

UNIT

1st Squadron, 1st Cavalry
2d Squadron, 1st Cavalry
3d Squadron, 1st Cavalry
4th Squadron, 1st Cavalry
Troop E, 1st Cavalry
6th Squadron, 1st Cavalry
7th Armored Squadron, 1st Air Cavalry
8th Armored Squadron, 1st Air Cavalry

VALRY
OF DRAGOONS)

ORS

Washington 1858
Idaho 1879
Montana 1887

CIVIL WAR
Peninsula
Antietam
Fredericksburg
Chancellorsville
Gettysburg
Wilderness
Spotsylvania
Cold Harbor
Petersburg
Shenandoah
Appomattox
New Mexico 1862
Virginia 1862
Virginia 1863
Virginia 1864
Virginia 1865
Maryland 1863

WAR WITH SPAIN
Santiago

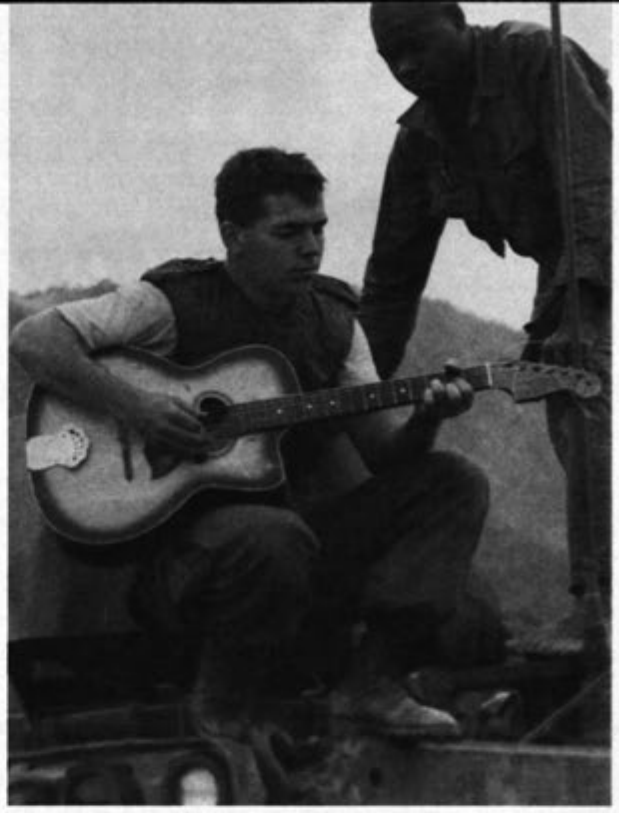
PHILIPPINE INSURRECTION
Luzon 1901
Luzon 1902

WORLD WAR II
Algeria-French Morocco
(with arrowhead)
Tunisia
Naples-Foggia
Anzio
Rome-Arno
North Apennines
Po Valley

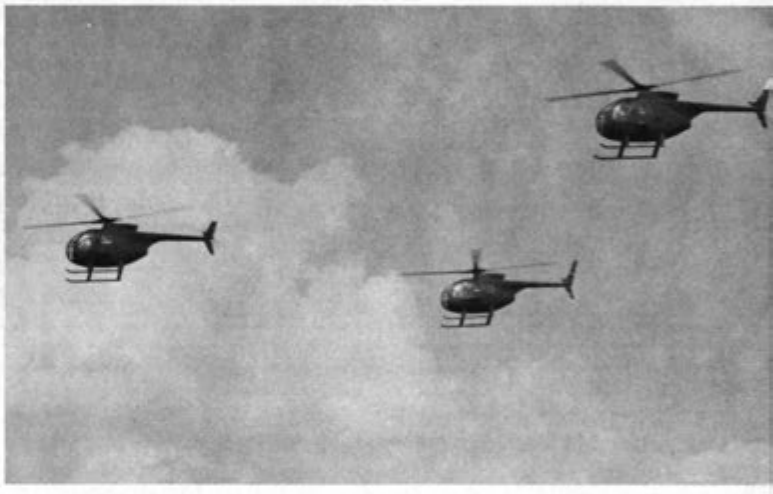
UNITS

ASSIGNMENT

Americal Division, Vietnam
4th Infantry Division, Vietnam
1st Armored Division, Fort Hood
United States Military Academy, West Point
11th Infantry Brigade, Vietnam
2d Armored Division, Fort Hood
Vietnam
Armor Center, Fort Knox



AT EASE—Now



The horse, the armored car, the tank and now the helicopter. Below, ACAVs of the 1st Squadron on a mission in Vietnam.

SHORT, OVER, LOST or...TARGET

A range for firing novel ideas which the readers of ARMOR can sense and adjust. This is a department for the new and untried from which the doctrine of tomorrow may evolve. Items herein will normally be longer than letters but shorter and less well developed than articles—about 750 words maximum is a good guide. All contributions must be signed but noms de guerre will be used at the request of the author. ON THE WAY!!

MUST THE MBT GO IT ALONE?

By LTC David K. Doyle

LTC Joe DeAngelis' article on the *MBT 70* was most informative. It was good to read of the complimentary development programs of "Related New Equipment." But I was dismayed when I could find no mention of armored personnel carriers, self-propelled guns, and resupply vehicles as part of the program. It would be interesting to have a follow-on article outlining our effort or lack of effort in the field.

What disturbs me is the thought that there is the distinct possibility that we have made major strides to develop only one part of the Armor team for sustained nuclear or conventional operations. In a nuclear environment this means that the tank element of armored formations will essentially be on its own. Even in a conventional environment the tank will stand apart from the rest of the team because of the limited ballistic protection afforded our current APCs. Thus without the development of APCs and other supporting vehicles that can survive and go it on the same battlefield as the tank, we shall never be able to realize the desired results of the tactics that we have promulgated since the late forties.

Having just returned from a year as the S3 of the 3d Squadron, 11th Armored Cavalry Regiment, I can attest to the fact that our Armor team is restricted in the pursuit of its goals because of the limited sustainability of the *M113* in situations approximating conventional war.

In one small action on Highway 1 in May of this year, an armored cavalry platoon with one *M48A3* in support was hit by an estimated battalion plus force. The VC had an extremely high density of antitank weapons. Within 20 minutes all but one of the *M113s* (in the so-called ACAV configuration) were out of action. The tank, which sustained 14 directs hits, was still being fought by its crew when the relief force arrived on the scene.

I do not want to paint a dismal picture of the *M113*. It is the best *APC* we have ever had. It is an easy vehicle to maintain and it will take quite a beating from its crew, and the jungle or primary forest as well. But it is *not* a fighting vehicle. Instead it is a transportation vehicle transformed a la Rube Goldberg for a purpose for which it was never intended. It has accounted quite well for itself because we have had determined men to fight it and because we have not been required to fight a modern conventional force with it.

Of the supporting vehicles that I spoke of, we have witnessed the self-propelled howitzers prove their ability to move with the supported force over the most difficult terrain. But to be of value in a nuclear operation, the self-propelled howitzers will also have to have the same nuclear protection as that afforded the *MBT 70*.

This also applies to our resupply vehicles. In that respect they must have not only nuclear protection (for the driver and assistant driver) but also the same cross-country mobility as the fighting vehicles. This is not a new idea.

As early as 1941, German commanders were begging for full-tracked vehicles that would enable the German forces participating in Operation *BARBAROSSA* to free themselves from the muck of western Russia.

Post World War II critiques of U. S. Army operations in Europe pointed to the same need. However, we have been slow to learn. The modern U. S. Army of 1968 must still rely on wheel, road-oriented resupply vehicles. We have attempted in Vietnam to by-pass the wheeled vehicle with the helicopter for resupply normally accomplished by organic squadron/battalion means. While the helicopter is an excellent expedient in an era of uncontested United States control of the air, its value would be negligible in a nuclear environment and questionable in other conventional environments.

Looking ahead, it is evident that all elements of any fighting team must be able to move, fight, and

survive equally under identical conditions. We do not have this capability today. Hopefully, *MBT 70* is a major step forward which will enable us to withstand nuclear radiation and firestorm and to forge forward in 400-500 kilometer dashes into enemy territory. But without the infantry, artillery, and resupply tagging along, there will be some mighty lonesome tank crews waiting for the rest of the Army to catch up.

YOU BET YOUR LIFE

By Captain Dundas S. Orr, Jr.

Billions have been spent to give this country's military forces the most modern equipment in the world. Yet, amidst our missile firing tanks and electronic wonders we find a weapons family that has not changed greatly in the past fifty years—the .45 caliber pistol and its more recent relative the *M3* submachinegun.

For a tanker the .45 caliber pistol is his basic weapon. He fires for qualification with it once a year. He carries it on guard, field exercises and maneuvers. And he carries it in combat. But what does the tanker think about this weapon? Many Armor people have never really given the .45 much consideration. Our experiences in Vietnam should cause the realization that a time may come when we must abandon our homogeneous steel shell, with its machineguns and main armament. At that moment we must pin our hopes of survival on our individual weapons and our skill in using them.

Will we be ready to use the .45? Unlike other weapons systems which were designed with the user in mind, the .45 requires the human to adapt to the weapon. This adaptation, which we call training, would require as much time as that expended in tank gunnery training in order to develop sufficient proficiency by the user to warrant his confidence in the weapon.

The training required is illustrated by the fact that of the students in the Armor OCS and officers basic classes firing for qualification, only 10 to 15 percent qualify.

To some this may not be a very representative figure, so I would offer another—that concerning the Armor Officers Advanced Course students. In a class with 50 percent combat experienced members and with all members having an average of 6.23 years military service, only 35 percent of the students shot qualifying scores. This figure is significant. It highlights an unfavorable situation which can only be overcome with extensive training or by substituting an improved weapon with a smaller caliber cartridge. The latter course of action, that of substituting a smaller caliber weapon, bears examination.

A logical point at which to begin our examination is the .45 caliber cartridge. It is here that efforts toward modernizing our small arms system are severely hampered. I believe that no real progress can be made in the development of a small arms system until we eliminate this cartridge. In developing the proposed new small arms system, equal consideration must be given to both the pistol and the submachinegun so that maximum effectiveness can be obtained from each.

The .45 caliber cartridge was designed specifically for one weapon, the *M1911* pistol, where range was not a major consideration. Yet today, we find this same cartridge being used in our submachinegun where range, velocity and weight are definite considerations.

There is a cartridge that is readily available to replace the .45 caliber and satisfies the requirements of the weapon system. This is the 9mm parabellum cartridge, the most widely used pistol and submachinegun cartridge in the world. This round is one half the weight of the .45 (164 grams versus 327 grams). It has about 60 percent greater muzzle velocity (1310 feet per second versus 830 feet per second). And, it offers greater penetrability. Because of its worldwide acceptance, particularly with our NATO allies, we could complete the standardization of small arms ammunition. This would greatly reduce the logistics problems inherent in using multiple ammunition types. The increased capability which would be given to the submachinegun would make it possible to re-evaluate our Armor battalion TOE with a view toward replacing rifles with the submachineguns. This too could reduce the small arms ammunition problem as well as giving our troops a more suitable weapon for working in and around armored vehicles. Some members of cavalry, mechanized infantry and other units would better be armed with a first-class submachinegun rather than with a rifle.

Perhaps the greatest advantage of the 9mm parabellum cartridge is that, throughout the world, numerous weapons have been developed which would make possible off-the-shelf purchases. This would obviate the necessity for an extensive research and development program and should result in greatly reduced procurement costs.

Of the many weapons available, I recommend two which incorporate the latest advances in small arms development and best utilize the characteristics of 9mm cartridge—the Smith and Wesson *Model 39* automatic pistol and the Israeli *Uzi* submachinegun.

The Smith and Wesson *Model 39* encompasses many of the more recent developments in small arms technology. It's major advantage is a reduction in weight through the use of an alloy frame which

makes it about a pound lighter than the *M1911A1* (26½ ounces versus 39 ounces). Like the German *P38* it is double action which means that one can safely carry a round in the chamber without the manual safety being applied and without any spring being compressed. To fire, one need only pull the trigger without having to cock the hammer (a clumsy operation with an automatic pistol). The pull on the trigger mechanically actuates the hammer to fire the first shot, and the slide automatically cocks the hammer for the next shot. Two excellent safety features have also been incorporated. They are the magazine disconnector which prevents firing a round in the chamber when the magazine is removed, and the slide safety device which automatically interposes a bar between the firing pin and the hammer when the safety is applied.

The *Uzi* submachinegun is the standard submachinegun of the Israeli, the Netherlands, and the West German armies. The major features of the *Uzi* are a short overall length (17.9 inches with stock folded) made possible by the telescoping bolt, a reduction in stoppages by having the magazine housed in the pistol grip, a selector firing switch which allows for both semi-automatic and full automatic fires, a grip safety which precludes accidental firing whether or not the manual safety is applied, and an increase in range over the *M3* from two to three hundred meters. The weight of the *Uzi is* 8.4 pounds. Due to blowback operation, this weight is necessary to preclude weapon climb during automatic firing. The *Uzi* lends itself to mass production as it consists mostly of stampings. Statements of those who have fired the *Uzi* in Germany attest to its accuracy, reliability, and ease of handling. Smith and Wesson in their books, *Small Arms of the World,* maintain that the *Uzi* is undoubtedly one of the best of its type in existence in the world today.

The weapons discussed by no means constitute the only pistol-submachinegun weapons system available. However, they do illustrate the advantages to be gained by the Army's adoption of the 9mm parabellum cartridge.

It is recognized that our government has millions of dollars invested in inventories of, and machine tools for, the .45 weapons and their ammunition. However, this should not be the overriding criterion for the retention or elimination of the .45 caliber family. Our involvement in Vietnam and the prospect of similar wars with their requirements for increased local security, as well as the possibility of a general war clearly indicates the need for including modern, effective and reliable pistols and submachineguns in our small arms inventory.

The time has come for us to insure that our small arms requirements are met fully. It is time to stop trying to make do with what we have. We need a re-evaluation of our Armor small arms which will result in changes to eliminate the twenty-year small arms gap which exists between us and our counterparts in the armor elements of some foreign armies to include the Soviet.

There could be a moment soon when the survival of each and every one of us may depend solely on our individual weapons. We should not bet our lives without holding the best possible hand.

Air Cavalry Rides HIGH

by Lieutenant Colonel
Benny E. Edney

Helicopter Photos by the Author

LIEUTENANT COLONEL BENNY E. EDNEY, Armor, was commissioned in 1950 from the ROTC at New Mexico State University. In 1954 he became an Army aviator. Subsequently he has served in both armor and aviation units and has commanded two aviation detachments, a helicopter company, a tank company and the first air cavalry troop in Europe. Now also a research and development specialist, Colonel Edney has been with Headquarters, US Army Combat Developments Command since 1964. During this time he has participated in several key study groups concerned with the combat roles of Army aviation. While a member of the MACOV study group he co-authored the first training text on air cavalry operations.

One of the Army's Air Cavalry Squadrons has been employed in Vietnam since August 1965. How has it done the past two years? For one thing, it has never lacked for work. It has been continuously committed to active combat operations since its arrival in the theater. This heavy tasking of the squadron is indicative of its success in combat. The three air cavalry troops and the one cavalry troop are fully committed nearly everyday. Hardly a day passes without the squadron receiving requests for support which exceed its capabilities.

AIR CAVALRY MISSIONS

The air cavalry troops are routinely tasked with the following types of missions:

- Support a brigade by providing extensive reconnaissance and developing the tactical situation in the brigade area of operations.
- Perform extensive reconnaissance and develop the tactical situation in the squadron area of operations.
- Perform aerial and ground reconnaissance and damage assessment following B52 strikes in the division area of operations.
- Rapidly develop lucrative intelligence situations as they arise in the current area of operations or in planned areas of operations.

The air cavalry troops have developed a number of techniques to accomplish these missions.

AERO SCOUTS

Aero scout teams are normally placed in support of the airmobile infantry battalions. These teams operate directly with the companies and sometimes even the platoons of these battalions. Teams relieve one another on station so that continuous reconnaissance support is provided. These teams give each other mutual cover and protection.

The aero scouts habitually use "nap-of-the-earth" flying to increase their ability to observe the minute details of the battlefield. They move at speeds varying from 0 to 80 knots and at altitudes of from 0 to 200 feet above the ground. By flying low and slow they are able to examine their areas of operations in great detail to detect trails, bunkers, caves, individuals and groups. They get close enough to tell whether the person being examined is wearing Ho Chi Minh sandals. They use reconnaissance by fire with aircraft weapons, handheld weapons and CS or WP grenades. This often entices a hidden enemy to fire at them, thus disclosing his location. These helicopter mounted cavalrymen respond to enemy action by applying their organic firepower, calling in artillery, mortar, aero weapons, or close air support, or directing ground combat elements to the enemy. The aero scouts are truly the eyes of the division.

AERO WEAPONS

Aero weapons teams increase the reconnaissance coverage, exploit information gained by the scouts, deliver preparatory fires in landing zones for the aero platoons and give fire support to the aero rifle platoons when they are on the ground. These teams operate as a part of a combined arms force or as independent hunter/killer teams.

The aero weapons teams are employed both by day and by night. One technique used to deny the enemy his accustomed freedom of action at night is to use aero weapons teams to conduct periodic surveillance of roads, rivers, beaches and other areas frequently used by the enemy at night. When on this type mission, two observers with night vision devices ride in one helicopter which is followed by a second, armed, helicopter. When the observers identify a target they mark it with a burst of tracers from their *M16s*. The following helicopter engages the target with rockets, 40 mm grenades or machineguns.

MODERN MOUNTED RIFLES

An aero rifle platoon is not just another rifle platoon, but rather a highly trained ground reconnaissance force. The primary mission of these platoons is to make detailed ground reconnaissance in areas which cannot be effectively reconnoitered from the air because of the presence of cover or concealment which limits aerial observation. These platoons are also the fighting force of the air cavalry troops. As such, they are usually the second element of the troops to respond to the aero scout's call for reinforcements. The platoons are air assaulted into a landing zone close to the enemy force and, depending on the strength of the enemy, either attack to defeat or capture the enemy or contain him until a larger force can be committed. These platoons also may conduct search and destroy operations on a small scale or they may make raids for the purpose of capturing prisoners. If no landing or pick up zone is available, they may construct one by using heavy artillery or TAC air to blow a hole in the jungle into which men with chain saws or demolitions are rappeled to clear an area large enough for a landing or pick up zone. If the terrain is particularly rugged and there are no level areas they use the felled trees to construct a landing platform.

To expedite mounting and dismounting their helicopters the aero rifle platoons have rearranged the troops seats so that all seats face the side doors. This allows rapid deployment from the helicopter in a fighting formation. It also makes dismounting while the helicopter is at a hover easier.

The supporting aerial rocket artillery use one half their rockets in firing the preparatory fires and retain the remainder for close fire support while the aero rifle platoons clear the landing zone.

The aero rifle platoons are also used for setting up ambushes, manning listening posts and observation posts and for long range patrols.

TRADITIONAL OPERATIONS, NEW MOUNTS

The air cavalry troops are frequently given the mission of capturing prisoners or detainees from a specified area for intelligence purposes. To accomplish this mission one or more aero rifle platoons are air assaulted into the most favorable landing zone adjacent to a selected village or hamlet. These platoons then make a detailed sweep through the village, detaining all men of military age and questioning all women and children through an ARVN interpreter. Aero scout and aero weapons teams es-

tablish and maintain a screen around the periphery of the village to prevent the exfiltration of people from the village and to detect and prevent reinforcement of the village by enemy forces. The detainees who are identified by the ARVN interpreter as being the best potential sources of information are transported by the aero rifle platoon's helicopters to the brigade or division IPW teams for interrogation.

While sweeping through the village, the platoons also search for arms or rice caches or other material of military significance. This material is then evacuated if it is of intelligence value. When the sweep is completed the aero platoons are picked up by their helicopters and are ready for another mission. During these operations, or for that matter, whenever aero rifle platoons are on the ground the squadron habitually holds a platoon size force in a mission ready posture so the commander has an immediate reaction force with which he can influence the action.

The air cavalry troop commander may have additional forces placed under his control for particular missions. He may get a platoon of the cavalry troop, less their ground vehicles, to use in an infantry role or he may get a platoon from a supported unit to supplement his ground combat power. It is not unusual for the air cavalry troop commander to have three rifle platoons on the ground under his control. He normally moves these platoons by successive lifts using his organic life section helicopters. When these ground platoons have developed the situation, they are either extracted to be employed or they assist the exploiting force to contain and defeat the enemy. Thus, the air cavalry troop may be simultaneously engaged in reconnaissance, fire support, development of the situation and exploiting the information gained by the troops.

The air cavalry in Vietnam adds another means of accomplishing long standing cavalry missions. The role is traditional. The mounts are new and swift. New achievements are being added to the annals of mounted warfare daily.

The primary mission of the aero rifle platoon is to make detailed ground reconnaissance where aerial observation is limited. Members of "B" Team, 1st Battalion, 9th Cavalry, 1st Cavalry Division, advance into an abandoned Viet Cong hospital complex during Operation Pershing.

ARMOR SCHOOLING SELECTIONS

ARMY WAR COLLEGE

LTC Bellinger, John B., Jr.
LTC Canedy, Charles E.
LTC Cole, Thomas F.
LTC Creuziger, Donald P.
LTC Eek, Lauris M., Jr.
LTC Fife, Thomas W.
LTC Hawkins, Algin S.
LTC Howell, Martin D.
LTC Lynch, Thomas P.
LTC Ponder, William R.
LTC Schweitzer, Robert L.
LTC Sharp, Earl W.
LTC Sinclair, Christopher B., Jr.
LTC Ulmer, Walter F., Jr.
LTC Williams, Paul S., Jr.

NATIONAL WAR COLLEGE

LTC Buchanan, William J.
LTC Clark, Clyde O.
LTC Cochran, Arthur F.
LTC Seigle, John W.

INDUSTRIAL COLLEGE OF THE ARMED FORCES

LTC Hayes, John G.
COL Hendricson, Harold M.
LTC Shea, John M.

NAVAL WAR COLLEGE

LTC McDowell, William R.
LTC Todd, William R.

AIR WAR COLLEGE

LTC Lewane, Leonard L.
LTC Patterson, James H.

BRITISH IMPERIAL DEFENSE COLLEGE

COL Miller, Kurtz J., Jr.

ARMED FORCES STAFF COLLEGE

Class 44 Aug 68-Jan 69

LTC Carter, Leonard E.
LTC Coston, Charles D.
MAJ Gillette, William P.
MAJ Higgins, Alan R.
MAJ Lehner, Scott J.
MAJ Lundquist, Donald C.
MAJ Melbye, John
MAJ Saint, Crosbie E.
MAJ Vitello, Patrick A.

SELECTION CRITERIA FOR ARMOR OFFICERS ADVANCED COURSE

Back in October 1967, Department of the Army published a message outlining a new policy regarding promotion of first lieutenants to captain. Basically, the policy provides for promotion eligibility to captain, effective 2 May 1968, after 12 months in grade as a first lieutenant. Authority to promote is delegated to the field. (For complete details see DA Circular 624-18 and DA Message 837567). This new policy will undoubtedly lead many officers to consider the value of extended service following promotion to captain. Procedures have been established to identify officers extending for service in the grade of captain. Officers serving in this category will not be eligible to attend the Armor Officer Advanced Course because of the requirement to serve one year after completion of the Course. Regular Army officers and those serving for an indefinite period are eligible to attend the Advanced Course on the attainment of captain's rank.

ARMED FORCES STAFF COLLEGE

Class 45 Jan 69-Jun 69

MAJ Armstrong, Hart R.
MAJ Butler, Frank C., Jr.
MAJ Clough, William S.
MAJ Hefford, Robert A.
MAJ Hill, James R.
MAJ Hlywa, Nicholas G.
MAJ Lo Re, Jesse D.
LTC Nolan, John R.
MAJ Reichelt, Eric F.

USA COMMAND AND GENERAL STAFF COLLEGE

Aug 68-Jun 69

MAJ Adkins, Donald V.
MAJ Andre, David H.
MAJ Ashworth, Servetus T.
MAJ Avey, James F.
MAJ Baker, Richard D.
MAJ Bedsole, William K.
MAJ Bergen, James P.
MAJ Boehme, James A.
MAJ Boyle, William P.
MAJ Brown, Lee D.
MAJ Carbone, Anthony J.
MAJ Carr, Robert F.
MAJ Cei, Peter G., Jr.
MAJ Chisolm, Patrick D., Jr.
MAJ Cochran, John R.
MAJ Collings, J. Elmer
MAJ Conneely, Martin F. X.
MAJ Cooper, Frederick E., III
MAJ Corliss, William D.
MAJ Crawford, Cecil M.
MAJ Cronen, James S.
MAJ Dankert, Derald T.
MAJ Daves, Phillip E.
MAJ Esher, John D.
MAJ Ferguson, William P.
MAJ Fish, William T.
LTC Fisher, Clyde, Jr.
MAJ Fitzmorris, Lawrence B.
MAJ Francis, John K.
MAJ Frederick, William R.
MAJ Funk, David L.
MAJ Gallagher, Joseph P.
MAJ Gilpatrick, David D.
MAJ Glock, Howard G.
LTC Goodwin, Willard C., Jr.
MAJ Graf, William S.
MAJ Hagan, Jerome D.
MAJ Hahn, James S.
MAJ Hannas, Robert
MAJ Hardin, Cletus A.
MAJ Harris, William K.
MAJ Harvey, Richard W.
MAJ Hatcher, Robert T.
MAJ Hill, William V., Jr.
MAJ Huggins, Charles B.
MAJ Hutter, James L.
LTC Jackson, Wilfred A.
MAJ Jarrett, George H.
MAJ Jensen, Blaine P.
MAJ Johnson, James C.
MAJ Kanarowski, Stanley M., Jr.
MAJ Kidwell, Walter E.
MAJ Kirk, John M.
MAJ L'Hommedieu, Richard F.
MAJ Lilly, Richard A.
MAJ Little, Ronald W.
MAJ Lloyd, Luther R.
MAJ Lutz, Joseph C.
MAJ Mahler, Michael D.
MAJ Malloy, Shaun T.
MAJ Martin, Don Jr.
MAJ Martin, Donald R.
MAJ Martin, Francis B.
MAJ McBride, Eugene R.
MAJ McDonald, Larry P.
MAJ McGee, William H.
MAJ McKalip, Homer D.
MAJ Moore, Charles L.
MAJ Moser, William R.
MAJ Nelsen, Ronald L.
MAJ Nelson, Richard E.
MAJ Oakes, William E.
LTC Orr, Jerry C.
MAJ Palmer, Arthur N.
MAJ Phillips, Johnny A., Jr.
MAJ Plott, Thomas J.
MAJ Prichard, Johnnie R.
MAJ Rackley, Robert L.
MAJ Rainey, Ellis C., Jr.
MAJ Richardson, Charles W., Jr.
MAJ Rider, Archie A.
MAJ Ritticher, Raymond J.
MAJ Ryburn, Glenn O., Jr.
MAJ Rydel, Albert S., Jr.
MAJ Sanders, Drexel E.
MAJ Schurtz, Gerald P.
MAJ Schwoppe, Edwin G., Jr.
MAJ Shalala, Samuel R.
MAJ Singer, Lawrence A.
MAJ Smart, Donald L.
MAJ Stanley, Frederick J.
MAJ Stapleton, Homer L.
MAJ Steckly, Kenneth D.
MAJ Stedron, Charles J.
MAJ Stevenson, Carl B.
LTC Stevenson, George D.
MAJ Stone, Gordon L.
MAJ Sullivan, Gordon R.
MAJ Toye, John E.
MAJ Tutwiler, James D.
MAJ Vogl, Raymond E.
MAJ Wade, Merle L.
MAJ Wages, Jerry S.
MAJ Walton, Warren J.
LTC Warren, James R.
MAJ Wasson, James V.
MAJ Watzling, John K.
MAJ Weckerling, John H.
MAJ Wells, Macon W.
MAJ Wells, Roy D.
MAJ Werner, Gary L.
MAJ Wilke, Thomas W.
MAJ Wolfe, Robert A.

AIR COMMAND AND STAFF COLLEGE

MAJ Adams, James C.

MARINE COMMAND AND STAFF COLLEGE

MAJ Petracca, John M.

NAVY COMMAND AND STAFF COURSE

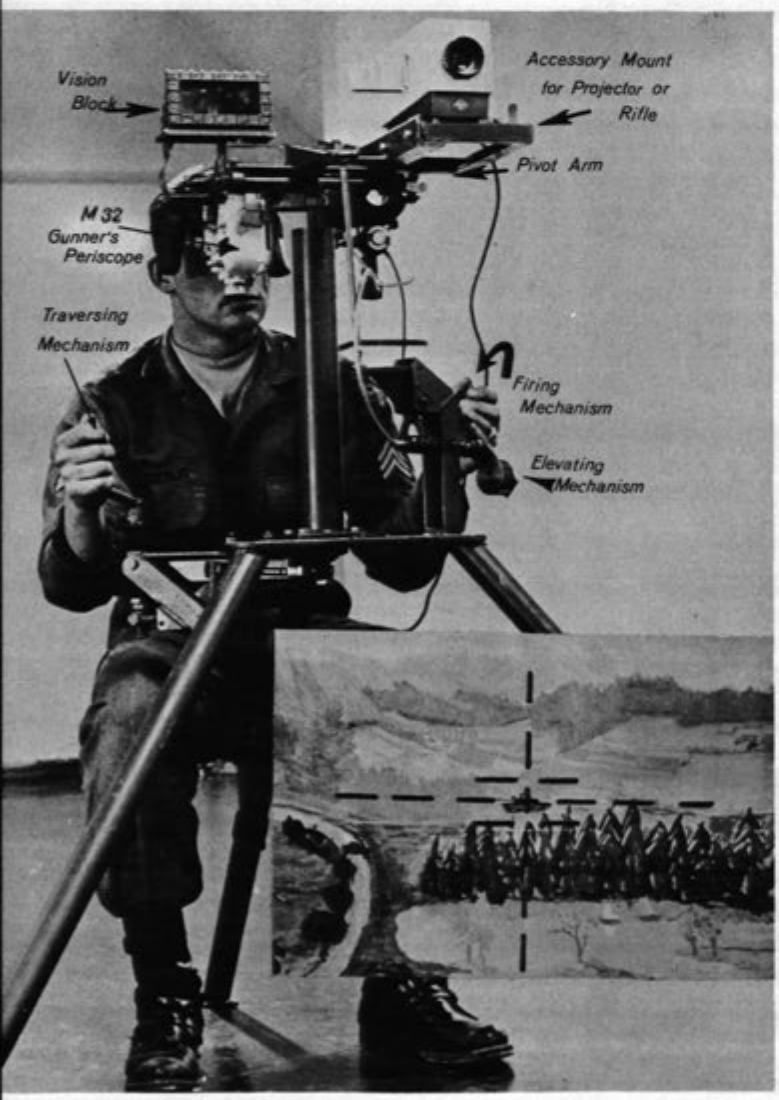
MAJ Day, Frank L.

AUSTRALIAN ARMY STAFF COLLEGE

MAJ Bartlett, Gerald T.

DREIBEIN ÜBUNGSSCHIESSGERÄT

by Lieutenant John D. Flanagan



Some of the classes included in a good tank gunnery training program necessarily comprise some of the most boring subject matter that has ever tortured a PFC. There is simply too much that must be taught. The result is large, crowded sleepy classrooms where an instructor drones on and on about diopters, IR elbows, replenishers, superelevation actuators, no-back assemblies and self-actuating equilibrator springs. If the mass of dials, instruments and technical gibberish isn't enough to bring on a fitful sleep, one is often hypnotized by the never-ending monotone of the instructor's voice.

The 14th Armored Cavalry Regiment's 3d Squadron, commanded by Lieutenant Colonel James R. Anderson, has not yet found a way of making the equilibrator spring really interesting to the private with lead-weighted eyelids. But, its training exchange with the Bundeswehr's 51st Panzergrenadier Bataillon (Mechanized Infantry) stationed at Rotenburg on the Fulda (Hesse) did result in a more exciting and beneficial tank gunnery training program. Here's how.

With tank gunnery qualification tests at Grafenwohr coming up in early October, the 3d Squadron's tank gunnery training program was in full swing by

---

LIEUTENANT JOHN D. FLANAGAN, Armor, received a Bachelor of Arts in History from Tulsa University (Oklahoma) in 1966. He was commissioned from the Armor Officer Candidate School in 1967. Subsequently he has served in the 3d Squadron, 14th Armored Cavalry Regiment as a platoon leader, S3 (Air) and adjutant.

During a later phase of training a .22 caliber rifle replaces the slide projector on the Dreibein Übungsschiessgerät. The gunner is then able to engage stationary and moving targets. One instructor acts as tank commander while the other loads the weapon and watches the gunner's movements.

mid-July. As a supplement to their regular classroom training the squadron's tankers spent many days training with the men of the 5th Company of the 51st Panzergrenadier Bataillon.

In the rear of their Kaserne, the German soldiers had built two miniature tank ranges complete with villages, moving tanks, troop concentrations and implaced artillery pieces. One of the Lilliputian ranges was used without ammunition for practicing crew duties, target acquisition, tracking, and burst-on-target (BOT). On the other, mounting a .22 caliber rifle alongside the main gun tube made it possible for the entire crew to engage in a highly realistic training exercise without even moving their tanks off the post. Visiting these ranges one could hear the initial fire commands being announced, watch the massive turrets swing around, hear the "Up!", the "Fire!", and even sense the burst of the special .22 caliber tracer ammunition that the Germans use in their training.

The training was made even more realistic by all of the targets being scaled down to exactly the size that one would see through the gunner's sight at 1200 meters.

These small ranges are a testament to the German soldier's enthusiasm, professionalism and craftsmanship. They showed the tankers of the 3d Squadron what could be done if one truly is concerned about training and developing military skills. The members of the 5th Company had built the ranges at their own expense and in their off-duty hours. As an example of the artful simplicity of the targets, the moving tanks' battery operated electric motors are of the type that is used in toys. These diminutive moving target tanks run along tracks made of angle iron.

Though the Americans were impressed by the possibilities of the miniature ranges, the item that ultimately proved to be of the greatest value to the squadron's training program was not discovered on the ranges, but in the German company's training room during a coffee break.

The Panzergrenadiers call it a *Dreibein Übungsschiessgerät*. But for simplicity's sake it was named the *Rotenburg Gunner's Device* by the Americans. If the name sounds strange, the instrument looks even stranger. Standing on three legs, like a tripod, it has a bicycle seat mounted on one of the legs for the gunner to sit on, elevating and traversing mechanisms, a mount for the gunner's sight and another mount for a .22 caliber rifle or a slide projector (yes, a slide projector).

During the early phases of training the German gunner uses the instrument with a projector that throws a cross-hair image upon either a terrain board or a landscape painted on the wall of the classroom. After the sight picture and the projected cross-hair image have been zeroed, the gunner is tested on his ability to track and engage targets and to apply BOT as well. This device allows the instructor to determine immediately if the gunner is performing properly and how well he is progressing.

During the later training phases, the portable instrument is moved to a small caliber indoor rifle range where the gunner is able to engage stationary and moving targets with live fire. The training device weapon can be fired either electrically from the

Mounting a .22 caliber rifle alongside the main gun tube enables the entire crew to engage in realistic training exercises without moving their tanks off post.

elevating handle or manually by pulling the trigger. One instructor acts as tank commander, giving the commands and observing down range, while the other loads the weapon and watches the gunner's movements.

The training potential of such a device greatly impressed one of the squadron's troop commanders. And as a result of the close friendship that was developed between he and his men and the members of the 5th Company, the 14th Cavalry troopers received one of the trainers, as a loan, for the duration of the squadron's tank gunnery program.

Within a week after its reception, the trainer had been modified to accommodate an *M32* sight and its use had been integrated into the training schedule. It was used constantly both in the classroom and on the range. It soon became the focal point of interest on the post.

It was discovered that with another minor modification, the instrument could be made to receive the *M32* infrared (IR) elbow. Then the gunners began firing both night and day. As a result, they gained a better understanding of the problems involved in night firing and the use of infrared light.

In mid-August, the squadron sponsored a "Gunner's Shoot-down" and awarded prizes for the highest scoring gunner and troop. It was later found, after the tank qualification record course at Grafenwohr, that there was a positive correlation between the high gunners in the shoot-down and the top scorers in the actual firing on Range 42.

In September, the squadron moved south to Grafenwohr to begin a solid month of intensive tank gunnery training before the rugged test of the Tank Commander's Qualification Course on Range 42. The interest, morale and confidence that had been built in the preceding months continued to remain high throughout the month-long schedule of day and night firing.

In spite of the ammunition shortages, particularly TPT, that forced many tanks to zero their guns with HEP rounds and kept almost half of the crews from firing the moving target table, the bad weather that played havoc with the planned firing schedules, and the intense pressure of competition, the records showed that 41 out of the squadron's 44 tank crews had qualified. This constituted a record-setting 93 percent qualification.

After the emotion of victory, the celebrations and the handshaking had ended, the squadron paused to try to reason the "why" that lay behind their fine performance at Grafenwohr. The answers that they developed were not in the least original or earth-shaking. Hard work, high morale, months of good training, and confidence. In essence, the same factors that lie behind any success.

As a matter of fact, there seems to be no substitute for that crowded, stuffy, sleepy classroom where the instructor is lecturing on equilibrator springs. But it must be counterbalanced with an active program of practical application. The *Rotenburg Gunner's Device* had an important effect upon the 3d Squadron, 14th Cavalry's tank gunnery program. It added novelty, excitement and sense of importance and drama. It focused the attention of everyone—cooks, clerks, mechanics and tankers too—on tank gunnery. And most of all, it made the tank gunners themselves feel like they were the best trained, most accomplished gunners in Europe. Who knows? Perhaps they are.

MAJOR GENERAL F. F. WORTHINGTON, C.B. M.C. M.M. C.D.
1889-1967

On 8 December 1967, Major General F. F. Worthington, "Father" of the Canadian Armoured Corps, died at Ottawa, Ontario. At the time of his death General Worthington held the appointment of Colonel Commandant of the Royal Canadian Armoured Corps.

General Worthington was born in Scotland in 1889. His parents were Americans and he spent the first eleven years of his life in Los Angeles.

Orphaned at eleven, General Worthington moved to Mexico to join his half-brother, an American engineer, employed by a Mexican mining firm. At the age of twelve he saw his half-brother killed by Pancho Villa. He continued to work at the mine until he was fourteen at which time he went to sea as a cabin boy. His ship was in San Francisco at the time of the earthquake and the General took part in rescue work.

In 1915, after having taken part in several South American revolutions, General Worthington made his way to Canada and enlisted as a private soldier in the Canadian Army. He was decorated four times for bravery and granted a battlefield commission. He saw tanks employed for the first time during the Battle of the Somme in 1916. He was an instant convert to armored warfare. His faith in this new form of warfare never diminished.

In 1938, General Worthington was selected to command the first Canadian armored fighting vehicle training center. This center, established at Camp Borden, was the forerunner of the Royal Canadian Armoured Corps School.

It was in 1940 that Canada's first armored brigade was formed and General Worthington was appointed its commander. In 1942 he was promoted to Major General and received command of the 4th Canadian Armoured Division. Because of his age he was not permitted to command his division in action. He returned to Canada and, in April 1945, was appointed General Officer Commanding Pacific Command. He retired from the Canadian Army in 1948.

In his capacity as Colonel Commandant of the Royal Canadian Armoured Corps, General Worthington travelled widely. In 1962 he visited the Canadian Reconnaissance Squadron on duty in Egypt with the United Nations Emergency Force. He made his last visit to armored units serving with Canada's NATO brigade during the summer of 1967.

General Worthington was a long-standing and true friend of American Armor and The United States Armor Association. The last annual meeting he was able to attend was the 76th held at Fort Knox in May 1965. At that time he was an honored guest and received a memento of appreciation from the Association President Major General Donald W. McGowan.

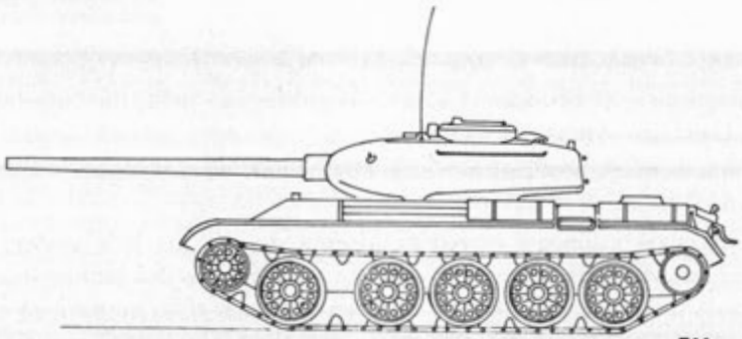
General Worthington was buried with full military honors at Worthington Park, Camp Borden, the home of Canadian Armor.

THE EVOLUTION OF THE

SOVIET BATTLE TANK

Part II

By Lieutenant Colonel Doctor F. M. von Senger und Etterlin



T44

In the first installment the author presented the development of Soviet medium tanks from the thirties to the closing of World War II. In this article he traces the steps leading to the current models. THE EDITOR

THE T44

At the end of World War II, a further development reached the troops. This was designated the *T44*. It differed in many small details from the *T34*. In order to get a turret ring of a larger diameter and with it a better turret configuration, the chassis was widened from 3.05 meter (9.8 feet) to 3.3 meters (10.7 feet) which exceeded the optimum width of railroad cars used to carry tanks. At the same time the height of the tank's upper hull was reduced about 25 centimeters (10 inches). The upper hull did not project out over the suspension system. The tracks were widened and the total weight rose to approximately 34 metric (37.5 US) tons. The turret for the 85 mm cannon was less vulnerable, the shot traps having been reduced. The engine was placed on a slant in order to save space.

This type was introduced in 1945 as a temporary solution. It was shown one time to Montgomery on a visit. However, it first appeared in photographs in the world press when it was employed by Soviet troops as they marched into Budapest in 1956. It cannot be assumed that a large number of this type were mass produced.

Nonetheless, the *T44* served as the immediate predecessor of the *T54*. In the latter tank, the hull and chassis were only slightly changed. Only the turret was a completely new development.

THE T54

Characteristics of the tracks and suspension for the mass produced *T54* are the usual 82.5 cm (32.5 inches) diameter road wheels. The suspension of the *T54* is essentially the same as that of the *T34*. Certain components are slightly improved. To save weight, the cast parts are pierced in many places. The large distance between the forward road wheel and the second road wheel, presumably because of stronger shock absorbers, is a typical recognition feature of the *T44* and *T54*. In contrast to the

T34 and *T44*, the *T54* has the earlier steel skeleton track rather than the plate track. The drive sprocket is no longer attached to the central drive cams, but is of conventional construction and can be changed easily. A smaller wheel in front serves as an idler. The *T54* has a torsion-bar spring system.

On the hull, only the front is beveled at an angle of 30 degrees. The sides and rear are perpendicular. The hull, however, projects only a little over the track shields. It has lateral salients over the track shield to accommodate the turret ring, the inside diameter of which is somewhat greater than the interior width of the hull. On the rear are a number of steel grills to protect the engine.

After the expedients were applied to the *T34/85* and *T44*, the Soviet designers finally solved the turret problem in a radical and efficient manner. The cast turret of the *T54* is presently the only turret in the world without any avoidable shot traps. It is sloped and rounded off on all sides, and has something like the shape of an egg halved along its long axis. The front of the turret is somewhat elongated and pointed. There is no visible gun shield for the 100 mm cannon which rests in a very small slot with an inner shield. The cannon trunnions are located rather far back from the front of the turret wall, as is the telescopic sight whose rotary axis is to the left of and beside the cannon. The aperture for the sight consists, therefore, of a long slot which is covered with shatterproof glass. The coaxial machinegun is located to the right of the cannon, in front of the loader's seat. The turret reportedly is formed from two half-sections and a cover.

Very flat cupolas are located on top of the turret. The bottom portion of the commander's cupola, which is located to the left, is fastened in place with a great number of bolts and does not rotate. The commander's field of vision is provided by a rotating periscope with three angled lenses. The most forward of these three lenses could afford 3x5 magnification. An antenna base mount and a telescope with 360 degree traverse are located in front of the commander's cupola. Two additional periscopes are located in the cover of the cupola. The loader's cupola, which is to the right on the turret top is designed differently. Its domed cupola base carries a turn-table, upon which the gun rack for the 12.7 mm antiaircraft machinegun *DShk* is mounted. The loader has one 360 degree periscope at his disposal, the driver two.

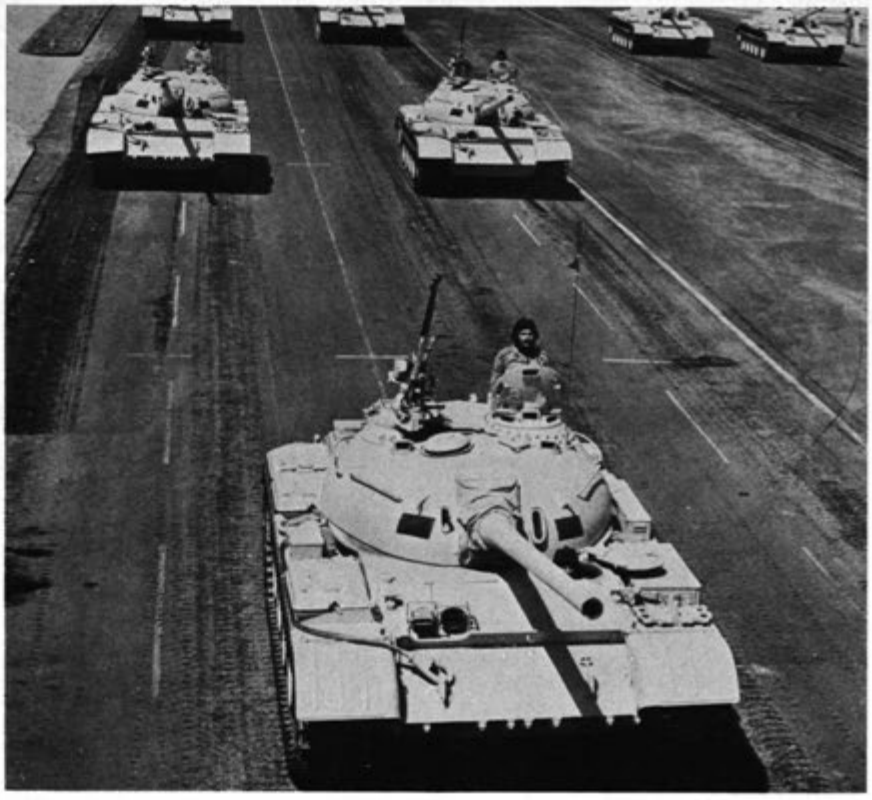
The old but highly regarded *V-12* diesel engine, Type *W2* which develops 550 hp at 2150 rpm has been retained in its basic form. It is placed athwart the long axis of the tank with its exhaust over the left track cover.

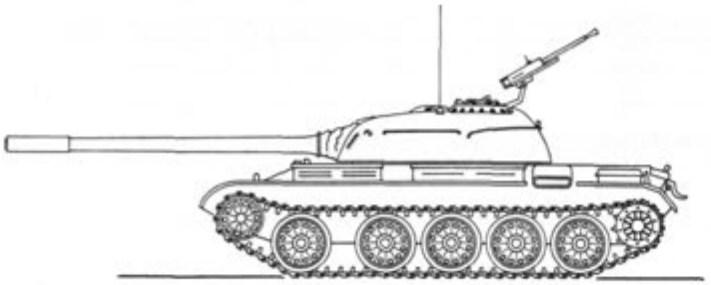
The transmission is located entirely in the rear. It may be the case of the old *Klauen* transmission here, with five forward speeds. Permanent supplementary fuel tanks are mounted on the track covers which is an unusual solution. At the rear are racks for the more common additional supplementary drum type fuel tanks.

With the built-in fuel tanks, the range of the *T54* probably lies in the vicinity of 350 kilometers (220 miles). By using discardable supplementary fuel tanks this can be increased to 500 kilometers (310 miles).

The *T54* can be so sealed and outfitted with snorkel equipment by the troop users that it is capable of deep-water fording. The snorkel consists of two pipes that are carried behind on the rear deck. Assembled, they are mounted upon the

Soviet manufactured T54A tanks in the Middle East prior to the 1967 conflict.





T54B

opening of the loader's periscope. After some preparation *T54* units could therefore cross water obstacles with firm beds at a probable depth of four meters without bridging equipment and could even drive through such obstacles in an attack.

Obviously, every *T54* is equipped with a radio transmitter and receiver. A short (approximately one meter long) antenna and an antenna of approximately four meters length are employed. Ranges of up to 40 kilometers (25 miles) can be obtained.

The model *D10S* 100 mm main gun was first used on the World War II *SU100* assault gun. The gun tube was used on both field cannon and antiaircraft guns. Possibly its weight was reduced for tank applications through using a concentric hydro-mechanical recoil system such as that now also used on the new Soviet field cannons. This mechanism, formed as a sheath, completely encloses the rear portion of the tube. The caliber length is 54, the tube length approximately 5.5 meters (18 feet). With such a tube, ranges of 20 kilometers (12.5 miles) can be achieved. The penetration capability at normal combat ranges of less than 2000 meters is so good that reliance on shaped charge shells can be greatly reduced. Most of the ammunition load may, therefore, consist of just armor piercing ammunition.

The *T54* is the result of years of development which was based on the tested and proven *T34*. The Soviets have been successful, through outstanding utilization of space, saving of weight and ingenious design of the turret in fitting a 100 mm cannon into a 35 metric (39 US) ton vehicle. As a result, in terms of firepower, this tank was the equal of, or superior to, all other types up to 50 tons that were in troop use prior to 1964. The superior capability of the 100 mm cannon could hardly be offset by the more refined fire-control systems which are readily available in other countries. In addition, these systems pose significantly higher training requirements.

The strategic mobility of the *T54* was unmatched for a long time. Its great cruising range made it practical to operate for 200 km (113 miles) without fuel resupply. Elements not involved in combat could drive from the zonal border to the ports on the English Channel without refueling. The simple construction of the track and suspension, drive train and armament makes it resistant, durable and independent of maintenance support. Furthermore, mass production is simplified. As an estimate, the man-hours required to produce this tank are only 25 percent of those spent on similar projects in the West.

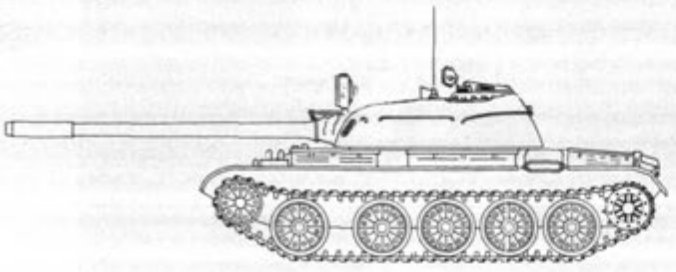
The high tactical mobility of the *T54* was made possible by the still favorable weight to horsepower ratio. The low silhouette is a distinct advantage on the battlefield. The diesel engine is quiet. It generates a minimum of exhaust heat, thus complicating infrared detection.

These advantages permit relatively weaker armor protection. However, the *T54* is strengthened whereever possible through ideal curvature of the armor, particularly in the turret.

Thus the advantages of the *T54* in comparison to the heavy Western types of the 45-50 ton class (e.g. *M48* with 90 mm cannon and *Centurion* with 84 mm cannon) are as follows:

- superior armament
- superior strategic and tactical mobility
- less breakdown prone with resulting greater logistical independence
- simplified production possibilities
- simplified training requirements

The *T54* is the most important combat means of the Soviet Army. In accordance with Soviet thinking, it is a mass employment weapon. According to press reports, approximately 30,000 had been built by the end of 1958. This would be enough to equip 100 divisions. Approximately 6000 might be located in the twenty divisions in the Soviet Zone of Germany.



T55B

THE T54A

In 1956 a modification of the *T54* appeared in Hungary. Its cannon had a long bore evacuator at the muzzle. This cannon is vertically gyro-stabilized. Next to the normal searchlight appeared an

infrared searchlight. An infrared viewer for the driver was also introduced. This model received the NATO designation *T54A*. Other outwardly noticeable modifications are not evident. Nevertheless, it is probable that the motor was improved.

THE T54B

Later changes in the *T54* are characterized by further improvements in the infrared systems. To round out the night combat capability, a "search" searchlight was placed on the commander's cupola. In addition to this, a "shooting" type searchlight was placed on the right front of the turret. This removable light is mounted on a lateral pole and is connected by way of a parallelogram system of levers to the gun tube rather than being mounted coaxially. The 360 degree telescope in front of the commander's cupola has been enlarged significantly. Probably it serves as a picture converter-telescopic sight for infrared gunnery. It is also possible that it contains a range finder system.

To the right and underneath the "shooting" searchlight appears another "search" searchlight the use of which is not clear.

Minor modifications have been made to the shape of the tool boxes on the left track cover. The last box has been enlarged somewhat in the front. The antiaircraft machinegun of the earlier model remains on the turret. Thus, the *T54* in its final form is mainly recognizable for its "shooting" searchlight.

THE T55

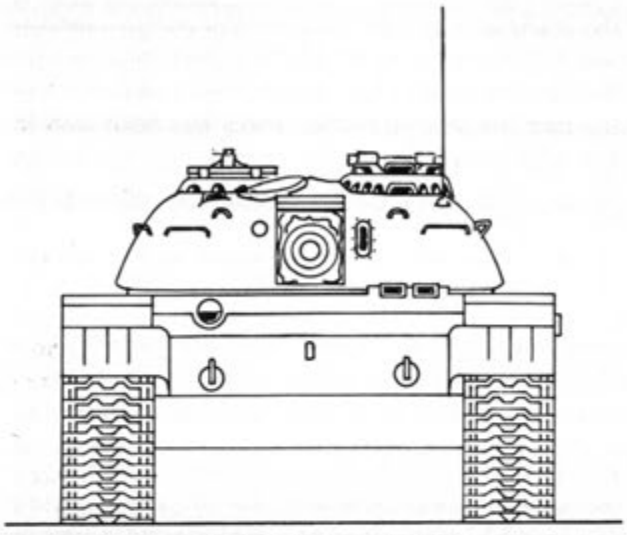
With the *T55*, the turntable on the loader's hatch disappears and with it the antiaircraft machinegun. The large cover can be opened widely enough that the practice deep-water fording tower can be mounted on this hatch. All tanks of this series are capable of deep water fording. The infrared target searchlight is mounted on a rack which is securely connected to the tube sleeves at a short distance in front of the turret and offset to the right of the tube. It is, therefore, mounted coaxially to the gun tube. The new loader's hatch and infrared installation are so designed that older models can be modified and equipped with them. It is to be assumed that this is done so that the individual versions can outwardly scarcely be differentiated any longer. In a later modification, the target searchlight on the *T55* was not coaxially mounted on the turret front but mounted as it was on the modified *T54*.

THE T62

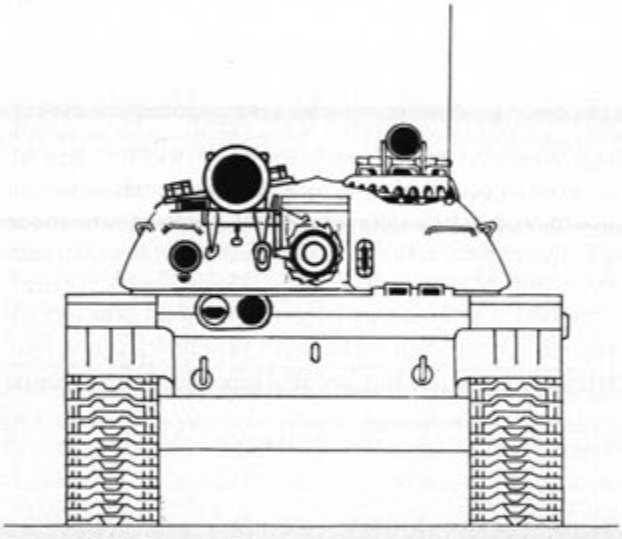
The Soviet combat tank *T62* is the newest link in a long chain of developments which began in the 1930's. It does not exhibit many outward changes from the *T54/55* series.

The hull of the *T62* has been increased in size by about 75cm (25 inches). The reason for this is the apparent necessity for enlarging the ammunition storage area because of larger caliber ammunition. The turret ring has been moved 40cm (16 inches) to the rear whereby additional space has been won in the front. Possibly a CBR defense air ventilation system whose filter has a relatively large space requirement was built into the bow. The relocation of the turret ring has necessitated a new design of the turret configuration. A turret which overhangs the deck does not, for practical purposes, exist anymore. The turret cross-section is almost circular, with a very small projection of the narrow turret front. The 115 mm cannon is couched in a cleft in this particular turret. The diameter of the turret ring and the cross section has been increased by what appears to be 10 centimeters (4 inches) in order to keep the exposure of the front as small as possible. These ten centimeters have also increased the total width of the tank from 327 to 337 cms (about 11 feet). The track width has remained the same, yet the length of track in contact with the ground has been increased from 375 to 403 centimeters (about 13 feet). The steering relationship (track length to track width), has as a result, become less favorable, but remains within acceptable limits. A substantial increase in space for the engine was not made although the increase in width of the hull (about 75mm or 3 inches) could have a favorable effect on the fuel tanks. This increase in the hull width with no changes in armor strength would mean an increase in weight. Since

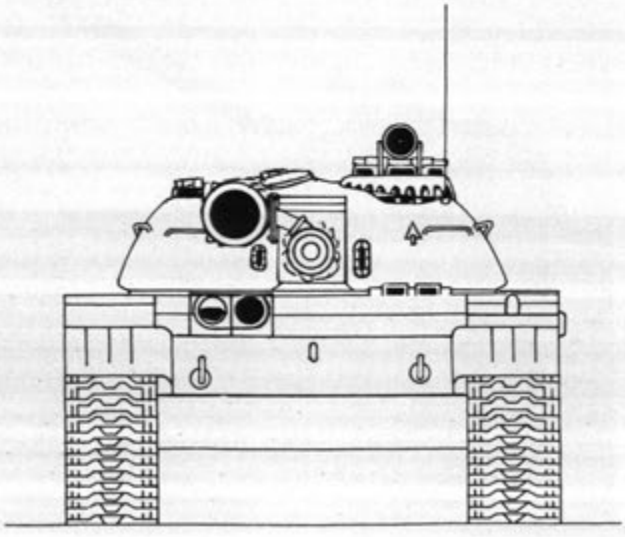
T55A



T54A without infrared devices



T55A with firing searchlight coaxial to the main gun. The commander's searchlight is mounted on a rotating cupola. (Below) T55B and reequipped T54. The firing searchlight is mounted independently on the turret front.



this tank weighs only about one-half ton more than those of the *T54* and *T55* series, it is presumed that the protection afforded by the armor has decreased somewhat. The fording capability is achieved through minor sealing operations by the crew. The exhaust is newly designed. The exhaust gases can be employed to eject tactical smoke from special containers. As previously, there are racks for two fuel barrels or the practice fording shaft on the deck, as well as one for the assembled fording snorkel.

The turret of the *T62* has been newly designed. But, the fundamental concept is similar to that of the *T54/55*. However, there is a new oval opening to the rear in the middle, probably for ejection of spent shell cases. It may also be that the turret ventilation system vent has replaced the cupola which was formerly located in the middle of the turret roof. Also, the loader's hatch has been moved forward somewhat.

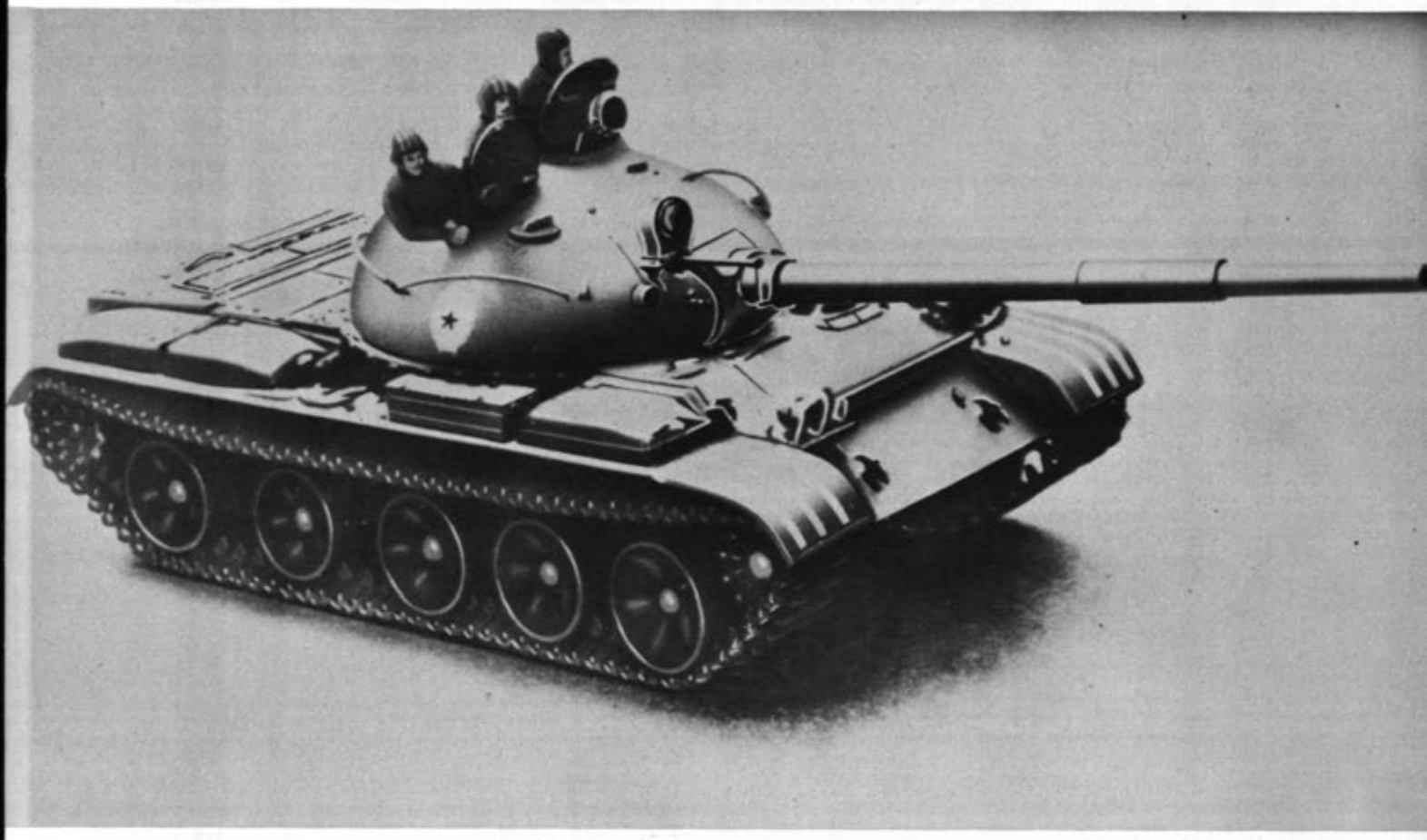
The target ranging and observation devices have not been changed perceptively. The previously oval aperture for the turret sighting device is now round, as is the aperture for the turret machinegun. An optical rangefinder is not detectable and probably is just as absent here as in the *T54/55*. In consonance with the present day state of the art, a laser range finder could be employed. The size of this would be commensurate with the articulated target sighting device in front of the commander's cupola. Sighting with this device still takes ten seconds, however, and the electrical current requirement of the laser is high.

With regard to the ammunition for the *T62*, nothing has been published so far. In that a new main gun is the most significant advance of this new tank vis-a-vis the previous series, one must assume that a greatly increased firepower capability which justifies modification of the entire vehicle has been achieved. This increased capability can be hypothesized by analyzing the present state of the art with respect to the insured target strike capability of the hollow charge and improvement of the effective penetration capability and range of kinetic energy rounds.

For the kinetic energy round, a velocity of 1400 meters (4600 feet) per second can be achieved. Thus the penetration capability can be increased by 20 percent over that of the former armor piercing projectile.

A changeover to a smooth bore would be conceivable in order to fire at a high velocity without imparting twist to the projectile. The accuracy of the fin stabilized hollow charge projectile with a velocity of at least 1400 meters (4600 feet) per second would have to be far superior to the previous HEAT projectile whose muzzle velocity was limited

to between 600 and 900 meters (2000-3000 feet) per second. In another respect, the cannon could be well suited for armor piercing discarding sabot and armor piercing rounds of higher velocity. The Soviets have until now, as far as it is known, not had the APDS round in troop use. It is, therefore, hardly to be expected that they would have introduced this type of round into their inventory.



NEWS NOTES

VICE PRESIDENT AWARDS DSC TO BLACKHORSE TANKER

Vice President Hubert H. Humphrey congratulates Staff Sergeant Homer L. Pittman, Jr., after presenting the Distinguished Service Cross to him. Sergeant Pittman was cited for extraordinary heroism during a battle between elements of the 11th Armored Cavalry Regiment and the Viet Cong on 21 May 1967. He was serving with Troop K, 3d Squadron, as a vehicle commander and acting platoon sergeant with a resupply convoy when it was attacked by a VC battalion astride Route 1, near Soui Cat.

AIRFIELD NAMED FOR ARMOR PILOT

At a recent ceremony the aviation facility at Fort Sheridan, Illinois, was dedicated as Haley Army Airfield in honor of the late Captain Patrick L. Haley.

Captain Haley was a member of the 1st Squadron, 9th Cavalry, 1st Division when he was killed in action while piloting a UH-1C helicopter on a reconnaissance mission in Vietnam.

Captain Haley was awarded posthumously the Distinguished Service Cross, the Distinguished Flying Cross, the Air Medal with nine oak leaf clusters, and the Purple Heart with oak leaf cluster.

The 25-year-old pilot was awarded the Distinguished Service Cross for his heroic actions on 2 October 1966. A first lieutenant at the time, he was piloting a command helicopter in the Ngot Bay area during an aerial attack on escaping Viet Cong forces. Flying at low altitudes, he remained at the most critical points of combat for an hour, keeping enemy forces from pinning down a friendly squad attempting to rescue a comrade lying in an exposed area. With his ammunition expended, he repeatedly flew between the opposing forces to divert the enemy fire. Finally, after persuading the friendly forces to withdraw, Captain Haley landed and picked up the wounded man. Although his aircraft was severely damaged on the ground, he was able to fly the casualty 150 meters to a safe zone.

His actions on 17 August 1966 during a single ship, low level, reconnaissance mission near Duc Co on the Cambodian border merited the Distinguished Flying Cross.

Captain Haley spotted a small allied Vietnamese force. The enemy was attempting to surround the disabled unit in a dry lake bed. He landed amid heavy fire and learned from an American advisor that the unit's ammunition was exhausted. Captain Haley then transported three seriously wounded soldiers to safety and returned although the lake bed was completely surrounded by the enemy. He directed two air strikes and four gunship strikes which enabled the Vietnamese to regroup and saved them from annihilation. His aircraft had been hit several times but Captain Haley remained in the battle area for three and one-half hours, making two more medical evacuations.

▲ **CAVALRY MEDIC AWARDED DSC**

Lieutenant General George R. Mather, III Corps and Fort Hood commander, presents the Distinguished Service Cross to Specialist 4 Harris R. Haynie, Jr., in a special ceremony at Darnall Army Hospital, Fort Hood. Specialist Harnie's father (center) and mother, Mr. and Mrs. Harris R. Haynie Sr., attended the ceremony.

Although seriously wounded, Specialist Haynie, then a medical aidman with Troop B, 1st Squadron, 9th Cavalry, 1st Division in Vietnam, ran through intense enemy fire twice to pull wounded comrades to safety. He repeatedly refused to be evacuated himself. Later he dashed to rescue men trapped in a burning ammunition supply helicopter again while he was under withering enemy fire. When the helicopter exploded and killed the crew, Specialist Haynie received multiple wounds. During the course of a three hour battle, Specialist Haynie exposed himself continually to hostile fire to treat the wounded and boost the morale of his comrades.

Specialist Haynie was also presented the Soldier's Medal for a later act when he leaped from a hovering helicopter in another attempt to rescue a crew trapped in a downed helicopter. The helicopter exploded, seriously wounding Specialist Haynie.

WASHINGTON ARMOR BALL

The Annual Armor Ball usually held in the Washington, D.C., area in January has had to be postponed until 7 June.

TANK PLATOON SERGEANT RECEIVES DSC

Staff Sergeant Charles R. Hazelip, a tank platoon sergeant of Company A, 1st Battalion, 69th Armor, was presented the Distinguished Service Cross by Lieutenant General Bruce Palmer, Jr., USARV Deputy Commander, at the 4th Infantry Division headquarters in Pleiku.

While conducting a cordon and search mission last May with units of the 1st Cavalry Division in An Qui, Vietnam, his unit was hit by a heavy barrage of automatic fire from a well entrenched North Vietnamese Army battalion. During the first minutes of the firefight, SSG Hazelip took charge and laid down a heavy volume of fire to enable infantrymen to evacuate their wounded. He then positioned the combined team for an assault and destroyed numerous bunkers with his tank and grenades. While organizing a second assault, SSG Hazelip again ducked enemy fire to aid a wounded comrade. Then with ammunition running low, he led a second attack which overwhelmed and defeated the Communists. His courage and quick reactions in the early fighting saved many lives and prevented the enemy from seizing control of the engagement.

3d CAVALRY INCLUDED IN TROOP CUTBACK

The 3d Armored Cavalry Regiment has been selected to leave Germany in 1968 as part of the announced cutback of some 35,000 American soldiers and airmen to help the United States save money.

Presently a V Corps unit, the 3d Armd Cav, commanded by Colonel Gerald V. Reberry, will begin moving to Ft. Lewis, Wash., in May.

Approximately 3,000 troops and 800 dependents will be involved in the move, scheduled for completion by the end of July, Reberry said.

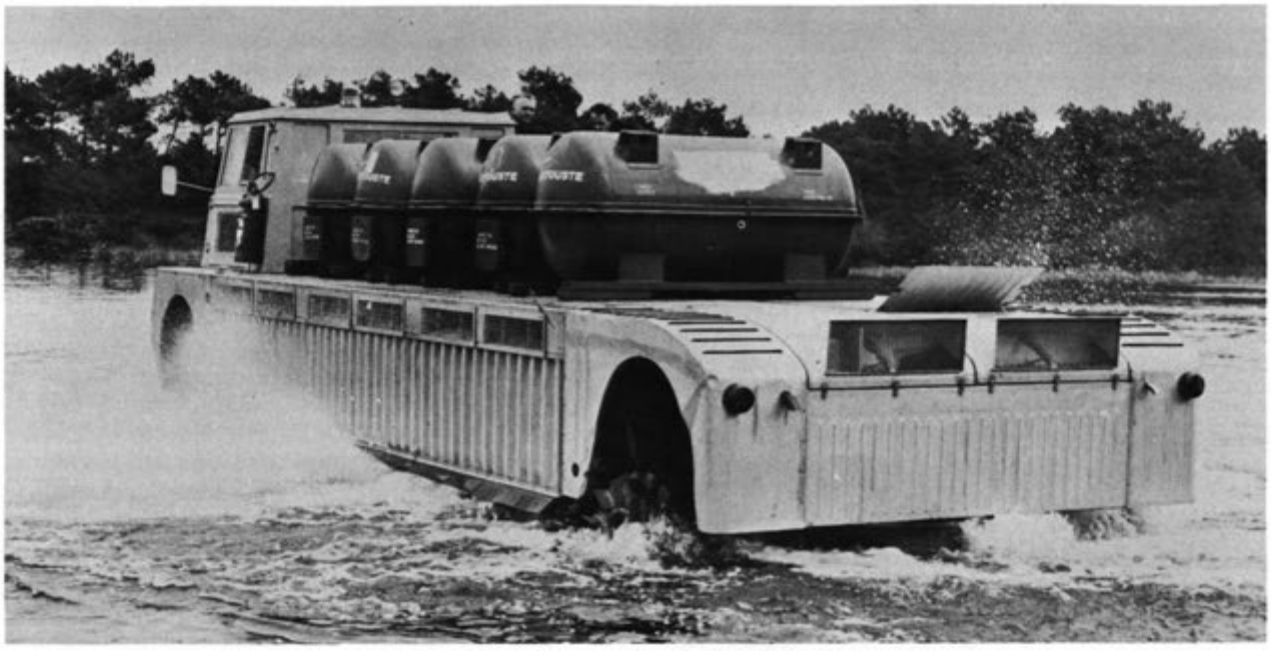
He pointed out that the unit's vehicles, weapons and other heavy equipment will be stored in Germany, with the regiment ready for a rapid return to Europe if necessary. The unit is to receive new equipment in the United States.

Along with the other units transferring stateside, the 3d Armd Cav will remain committed to NATO and will stay under the command of the EUCOM commander-in-chief.

The Department of Defense has said that it would take about two weeks under emergency conditions to fly the Army troops back to Germany, match them with their stockpiled equipment, and have them ready for combat.

Reberry is enthusiastic about the 3d Cavalry's move and said that although the duty in Germany has been good, "the training areas at and near Ft. Lewis will offer more opportunity for realistic training."

(Adapted from V Corps **Guardian)**



A NEW LOOK IN AIR CUSHION VEHICLES

The **BC 7** Terraplane designed and built by Bertin et Cie of France combines an air cushion and wheels. The design solves many of the inherent problems of pure air cushion vehicles. The wheels are used for both propulsion and steering. This eliminates the noise of the conventional pusher propeller and gives maneuverability equal to a similar sized wheeled vehicle. The amount of the vehicle weight borne by the air cushion can be varied by the driver. This can range from 90 percent of the weight to zero weight. If the wheels carry less than 10 percent of the weight, traction is lost. Special ribs, or fins, have been constructed on the side walls of the tires to provide increased efficiency in the water.

The **BC 7** is powered by two 45hp Renault engines, one for each axle. The **Terraplane** has a top speed of about 50mph. The four lift fans are ducted to supply air to two **jupes,** or skirts, each. Each fan is powered by a 160hp General Motors engine. With the current 22 inch skirt height the vehicle can clear a 20 inch obstacle at low speeds. Measuring 10 feet wide, 32 feet long and 9 feet high, the **BC 7** has an empty weight of 2.5 tons. It can carry about 5000 pounds of cargo for an "all up" weight limit of 5 tons. The cost, according to Bertin et Cie, would be about two or three times that of a conventional vehicle of similar size or about one tenth the cost of a pure air cushion vehicle.

Master Sergeant Bobby Langston as the colonel in command of his unit.

◄ IMPERSONATING AN OFFICER LEGALLY

Master Sergeant Bobby Langston, operations sergeant of the 6th Battalion, 32d Armor, 16th Armor Group, Fort Knox, recently found himself promoted to colonel. But the promotion was only on the "set" and for the duration of the filming of an Army training film entitled "The Armored Cavalry Troop: Reconnaissance Missions." The civilian director of the ten-man film crew from the U.S. Army Pictorial Center cast Sergeant Langston for the starring role "because he looked like a colonel."

Other members of the 32d Armor received similar promotions as they took various parts during the shooting of three training films at the "Home of Armor." While the movies will never play at the leading theaters, Armor people may watch for them to be featured soon at their local classrooms.

▲ UNUSUAL VEHICLE ACCEPTED FOR ABERDEEN TESTING

The US Army Limited War Laboratory at Aberdeen Proving Ground, Maryland, has begun testing a marginal terrain research vehicle designed to perform equally well on hard, soft, and water surfaces. Produced by Lockheed and called the TerraStar, the vehicle was accepted for testing following trial runs through swamps and rice paddies, over rough, broken ground, and in water. (ARMOR, May-June 1967).

An unusual locomotion concept has been employed to give TerraStar its capability to move through and over varied land and water surfaces. Maximum cross-country speed exceeds 30mph. The TerraStar has four major wheels on each side of the vehicle. When moving in the water or on soft soil it is propelled by the major wheels permitting the vehicle to operate where other wheeled or tracked vehicles would be immobilized. Each of these major wheels, however, has three wide-base, low-pressure minor wheels mounted on secondary axles. Using the minor wheels, TerraStar operates as a conventional vehicle on roads and other hard surfaces.

▲ "E" IS FOR EXPEDIENT

Armor ingenuity is ably demonstrated by this 4th Armored Division tank crew during a field exercise at Hohenfels, Germany. While not yet adopted as standard, the new design left rear fender shown above appears to be standing up as well in user tests as its conventional counterpart on the right.

NEED A LIFT?

Are your spirits dampened by the winds and rain? Are you disheartened by the latest AGI or CMMI results? Do you need a change of pace from listening to Hippie Hooray and His Hairy Hooters? Then the Patton Museum record "Cavalry Melodies" featuring "The Yellow Ribbon," "Sabre and Spurs," "Garry Owen" and "Hit The Leather" is just the spring tonic you need. Only $1.00.

THE GERMAN KPz70 ▼

Differing only in minor detail from its U.S. twin, the German version of the Main Battle Tank 70 was displayed in Augsburg at the same time the American prototype was unveiled here. Kampfpanzer 70 particulars given by the German Suddeutsche Zeitung listed a top speed of 70 kilometers per hour and a weight of 50 tons.

SERGEANT MAJOR AWARDED LEGION OF MERIT FOR MBT WORK

The only American enlisted man working with the US Joint Engineering Agency during the concept and design phase of the **Main Battle Tank 70** development program has been awarded the Legion of Merit for his outstanding contributions to the success of the program.

Sergeant Major Otis C. Hendrix of the U.S. Army Tank-Automotive Command (ATAC) was presented the award by Major General Shelton E. Lollis, Commanding General of ATAC, at a special ceremony in his office. The **MBT 70** program, a joint U.S./Federal Republic of Germany effort, was featured in the November-December 1967 ARMOR. Major General Edwin H. Burba, the U.S. Program and Project Manager, also took part in the award ceremony.

In 1965, Sergeant Major Hendrix, then a master sergeant, was serving with the 14th Armored Cavalry in Germany when he was selected by a special board from among 30 Armor noncommissioned officer nominees for the **MBT 70** project assignment.

As the Senior Enlisted Armor Advisor to the Project Manager and the US Element of the Joint Engineering Agency, Sergeant Major Hendrix kept the views of the ultimate soldier user of the new vehicle continuously before the project managers and engineers from selection of a design concept to delivery of the pilot vehicles.

Sergeant Major Otis C. Hendrix is congratulated by Major General Shelton E. Lollis, Commanding General of the US Army Tank-Automotive Command, who has just presented the career soldier with the Legion of Merit Decoration. With Sergeant Major Hendrix is his wife, Nina.

ARMOR SCHOOL TRENDS

NEW DIVISION CAVALRY MANUAL

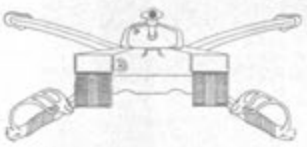
A new Field Manual 17-36, *Division Armored and Air Cavalry Units,* has been prepared by the Combat Developments Command Armor Agency and reviewed by the Armor School. It is scheduled to be released during the third quarter, fiscal year 1969. The new manual incorporates no major changes in doctrine. However, it is more complete and comprehensive and will give users a better cavalry ready reference handbook. Special operations and stability operations are treated in greater detail. Surveillance, an inherent part of reconnaissance and security missions, is highlighted to give added emphasis to this critical task. Terms used in the manual have been updated and it reflects the latest changes in AR 320-5, *Dictionary of United States Army Terms.* Current military symbols and the G Series TOE are used throughout the new manual.

PIPSY 5 INSTRUCTION BEGINS

Instruction on the AN/PPS 5 radar set, which will replace the AN/PPS 4 and the AN/TPS 33, has begun at the Armor School. Operation of the equipment is being taught to students in the Armor NCO Candidate Course. Familiarization instruction for the Armor Officer Basic Course is planned to begin in fiscal year 1969.

In addition to audible and meter target indicators, the new set features two visual indicators which allow the operator to use the equipment for longer periods of time than is possible with the AN/PPS 4. Target indication on the AN/PPS 4 is by audible tones and a needle on the range extension meters meter only. This causes operator fatigue and consequent reduced efficiency after approximately 45 minutes of operation. Simpler to operate than the AN/TPS 33, and as simple as the AN/PPS 4, the new set may be powered by a 6-volt, self-contained battery. In conjunction with the PP-450/PPS 5 power supply, the set may receive power from a six or 24-volt direct current source, vehicular power, or the PU 532/PPS4 engine generator.

With a maximum range of 10,000 meters for moving vehicle targets, the AN/PPS 5 was designed to provide a basic ground surveillance capability at greater ranges than the AN/PPS 4 affords. It is also easier to move. A remote capability allows the operator to take advantage of cover away from the set.



ARMOR BRANCH DIRECTORY

CHIEF
COLONEL JOHN R. BARCLAY
OXford 6-8502

PERSONNEL ACTIONS AND EDUCATION SECTION

Section Chief/Deputy Branch Chief
LTC J. GODFREY CROWE
OXford 6-8502

Personnel Actions
MAJ JACK M. BERINGER
MAJ DONALD E. SPARKS
OXford 6-8529/8730

Military and Civil Education
LTC JAMES H. PATTERSON
OXford 6-8507
MAJ WILLIAM J. MORAN
OXford 7-1210

Programs and Plans
LTC ROBERT H. LUCK
OXford 6-8503

ASSIGNMENT SECTION

Section Chief
LTC CHARLES J. SVOBODA
OXford 6-8507/8508/8509

Overseas Field Grade Assignments
LTC ROBERT E. LEY
OXford 6-8507/8508/8509

CONUS Field Grade Assignments
MAJ ADAM JIMENEZ
OXford 6-8507/8508/8509

Overseas Company Grade Assignments
MAJ HOLLIS D. MESSER
OXford 6-8507/8508/8509

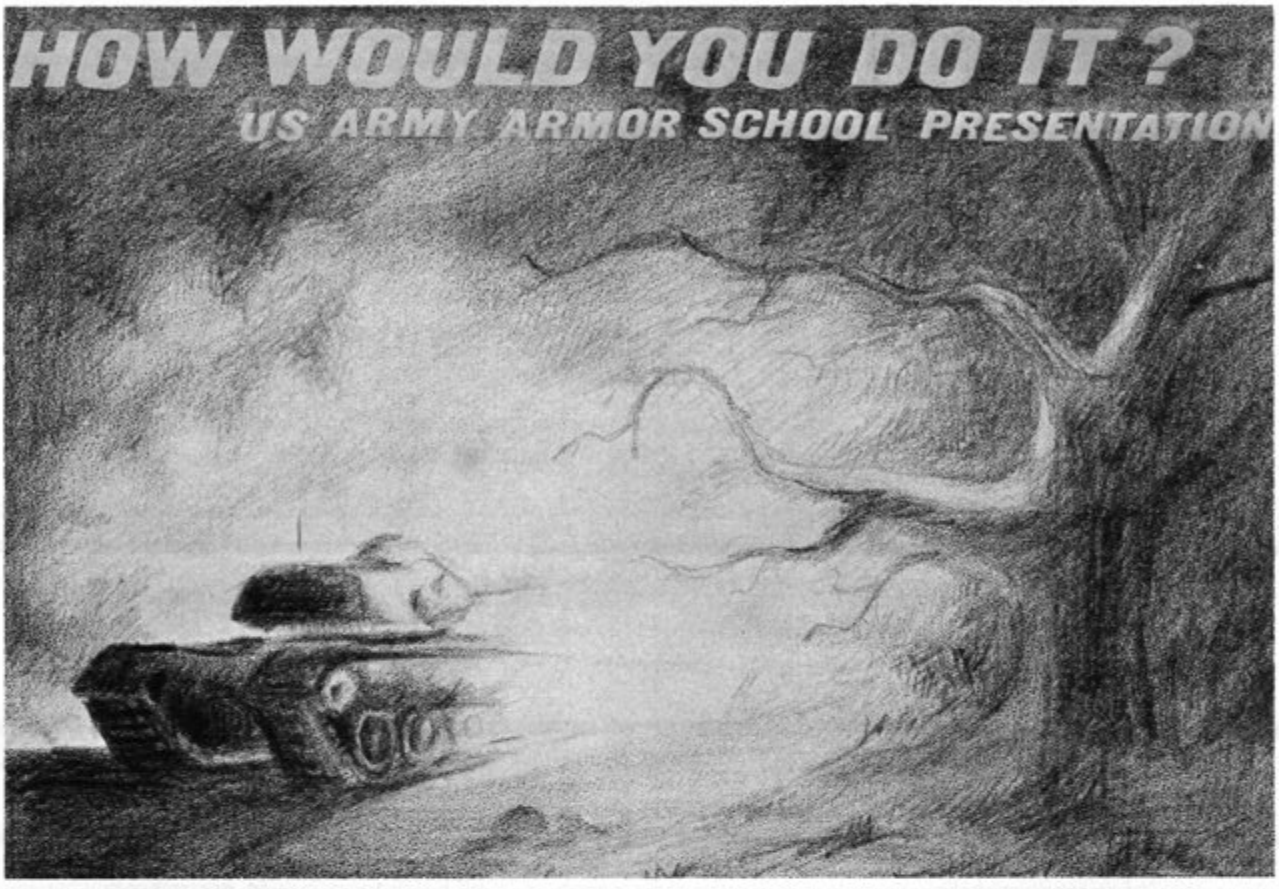
CONUS Company Grade Assignments
MAJ RICHARD G. GRAVES
OXford 6-8507/8508/8509

Aviation Program
LTC WILLIAM C. ROUSSE
OXford 6-8507/8508/8509

ADMINISTRATION SECTION

MRS. LILLIAN WESLEY
OXford 6-8756

The branch is located in Wing 3, Tempo A, on the corner of 2d Street S.W. and "V" Street. Tempo A flanks Fort McNair on the east. It can be reached readily from the Pentagon by shuttle bus. If you're driving your own car, Maine Avenue or South Capitol Street are the best approaches. Visitors parking is available in rear of the building. **ADDRESS YOUR LETTERS TO: Office of Personnel Operations, ATTN: OPD-OPAR, Headquarters, Department of the Army, Washington, D. C. 20315.**



You are the 2d Platoon leader of a tank company that has just occupied a defensive position. Your platoon call sign is EAGLE EYE 26. The tank crews in your platoon have completed their range cards and you have extracted all necessary information from each card to prepare your platoon fire plan (fig. 1). The company commander has attached a radar section to your platoon to give you assistance in your sector of responsibility because of the road net. He has also given you instructions to engage any targets that appear in your sector and report upon each engagement.

SITUATION

At approximately 2230 hours you receive the following reports:

1. One of your listening posts reports that an enemy patrol (dismounted) is stopped near target 4.

2. The attached radar section leader reports he has located two or three tanks near target 2.

3. The company commander informs you that there are several enemy trucks approaching target 3 from the north.

After receiving these spot reports and analyzing the situation, you have decided to engage all these targets with the entire platoon.

AUTHOR: CPT ALROY WAHL

ILLUSTRATOR: TOURAN LATHAM

PROBLEM

How would you engage these targets with your platoon? Which target or targets would you engage first? What platoon fire command or commands would you issue?

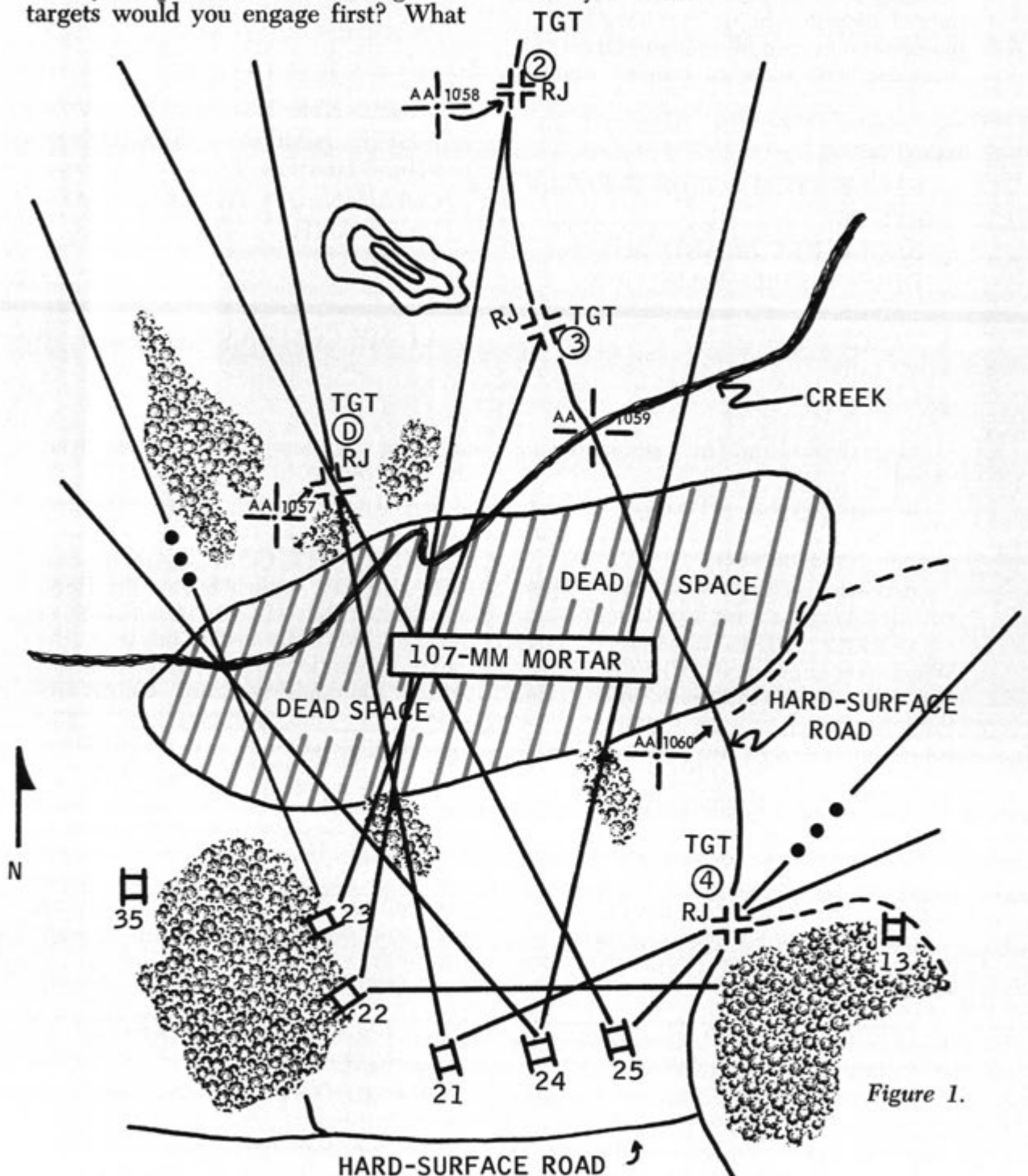


Figure 1.

TGT	TANKS ABLE TO FIRE	TGT	WHITE LIGHT	RED LIGHT	RANGE
2	21, 22, 24	2	None	None	1700
3	21, 23, 24	3	21, 23, 24	None	1200
4	21, 22, 25	4	21, 22, 25	21, 22, 25	550
D	24, 25	D	24, 25	None	1000

SOLUTION

You issue a platoon fire command to engage all targets at the same time. Looking at your platoon fire plan you immediately determine that none of the platoon tanks can illuminate target 2; therefore, you have to request illumination assistance from the company commander. The fire command you issued is:

EAGLE EYE 2 – THIS IS EAGLE EYE 26
EAGLE EYE 22 AND 24
DIRECT FIRE, MAIN GUN
TANKS
TARGET 2

EAGLE EYE 25
RED LIGHT, COAX
TROOPS
TARGET 4

EAGLE EYE 23
WHITE LIGHT – STEADY – FIRE MISSION
COLUMN OF TRUCKS HEADING SOUTH
TARGET 3

AT MY COMMAND – FIRE

DISCUSSION

Let's discuss the fire command you issued.

EAGLE EYE 2 – THIS IS EAGLE EYE 26: Here you alert the entire platoon for a mission.

EAGLE EYE 22 AND 24: Here you alert two tanks for a certain mission.

DIRECT FIRE – MAIN GUN: When you announce DIRECT FIRE, you indicate to the tank commander that the target will be illuminated by some source not in the platoon. MAIN GUN allows each tank commander to select the type of ammunition to best destroy the target.

TANKS: The description element must always be included so that tank commanders know the nature of the target. The gunner will use direct-fire techniques when the target is illuminated.

TARGET 2: Each tank commander knows where target 2 is located because it is plotted on the range card.

DIRECT FIRE: Since this was announced, the tank commander will wait for the target to be illuminated before giving the command to FIRE. You, the platoon leader, could assist in engaging the enemy tanks, but this decision will be up to you.

EAGLE EYE 25: Here you alert an individual tank for a mission.

RED LIGHT, COAX: Announcing RED LIGHT indicates to the tank commander he will use nonvisible or infrared light. By using infrared, the tank commander will not give away his or the platoon's position. COAX restricts the tank commander to coax machinegun use for the engagement. This should provide enough firepower to destroy the enemy patrol.

TROOPS: The description element must always be included in a fire command so the tank commander knows the nature of the target. The gunner will use direct-fire techniques when the target becomes illuminated.

TARGET 4: The tank commander immediately knows where the target is located because it is plotted on the range card.

EAGLE EYE 23: You designate an individual tank for this mission. Using the data from your range card you know that tank 23 can illuminate and fire on target 3.

WHITE LIGHT – STEADY – FIRE MISSION: By announcing WHITE LIGHT – STEADY, you are calling for continuous illumination on the target, and by announcing FIRE MISSION, you are letting the tank commander select the type of weapon or ammunition to best neutralize or destroy the target. Firing HEP ammunition would be very effective; however, due to the superelevation angle, the tank commander cannot illuminate and fire on the target as you directed. Since the tank commander must illuminate and fire, he could select HEAT ammunition, because the superelevation angle at 1700 meters would not affect his mission. The tank commander could also select the caliber .50 machinegun for the engagement. He would lay it for deflection by orienting it with the main gun and applying the range card data for target 3 to his auxiliary fire control instruments.

COLUMN OF TRUCKS HEADING SOUTH: This informs the tank commander what the nature of the target is and direction of travel. The description element must always be included in a fire command.

TARGET 3: The tank commander has target 3 plotted on his range card.

AT MY COMMAND – FIRE: This indicates to the tank commanders that there will be a slight delay to obtain illumination on target 2. This will also allow each tank to lay on his assigned target using his auxiliary fire control instruments. Upon illumination, you give the command FIRE, and each tank commander then gives the command to fire on his assigned target.

You could assist EAGLE EYE 23 with your caliber .50 machinegun to help destroy the column of trucks. At the same time, the gunner of your tank could help EAGLE EYE 22 and 24 engage the tanks at target 2.

Points to remember are that tank weapons are effective against various targets and the tank is not restricted to one target at a time, the platoon leaders have various means of illumination available and when in a defensive position, the platoon can effectively engage more than one target at a time.

FROM THE BOOKSHELF

INFANTRY IN VIETNAM Edited by the Staff of Infantry Magazine. 409 pp. Maps and illustrations. **$3.25**

In his introduction, Major General John M. Wright, Jr., Commandant of the Infantry School, writes: "The Infantryman has learned many important lessons in South Vietnam. . . ." This book is about those lessons and how they were learned; it is not intended to be a broad historical documentation of the conflict in Southeast Asia." This is this book's charter and it fulfills it.

Infantry in Vietnam treats the enemy, intelligence, patrolling, ambushes, attack, defense, fire support, combat support, special operations and the transcendent subject of leadership in battle. Its nearly sixty contributors, as one would expect, are mostly infantry officers. However, three Marine officers, two armor officers, an officer each from the artillery, engineers and medical corps and several non-commissioned officers round out the list. A glossary and a compendium of military symbols are useful. An index would have been helpful.

This is a highly important book for those Armor leaders who will serve in Vietnam in armor units alongside the infantry, in infantry units, in aviation units working with infantry, or as advisors. Its modest price puts it within easy reach of all and it should be kept handy in the portable professional library.

This is a definitely professional book and attractive as well. We congratulate our friendly rivals at INFANTRY and dream about the day that we might see published a companion volume *Armor in Vietnam*. OWM, JR.

THE WRITER'S MANUAL by Archibald C. Jordan. 403 pp. **$4.00**

If you have been wanting to write an article for ARMOR or any other magazine and English grammar and mechanics have held you up, here is a book to help you break through that barrier. This is not a pep talk book on writing, but rather it contains concentrated essentials of the English language that you will need on your desk when writing. This writing guide is useful for those who must prepare accurate, readable reports as part of their military duties.

Professor Jordan has taught Duke University courses in advanced English Composition for the last twenty years and has previously published several books in this field. In compiling this handy guide, he has sought and received the advice of hundreds of educational institutions, courts, businesses and industries. Get this book, use it and you can expect a maximum score on your efficiency report or commander's evaluation for expression.

FRONTIERSMEN IN BLUE by Robert M. Utley. 384 pp. Maps and Illustrations. **$9.95**

The role of the United States Army on the western frontier from the close of the Mexican War in 1847 to the beginning of the Civil War in 1861 has received all too scant attention from historians. Then again, despite the many excellent Civil War histories there has been little solid work done on Army activities on the frontier during that conflict. The post-Civil War frontier military operations have been quite thoroughly chronicled.

Frontiersmen in Blue satisfies the need for a perceptive, analytical history of the American Army's primary effort during the period of remarkable expansion across the continent. This second volume in the Macmillan Wars of the United States series is interestingly written and thoroughly researched. The author, Chief Historian of the National Park Service and President of the Western History Association, is well qualified.

On the pages of this book one finds the origin of many of our mobile warfare traditions and the development of tactical doctrines which remain sound today. Here is an assessment of the greatest trial and error period of the American Army. For those who would understand what followed, this work gives a solid background. OWM, JR.

A PICTURE REPORT OF THE CUSTER FIGHT by William Reusswig. 184 pp. with 100 drawings and one two-page painting reproduced in full color. **$8.50**

This is an art book with an authoritative account of the Custer battle. Every turn of the page reveals an exciting sketch of either Indians or Cavalrymen. Often the two clash in pitched combat across double pages of the book. Other pages show Indians in battle regalia as they circle the determined cavalrymen. Dozens of sketches depict the Little Big Horn battle itself as it must actually have looked. Artist William Reusswig has long cherished the plan to complete this series and has now done so to the delight of all who are interested in the Old West, Indians, the Cavalry, or George Armstrong Custer. JEK

A DICTIONARY OF BATTLES by David Eggenberger. 526 pp. Two-color maps. **$12.50**

From Aachen to Zutphen there are more than 1560 entries ranging in time from Megiddo in 1479 B.C. to engagements in Vietnam. The descriptions of each battle are short but fact packed. A comprehensive index and extensive cross reference enhance this useful ready reference for readers and writers of military history.

"BIG VICTORY, GREAT TASK" by General Vo Nguyen Giap and with an introduction by David Schoenbrun. 120 pp. **$4.50**

The author of *People's War, People's Army: The Viet Cong Insurrection Manual for Underdeveloped Countries,* who is also Minister of Defense of North Vietnam, again has taken pen in hand. In the fall of 1967, General Giap prepared a series of articles for the Hanoi press which set forth his current assessment of the Vietnamese War. These have been translated, and together with an incisive introduction by commentator and Columbia University professor Schoenbrun, make up an interesting book for those who would essay to progress in the war thus far.

Giap is unstinting in his praise of the National Liberation Forces of South Viet Nam, modest in outlining Hanoi's assistance and curiously silent on Red China's role. His evaluations of American operations, both military and political, are harsh. His obvious intent is to keep Communist Vietnamese morale high by stressing the "big victory" of the past while exhorting his people to put their all into the "great task" ahead. General Giap is clearly making skillful propaganda. But, as David Schoenbrun writes in his introduction: "The propaganda, however, is based just as heavily on reality, the reality of the resistance spirit of a valorous people, whatever else they may be." OWM JR.

THE BUFFALO SOLDIERS, A Narrative of the Negro Cavalry in the West by William H. Leckie. 290 pp. **$5.95**

Many Negro soldiers who wished to remain in the United States Army following the Civil War were organized into the 9th and 10th Cavalry Regiments and sent to the Great Plains to control the Indians. Although Doctor Leckie maintains a historian's eye for accuracy, the tale moves swiftly as "The Buffalo Soldiers"—so named by the Indians they opposed—chase and come up against tough fugitives, horse thieves, outlaw Indians and plain uncaring official bureaucracy. Doctor Leckie's interest in Indians and military history resulted previously in his *The Military Conquest of the Southern Plains,* published in 1963. This book belongs in every collection of good cavalry histories.

UNIT FUND CUSTODIANS

The correct price for unit fund subscriptions is $12.00 for two years (a saving of $1.00) or $6.50 for one year. Keep your troops informed. Be sure there are enough copies of ARMOR available that all can read them. Binders to hold two years' issues are only $2.75 and help to keep your dayroom or training library neat.

BACK ISSUES AVAILABLE

The Cavalry Journal 1887-1946

The Armored Cavalry Journal 1946—1950

ARMOR 1950—1967

are now available on microfilm. Details are available from University Microfilms, 300 North Zeeb Road, Ann Arbor, Michigan 48106.

APPLICATION FOR MEMBERSHIP OR SUBSCRIPTION

TO: THE UNITED STATES ARMOR ASSOCIATION
1145 19th Street, NW, Washington, D. C. 20036

NAME _____ ☐ NEW

ADDRESS _____ ☐ RENEWAL

CITY _____ STATE _____ ZIP _____

PLEASE FILL IN ALL APPLICABLE SPACES IN 1, 2 OR 3 BELOW

1. ACTIVE DUTY MILITARY MEMBER
   ☐ REGULAR ☐ RESERVE ☐ ARNG ☐ USMA
   _____ (grade) _____ (service) _____ (branch)
   _____ (service number) _____ (unit)

2. OTHER MILITARY MEMBER
   ☐ REGULAR ☐ RESERVE ☐ ARNG ☐ ROTC ☐ RETIRED ☐ VETERAN
   _____ (grade) _____ (service) _____ (branch)
   _____ (service number) _____ (unit) (if veteran or retired indicate former unit)

3. SUBSCRIBER
   ☐ DOMESTIC ☐ FOREIGN
   ☐ INDIVIDUAL (FOREIGN MILITARY INDICATE RANK, BRANCH, ETC. IN 2. ABOVE)
   ☐ MILITARY UNIT
   ☐ BUSINESS, INDUSTRY, ETC.
   ☐ LIBRARY, EDUCATIONAL INSTITUTION

Dues for military members (including veterans) $8.50 for two years; $4.75 for one year. Cadets only—$4.00 per year. Dues include subscription to ARMOR.
Subscriptions—Domestic $12.00 for two years; $6.50 for one year. Foreign $15.00 for two years; $8.00 for one year.

FOR YOUR LIBRARY

SOUTHEAST ASIA

BATTLES IN THE MONSOON by BG S. L. A. Marshall 6.95
HOW TO STAY ALIVE IN VIETNAM by COL R. B. Rigg 1.95
HELL IN A VERY SMALL PLACE by Bernard B. Fall 8.95
THE TWO VIET-NAMS by Bernard B. Fall 7.95
HO CHI MINH ON REVOLUTION by Bernard B. Fall 6.95
LAST REFLECTIONS ON A WAR by Bernard B. Fall 4.95
BIG VICTORY, GREAT TASK by GEN Vo Nguyen Giap 4.50
FIRE AND MOVEMENT by Jac Weller 6.95

COUNTERINSURGENCY

CHE GUEVARA ON GUERRILLA WARFARE 4.50
MAO TSE-TUNG ON GUERRILLA WARFARE 4.50
PEKING AND PEOPLES WARS
by BG Samuel B. Griffith, II, USMC-Ret 4.95
THE ART OF COUNTERREVOLUTIONARY WARFARE
by John J. McCuen 8.50
PEACEFUL CONFLICT by Edward B. Glick 6.50

WORLD WAR II

PANZER BATTLES by Von Mellenthin 5.95
THE ROMMEL PAPERS edited by B. H. Liddell Hart 8.50
KASSERINE PASS by Martin Blumenson 5.95
THE MARCH TO TUNIS by Alan Moorehead 8.50
THE FOXES OF THE DESERT by Paul Carell 5.95
THE BATTLE FOR ITALY by W. G. F. Jackson 8.50
THE BATTLE OF THE FALAISE GAP by Eddy Florentin 7.50
CORREGIDOR—The Saga of a Fortress
by J. H. Belote & W. M. Belote 6.95

CAVALRY AND THE AMERICAN WEST

THE YELLOWLEGS by Richard Wormser 6.50
SPURS TO GLORY by James M. Merrill 6.95
FRONTIERSMEN IN BLUE by Robert M. Utley 9.95
THE MILITARY CONQUEST OF THE SOUTHERN PLAINS
by William H. Leckie 5.95
THE COMPACT HISTORY OF THE INDIAN WARS by John Tebbel 5.95
THE BUFFALO SOLDIERS by William Leckie 5.95
SOLDIERS ON THE SANTA FE TRAIL by Leo E. Oliva 4.50
A PICTURE HISTORY OF THE CUSTER FIGHT by William Reusswig 8.50
FAINT THE TRUMPET SOUNDS
by John Upton Terrell and COL George Walton 6.95

GENERAL

GUIDELINES FOR THE LEADER & THE COMMANDER
by GEN Bruce C. Clarke 1.00
THE OFFICER AS A LEADER by BG S. L. A. Marshall 6.50
TAKING COMMAND by USMA Faculty Members 6.95
THE OFFICER'S GUIDE by R. B. Reynolds 6.95
THE NCO GUIDE 4.95
THE TANK COMMANDER'S GUIDE by Warnick, Cook & Baker . 3.95
TANK COMPANY COMMANDER'S GUIDE,
by Brier, Moore & Bahnsen 1.25
MANAGING INSURANCE & PERSONAL FINANCE
by USMA Faculty Members 6.95
A PICTORIAL HISTORY OF THE U.S. ARMY by Gene Gurney . 15.00
THE HISTORY OF THE U.S. ARMY by Russell F. Weigley 12.95
DICTIONARY OF MILITARY & NAVAL QUOTATIONS
by COL R. D. Heinl 15.00
DICTIONARY OF BATTLES by David Eggenberger 12.50

THE MIDDLE EAST

SWIFT SWORD by S. L. A. Marshall 3.95
THE SIX DAY WAR by Randolph & Winston S. Churchill 3.95
DIARY OF THE SINAI CAMPAIGN by MG Moshe Dayan 5.95
Paperback 1.95

BIOGRAPHY

AT EASE, Stories I Tell to Friends by Dwight D. Eisenhower 6.95
BEFORE THE COLORS FADE by Fred Ayer 6.00
WARRIOR—The Story of General George S. Patton, Jr.
by Editors of THE ARMY TIMES 5.95

MILITARY WEAPONS

AGE OF GREAT GUNS by Frank E. Comparato 11.95
PAGEANT OF THE GUN by Harold E. Peterson 5.95
CANNONADE by Fairfax Downey 6.50
THE WEAPONS OF WORLD WAR III by John S. Tompkins 5.95
SMALL ARMS OF THE WORLD, Smith & Smith 17.95

FOR THE LADIES

WHAT EVERY ARMY WIFE SHOULD KNOW
by Betty Kinzer and Marion Leach 4.95
THE ARMY WIFE
by Nancy Shea/revised by Anna Perle Smith 5.95
LADY IN ARMS by Virginia Weisel Johnson 4.50
SERVICE ETIQUETTE by Harral & Swartz 6.50
THE ROLLING KITCHEN by Ruth Patton Totten 3.95

TAKE NOTE!!!

During recent months has your magazine been received in a somewhat crumpled condition normally alien to the pristine shape in which you usually receive it? Did you receive the July-August issue after you received the November-December issue?

Over the past year, ye Editor (size 11D boot) has personally "supervised" the Circulation Department to insure that an average of three reader service cards was mailed to each member. However, the magazines returned to this office after each press run are still literally staggering.

We are sure that many of our readers did note our "Problem and Solution" on page 33 of the November-December issue inasmuch as a number clipped the "Solution" portion out and mailed it for their change of address. This, in itself, was gratifying even though it broke the layout man's heart as he reflected upon the wanton destruction of "his" centerspread.

We have an almost inexhaustible supply of reader service cards on hand. We would be happy to send anyone who desires some a supply. Just give us the word and they will be on their way.

In money matters our Business Manager is a miser. When the postman delivers an entire mail sack of returned magazines and demands $5.00 or more, his entire day is ruined. He grudgingly gets out that little old cash box, counts out the money penny by penny and spends the remainder of the day in a plain old miserable mood.

If for no other reason, won't you please use those address cards we have sent you to put our Business Manager in a happier frame of mind and to keep the Editor's boots under his desk—we'd sure appreciate it.

The Circulation Manager

ARMOR

MAY-JUNE 1968

THE UNITED STATES ARMOR ASSOCIATION

Established 1885 as *The United States Cavalry Association*

"To disseminate knowledge of the military arts and sciences, with special attention to mobility in ground warfare; to promote the professional improvement of its members; and to preserve and foster the spirit, the traditions and the solidarity of Armor in the Army of the United States"—Constitution.

PRESIDENT

GEN JOHN K. WATERS

HONORARY VICE PRESIDENTS

SENATOR J. CALEB BOGGS

REPRESENTATIVE W. G. BRAY
REPRESENTATIVE JOHN J. FLYNT
REPRESENTATIVE E. J. GURNEY
REPRESENTATIVE GRAHAM PURCELL

☆GEN BRUCE C. CLARKE
GEN JACOB L. DEVERS
GEN H. H. HOWZE
GEN CHARLES D. PALMER
☆GEN I. D. WHITE
☆GEN W. G. WYMAN
LTG E. H. BROOKS
☆LTG F. J. BROWN
LTG CLOVIS E. BYERS
☆LTG JOHN H. COLLIER
☆LTG W. D. CRITTENBERGER
LTG CHARLES G. DODGE
☆LTG HOBART GAY
LTG THOMAS L. HARROLD
LTG W. H. H. MORRIS
LTG SAMUEL L. MYERS
☆LTG GEORGE W. READ
LTG JOHN L. RYAN, JR.
LTG ARTHUR G. TRUDEAU
LTG W. H. S WRIGHT
MG R. W. GROW
☆MG ERNEST N. HARMON
MG W. PAUL JOHNSON
MG HENRY C. LODGE
MG HARLEY B. WEST
MG E. O. WOLF
BG S. R. HINDS
BG W. A. HOLBROOK, JR.
BG H. C. NEWTON
BG P. M. ROBINETT
BG WILLARD WEBB
COL ARTHUR W. ALLEN, JR.
☆FORMER PRESIDENTS
COL J. L. HINES, JR.

VICE PRESIDENTS

GEN RALPH E. HAINES, JR.
MG A. D. SURLES, JR.
MG THOMAS G. WELLS, JR.

EXECUTIVE COUNCIL

MG EDWIN H. BURBA
MG MICHAEL S. DAVISON
MG WILSON M. HAWKINS
MG ARTHUR L. WEST, JR.
BG CHARLES H. HOLLIS
COL JOHN R. BARCLAY
COL WILLIAM W. COBB
COL JAMES B. DEERIN
COL CLAYTON F. GOMPF
COL WALTER GREENWOOD, JR.
COL WILLIAM S. STOKES, JR.
COL MARSHALL WALLACH
LTC JAMES W. BOOTH
LTC JEAN P. BURNER
LTC EDWARD M. NORMAN
LTC ALBERT W. SMARR, JR.
MAJ JOHN MASON
MAJ ROY A. WULFF
MAJ DAVID G. MOORE
CPT RICHARD C. GALLAGHER
1LT WILLIAM K. HOUSTON III
2LT ALLAN W. ESTEY
SGM DONALD L. TEFFT
MSG JAMES H. ROBERTSON

SECRETARY-TREASURER

LTC O. W. MARTIN, JR.

ARMOR

The Magazine of Mobile Warfare

Volume LXXVII | May-June 1968 | No. 3

ARTICLES

FEATURES

DEPARTMENTS

COVER

"VIETNAM VIGNETTE," ORIGINAL INK AND WATER COLOR RENDITION BY WILLIAM LINZEE PRESCOTT FROM THE ARMY VIETNAM COMBAT ART COLLECTION OF THE OFFICE OF THE CHIEF OF MILITARY HISTORY, UNITED STATES ARMY. THIS COVER HAS BEEN DESIGNED TO ALLOW READERS TO FRAME THE SKETCH.

ARMOR Magazine is published bimonthly by the United States Armor Association, Suite 418, 1145 19th Street, N.W., Washington, D. C. 20036, to stimulate interest in, provoke thought on, and provide an open forum for decorous discussion of professional matters. Articles appearing herein represent the personal views of the contributors. Unless otherwise stated, they are neither expressions of official policy nor do they represent the position of the publisher. Unless credited, photographs are official Department of Defense releases.

MEMBERSHIP DUES (including ARMOR): $4.75 one year, $8.50 two years. Active or associate membership is open to all active, reserve, retired or honorably discharged members of the U. S. Armed Forces.

SUBSCRIPTION RATES: Individuals not eligible for membership, unit funds and institutions may subscribe to ARMOR. **Domestic:** $6.50 one year, $12.00 two years. **Foreign:** $8.00 one year, $15.00 two years. Single copies $1.50.

CORRESPONDENCE: All correspondence should be addressed to ARMOR, Suite 418, 1145 19th Street, N.W., Washington, D. C. 20036 (Telephone: (202) 223-2161).

POSTMASTER: Second-class postage paid at Washington, D. C. and at additional mailing offices.

ARMOR may be forwarded to persons in the United States Service whose change of address is caused by official orders (except to APO addresses) without payment of additional postage (157.4 Postal Manual).

LETTERS TO THE EDITOR

From The Royal Tank Regiment

Dear Sir:

I have just read your November-December 1967 issue. On behalf of the Colonels Commandant and all ranks of the Royal Tank Regiment I would like to thank you most sincerely for the very generous way in which you published the Mounted Review of the Regiment which took place in its 50th Anniversary Year. Everyone in the Regiment is very conscious of the great honor you have paid us by giving us the "centre spread."

E. R. Farnell-Watson
O.B.E., M.C.
Regimental Colonel,
Royal Tank Regiment

London, England

Who Reads ARMOR?

Dear Sir:

We thought the inclosed clipping from "The Army Reporter" in Vietnam might be interesting to you.

JOHN MASON
Major, Armor

West Point, New York

The text of the inclosure follows:

ARMOR MAGAZINE CAPTURED

PLEIKU (4th INF-10)—The editors of *ARMOR* Magazine may be interested to know they have a subscriber of long standing in Vietnam. Unlike most readers though, this one wears black pajamas and carries an *AK47*.

A portion of this mystery subscriber's May-June 1964 copy of *ARMOR* folded neatly around a Viet Cong propaganda booklet was recently captured by elements of the 4th Infantry Division's Troop B, 1st Squadron, 10th Cavalry south of Highway 509, west of here.

The coincidence of a cavalry unit discovering the yellowed excerpt from *ARMOR* was compounded when an article it contained was examined. It was entitled "Psychological Shock in Battle" a theme closely related to the psychological propaganda scribbled in the book by its former owner.

To say that we were "interested" is a masterpiece of understatement. It is always gratifying to learn that ARMOR is widely read and that prized copies are carefully saved. Nevertheless, we are invariably distressed to be reminded that a number of readers filch some paying member's or subscriber's copy. In this case, however, we did not lose a cent. We do not knowingly accept subscriptions from those who wear black pajamas and carry an AK47. EDITOR

A Word From The Author

Dear Sir:

I was fascinated by the news item from Vietnam about the Viet Cong reading my article "Psychological Shock in Battle." Alas, it seems to me they have learned its lessons only too well.

LEO HEIMAN

Haifa, Israel

Mr. Heiman is a fine author who has written a number of interesting articles for ARMOR in the past. We look forward to the day when his many commitments will allow him to do so again. EDITOR

"The Affray At Slope 30"

Dear Sir:

Congratulations to Captain Hofmann for his fine article on the Battle of Slope 30 (*ARMOR* January-February 68). Also, congratulations to *ARMOR* for the excellent manner in which it presented the article. The combination of writer and magazine have done a great deal toward recording the history of Armor and the heroics of its men in Vietnam.

If I may, I would like to add to the account of the Battle of Slope 30. First of all, we originally thought that the VC attack had been conducted by one battalion of the 274th VC Main Force Regiment. However, subsequent to the attack, we revised our estimate as a result of data secured from VC wounded and dead (to include the VC operations order), and intelligence reports from agents, local villagers, and the GVN District Chief. Instead of one battalion, the attacking force was composed of two battalions of the 274th VC Regiment, reinforced by heavy weapons elements from the 5th VC Division. The VC had tailored their regiment into an antitank heavy force in hopes of gaining a short, dramatic victory over a US Armor unit; a feat not accomplished to date. As in past operations against US Armor units, the VC again found themselves to be at a critical disadvantage. Instead of being able to cash in on their high density of antitank weapons, they found that their recoilless rifles and *BA40s (RPG2)* were of little value. Not only were they unable to accurately sight their weapons because of the night, but they were forced to engage us at or beyond their maximum effective range. This, in turn, dictated that they try to slug it out with our tanks and *ACAVs* from unprepared positions. At first light, the litter of the battlefield attested to their folly. It also attested to not only the courage and professionalism of the US cavalryman, but also to the strength of our material and the validity of Armored Cavalry organization and organization for combat as well. A reinforced troop had dealt a far superior force a stunning defeat.

One element which missed mention (inadvertently I'm sure) in Captain Hofmann's article was the 3d Platoon of the 919th Armored Engineers. Whether building bridges (a man-sized job for a single platoon), establishing fords, blowing tunnels and bunkers, or clearing roads, the 3/919 Engineers always played a large although undramatic part in the squadron's operations. The night of 18-19 June was

no different. In this case, the platoon returned to the squadron CP to lager with Team K. That night, as usual, they assumed responsibility for a portion of the perimeter (on other occasions they added to the strength of a lager by furnishing LPs and APs). When the VC initiated their attack the weight of the main attack fell on the engineer sector, and even though they lost many key personnel they held and proved once again to be a valuable asset to the squadron. Although small in number, I feel it is important to mention their effort not only because of their sacrifice, but also to note the versatility and capability organic to Armor's major force in Vietnam—The 11th Armored Cavalry Regiment.

DAVID K. DOYLE
LTC, Armor
Fairfax, Virginia

"Concerns of Sergeants"

Dear Sir:

Permission is requested to reprint in its entirety the article "Concerns of Sergeants" (*ARMOR* January-February 1968) for inclusion in the 3d Armored Division NCO Academy student handout material on leadership.

The article illustrates Soviet application of the leadership principles taught in our own Army. It points up the widespread recognition of the necessity for good leadership rooted in consideration for subordinates and careful application of leadership principles and techniques. Since this article originates outside our armed forces it has a "reverse propaganda effect" and those who read it will tend not to dismiss it as just another U.S. Army discourse on an old subject.

DANIEL M. SMITH
1LT, Infantry
3d Armored Division NCO Academy
APO New York 09045

We have been caught red handed! We too thought there was much merit in the article and that perhaps the sound principles that it treats would receive more deserved attention when packaged on the "other side of the hill." Hopefully the reprints will be helpful to your instruction. EDITOR

About Tank Weapons

Dear Sir:

It is probably worthy of note that the first account of the most sophisticated and expensive tank yet appears in the same number of *ARMOR* (November-December 1967) as the first account of a war that was won by the least sophisticated and expensive of current production tanks.

The *Centurion*, which provided the main Israeli tank strength in the decisive tank battles on the Sinai front, is basically a 1943 design. It is slower, and has a higher silhouette, than the opposing *T54*, while its armor is thinner in places and much less favourably sloped. Its 105mm gun is only marginally more efficient than the 100mm gun in the *T54*.

Why then did it achieve the results it did, knocking out opposing tanks and concrete gun positions with its first shots out as far as 4000 yards, far beyond the effective range of enemy reply?

Obviously, the well-trained Israeli crews used every bit of the capability the weapon offered, but nonetheless, the capability had to be there. The simple answer is ammunition.

105mm APDS with its flat trajectory and high velocity could hit without the aid of a rangefinder, penetrate the thickest armor, and give an assured kill. 105mm HEP, originally designed as a concrete buster, did just that, assisted on target by the caliber .50 spotting round, a neglected American invention.

The opposition did not have ammunition with these capabilities.

Now if the 105mm gun is capable of dealing with *T54* and *SU100* at phenomenal ranges like those quoted above, it can certainly deal with the new *T62* which is no better armored. Why then bother with a 152mm gun/launcher, which entails limited storage for the large ammunition, a larger and less favourably sloped turret, and a larger vehicle? Apparently the Germans already have doubts.

The Israelis seem to have made their minds up, because they are trying to persuade the British government to let them have supplies of its 120mm gun *Chieftain*.

Incidently, that business about the Israelis putting 105mm guns into the majority of their *Shermans* is a little hard to swallow. If true, it represents a real technical achievement. Can we have some details please? None of the 40 odd photographs of Israeli *Shermans* that I have seen published so far seem to show anything but a long 75mm or 76mm with muzzle brake. Could it be that the 105mm in question is the low velocity French 105mm mounted in some *AMX13*, firing HEAT instead of APDS and with a strong resemblance to the 75mm?

The long British 105mm with bore evacuator and no muzzle brake is a very different proposition, and distinctive in appearance.

PHILIP BARKER
Birmingham, England

Our information is that the Israeli Army modernized a number of Sherman tanks during 1957-58. Some had a counterweight installed in the rear of the turret, a new gun mount with hydraulic elevation and traverse and a new gun mantle. These were equipped with a French 105mm with muzzle brake similar to those mounted on some models of AMX tanks. The HE shell for this gun weighs 26½ pounds and has a muzzle velocity of 2460 fps. The AP round is non-rotating fin-stabilized, and with a shaped charge. Muzzle velocity is 2970fps. Penetration is 13.7 to 15.7 inches with an accuracy 1 mil at 1500 meters. Prior to 1956 other Israeli Shermans were retrofitted with AMX turrets with a 75mm gun.—EDITOR

Fighting Music

Dear Sir:

Can you help to obtain the music for "The Army Goes Rolling Along," "Garry Owen," "The Yellow Ribbon" and "Hit the Leather and Ride"?

The ARVN 1st Infantry Division bandmaster has requested my counterpart, the CO of the ARVN 7th Armored Cavalry Regiment, to assist in getting this music for use at ceremonies.

EDWARD HALBERT
Major, Armor
APO SF 96258

Thanks to the very considerable help of the United States Army Band, band sets of these traditional airs were located and sent. Major Halbert's thank-you note follows. EDITOR

Dear Sir:

We certainly appreciate your efforts to secure the music for the ARVN 1st Infantry Division Band.

We have been rather busy here in Hue during the past four weeks. The NVA/VC attacked several critical areas in and around the city to include the MACV Compound. The final results have not been calculated but it appears that the enemy suffered a tremendous personnel and equipment loss.

The ARVN 7th Armored Cavalry did a real fine job here in the city. Although street and house-to-house fighting is difficult, the APC troops inflicted their share of damage on the enemy.

It might be of further interest to know that the ARVN 1st Division Band played an important part in the fighting. They put down their horns and drums and picked up rifles and machineguns to fight most bravely. The city is now clear and I believe the band will get back to playing very soon.

My copy of ARMOR is thoroughly read by some of my Infantry and Marine friends. I'll work on some memberships and subscriptions.

EDWARD HALBERT
Major, Armor
APO SF 96258

Reconnoitering

ABOUT THIS ISSUE

For those in a rush the whole story can be summed up in the headline "IT DIDN'T JUST HAPPEN."

First off, it was planned to feature prominently the top articles of those young professionals turned author through the agency of the Armor School writing program. We never know what themes these articles will take. All the winners could have been on the same subject or on high level themes with low level reader interest.

But they were not, and we are proud to publish the results of the thinking and writing of four up-and-coming Armor leaders who offer some challenges and some lessons for all of us. One excellent article was classified for sound reasons and can not appear at this time.

The winners for the Armor Officer Advanced Course 1, 1968 are:

1st Place—"Herringbone" by Captain Jacob R. Degenhardt, Jr.

2nd Place—"Maintaining the Momentum of the Trained Soldier" by Captain Elwood L. Fairbrother, Jr.

3rd Place—"Propaganda of the Deed" by Captain John N. Sloan.

4th Place—"The 24 Hour Soldier" by Captain William A. Izzard.

5th Place—"What About the 'Other War'?" by Captain John R. Irving, III.

Nearly a year ago we wrote to General Israel Tal asking him to share with our readers lessons learned from armor operations in the Middle East. "The Israeli Armoured Corps in the Six Day War" by Colonel Doctor Jehuda L. Wallach, soldier and scholar, is the result.

Another letter writing campaign directed at potential sources for a significant article on air cavalry operations raised our expenditures for postage and created a thick suspense file of unanswered correspondence. But, Brigadier General Richard L. Irby replied that he would do his best to help. And thus we received the manuscript for "Air Cavalry in Battle: A New Concept in Action" by Major Thomas H. Harvey, Jr., a second-generation artilleryman of the stamp of young John Pelham, Major, C.S.A. about whom we intend to say more in a future issue.

Thanks to Marion Leach, and now Betty Bowen too, we are once again able to enjoy social gatherings. The lovely ladies who wear a yellow ribbon for their troopers used to comment pointedly on the fact that ARMOR had nothing for them. Our Yankee trader instincts told us that they had a point. A semi-scientific survey indicated that, during one period, 82 percent of the checks for member's dues were signed in a pretty feminine hand and were scented quite differently from the more pungent aromas we normally associate with our trade.

Another ARMOR exclusive is the article by Major General Winston P. Wilson, Chief of the National Guard Bureau, giving full details on the what and where of our Army National Guard comrades-in-arms. After the article was set, and just before press time, the readiness of these minutemen was vouched for by the call-up of the 1st Squadron, 18th Armored Cavalry Regiment from California which reports to Fort Lewis, Troop E, 114th Cavalry of Kansas going to Fort Campbell, and Troop E, 19th Cavalry of Hawaii to be stationed at Schofield Barracks.

Other good articles, photographs (some by the authors themselves) and maps by our staff artist rounded out the dummy issue. But still no cover.

The Office of the Chief of Military History recently sponsored a showing of Army combat art from Vietnam at the Smithsonian. Many of the paintings would make fine ARMOR covers. Nonetheless, the complexity of hues in most would require technical preparation and printing costs far beyond our tight budget. One ink and watercolor sketch seemed just right though.

Hence, "Vietnam Vignette" by William Linzee Prescott appears on the cover. Mr. Prescott was the first civilian artist to volunteer for the Army program designed to capture the Vietnam scene as viewed through the eyes of fine artists. Famous as a muralist of military history, he temporarily abandoned the technique of grand panorama to portray the Vietnam conflict in terms of everyday activities of the South Vietnamese and the U. S. Forces in a way which seems to penetrate the essential character of both East and West.

If there is something that *you* would like to have in a future issue of your ARMOR, send it in. It might even supplant this byplay from the pen of—

the Editor

AIR CAVALRY IN BATTLE

a new concept in action

by Major Thomas H. Harvey, Jr.

A foreboding and premonitory quiet pervaded the air as the point squad approached the village to within ten meters of the line of dense hedgerows and bamboo trees. Suddenly, the alert squad leader, SFC Scott R. Hunley, noticed movement behind the thick shrubs. Almost simultaneously as he shouted the warning, "down," each squad member instinctively flattened himself in the dirt as a hail of automatic weapons fire flew overhead. And thus began Act I of the scenario of the Dam Trao Lake Battle which has become a classic example of air cavalry operations in the 1st Cavalry Division (Airmobile).

The connotation of "air cavalry" operations as employed by The First Team imparts an intrinsic uniqueness that cannot be found in any other division or brigade size organization in the United States Army. The techniques developed and refined by the 1st Squadron, 9th Cavalry, the 1st Cavalry Division's air cavalry squadron, and for several years the only unit of its type in the United States Army, have reached the state that they are invaluable and almost indispensable to the operations of the division. Besides the continuous reconnaissance and information gathering conducted by the squadron, its most significant contribution to the division comes as an economy of force unit. In part, the squadron's mission is "to engage in combat as an economy of force unit." Corollaries of this mission are: avoid decisive combat engagements; maintain contact with the enemy; develop the situation. Each facet of this air cavalry mission is demonstrated in the Dam Trao Lake Battle; it was as if a script had been written to play for the world the archetypal air cavalry operation.

As practiced in the 1st Cavalry Division, a "cav operation," as it is more commonly called, has several distinct phases which follow a natural progression. The transition from one phase to the next depends upon the degree of contact established and how rapidly the situation develops. The first phase is intelligence, either gathered by the squadron itself or originating from agents through divisional resources, indicating the location of an enemy force. The second phase involves the investigation of this intelligence through air reconnaissance by one of the air cavalry troops to determine if exploitation by ground forces is warranted. Frequently air observation quickly reveals that no further action is required.

MAJOR THOMAS H. HARVEY, JR., Artillery, was graduated from the United States Military Academy in 1958. Following duty as a battery officer with air defense artillery, he became an Army aviator in 1961. In 1963 and 1964 he served with the 1st and 61st Aviation Companies in Vietnam. Following completion of the Artillery Career Course he joined the Airborne Electronics and Special Warfare Board. During the past year he served with the 1st Squadron, 9th Cavalry, 1st Cavalry Division as an aerial weapons platoon leader and troop commander. Major Harvey holds The Distinguished Service Cross, Silver Star, Distinguished Flying Cross (with two oak leaf clusters), Bronze Star, Air Medal (with 27 OLC) and other American and Vietnamese awards. He is now stationed at West Point.

However, in the event that there are some indications of the enemy's presence, the troop commander has the option of employing his reconnaissance rifle platoon (Blues), or if the situation appears too big for one platoon, he can recommend the employment of a larger force. Normally the troop's rifle platoon is air assaulted into the location. If and when contact with the enemy is established, the troop commander must decide upon the magnitude of the enemy force and whether he will need a reaction force already on standby. The troop commander retains operational control of all reaction forces he calls into the battle until he has more than a company size force from the battalion which his troop is supporting. Then control of all elements is assumed by the battalion commander who has the responsibility for the area. From this phase on the operation assumes the complexion of a typical airmobile engagement.

Thus the phases of an air cavalry operation are:

1. Intelligence
2. Air reconnaissance
3. Ground reconnaissance
4. Situation development
5. Reinforcement
6. Battalion control and exploitation
7. Victory

Allusion has been made to a reaction force. A digression is in order to discuss this all-important factor of a cav operation. An air cavalry troop, under squadron control, usually orients on a specified brigade area of operations. Seldom does a clear-cut direct support relationship exist. However, the success of the air cav is immutably related to the responsiveness of the brigade to the intelligence on enemy activity developed by the troop. The air cavalry troop can function with a great deal of latitude and aggressiveness so long as there is the realization that a sizeable reaction force is available. If such a force is not available, then troop operations are significantly inhibited and reduced to only an aerial reconnaissance role.

In order to exploit the cav concept the brigade operations center must remain closely tied in with the activities of the cavalry troop. Perhaps one of the most successful exponents of the cav concept was Colonel Fred E. Karhohs, commander of the 2d Brigade, 1st Cavalry Division at the time of the Dam Trao Lake Battle. He keyed many of his operations to the findings of the air cavalry troop and was always ready to react with a large force if the troops made a significant contact. He was the quintessential practitioner of the cav concept and we shall see how his adherence to this concept paid large dividends at the Dam Trao Lake.

Located in Binh Dinh Province on the east coast, fifteen kilometers southeast of Bong Son, are two large lakes, the northern one of which is the Dam Trao. On the northeast corner of this lake are two large villages each approximately seven hundred meters in length and three hundred meters in breadth. The northern village, An Hoa, lies on a southwest-northeast axis, and the southern village, An Quang, is oriented northwest and southeast. The two villages are on converging axes and are separated by three hundred meters of sandy terrain and rice paddies. Both villages are contiguous to the lake on the west, with a small spit of land lying on the east-west dividing axis between the villages, extending northwest into the lake. Small ponds and

rice paddies comprise the immediate eastern confines of the two villages and immediately to the east of the paddies are sand dunes rising slightly above their level. At that time of the year the paddies were dry and the ponds were at ankle depth.

These two villages were characteristic of many others found throughout the province, each of which was easily transformed into a fortified village—overnight if necessary. Both villages had such a considerable number of palm trees in and about that there was a virtual canopy over the huts and people within. In addition, both villages were bordered by thick hedgerows and each had its maze and network of trenches excavated by the Vietcong (VC) cadre over a period of years. Typical of all villages where combat was an imminent threat, these two had literally hundreds of protective bunkers. Not characteristic of all villages but a feature of the fortified village was the large number of fighting bunkers cleverly concealed until a propitious moment. These bunkers always have good fields of fire and are situated in the trenches and throughout the village in order that a defending force can maintain interior lines and tactical integrity. Once the enemy has elected to stand and defend such an area, he is virtually impossible to dislodge without intensive heavy artillery and aerial bombardment. Light artillery does little damage to the well prepared bunkers.

PROLOGUE AND ACT I

(Intelligence, Air and Ground Reconnaissance)

Sometime late on 27 June the S2 of the 2d Brigade received information that a large enemy unit was located in the village of An Quang. Frequently such information proves to be spurious. However, reluctant to miss any opportunity to engage a sizeable force, the brigade commander, Colonel Fred E. Karhohs, requested that the village be investigated by the air cavalry troop supporting his brigade.

Although not in a direct support role, Troop C, 1st Squadron, 9th Cavalry directed most of its efforts in support of the 2d Brigade. A consistent practice in the cavalry squadron is to assign to one of the troops an area of operations (AO) which is coincident with the AO of the brigade with which that troop normally operates. This engenders a continuity and harmony in operations which has proved quite successful.

Responding to the requests of the brigade commander, the commanding officer of Troop C, Major Donald V. Adkins, planned an operation in the vicinity of An Quang for 28 June.

Early on the morning of 28 June, Major Adkins began his aerial reconnaissance of An Quang and the surrounding area. The physical layout of An Quang and the dense vegetation in the village did not permit him to determine if there were, in fact, any enemy troops present in the village. He elected to insert his Blues at the south end of the village in open terrain with sand dunes and thick shrubs available for cover. After a ready reaction force was designated and an artillery battery was pointed towards the landing zone (LZ), the Charlie Troop Blues air assaulted into the LZ just south of An Quang at 0810. Once organized on the LZ, the platoon leader, Lieutenant Edward J. Schultz, started his platoon cautiously moving towards the village. At 0817 the point squad received a fusillade of automatic weapons fire. Miraculously, and because of the alertness of Sergeant Hunley, not a man was wounded. Almost immediately Major Adkins flew his aircraft, a *UH-1C* armed helicopter, over the edge of the village in order to provide suppressive fires. Over the village, practically at a hover, his co-pilot, WO Raymond A. Lossing, observed several individuals with weapons moving towards bunkers. These enemy were quickly dispatched by the alert door gunner and first blood was drawn by Charlie Troop.

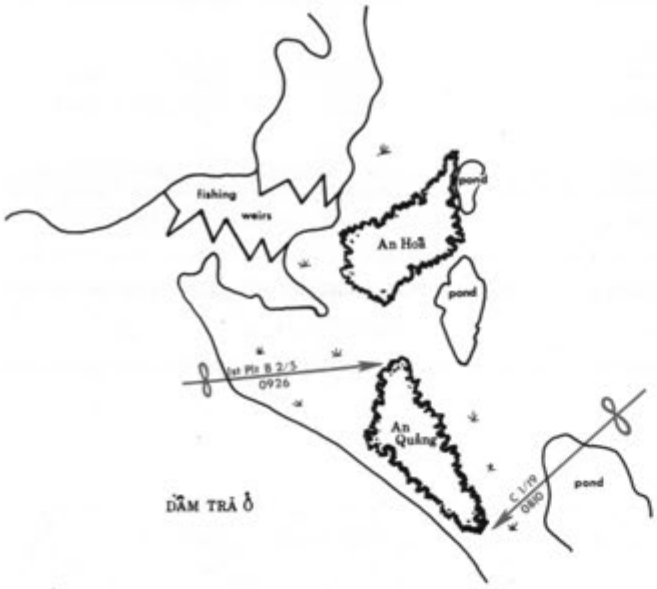
ACT II

(Situation Development)

Events began to unfold rather rapidly now. During his repeated passes over the village Major Adkins and his crew observed a number of other enemy troops scurrying about. In addition, he became the target of intense small arms fire. He quickly decided to call for the ready reaction force which was on a 15 minute alert at LZ *Uplift,* a five minute flight to the southwest. Immediately upon learning of the contact both the brigade commander and the squadron commander, Lieutenant Colonel Robert H. Nevins, Jr., headed toward An Quang.

In the meantime, after deciding to seal off An Quang to the north by inserting the reaction force in this area, Major Adkins was relieved on station by his weapons platoon leader, Captain Donald J. Fritsche. Captain Fritsche commenced an artillery preparation of the LZ.

Providentially, at the last moment, Fritsche decided to move the LZ from the exposed middle ground between the two villages to a location as close as possible to the northern edge of An Quang.



This location had rice paddy dikes which afforded cover for the assaulting troops. In a final preparation and for suppressive fires, Colonel Nevins and Fritsche flew a cover for the lift ships as they approached the LZ. As he was covering on the left, Colonel Nevins observed eight to ten enemy in green uniforms with weapons and packs hurrying toward their offensive positions. He quickly brought his gunship around and engaged these people, killing four of them and wounding several others.

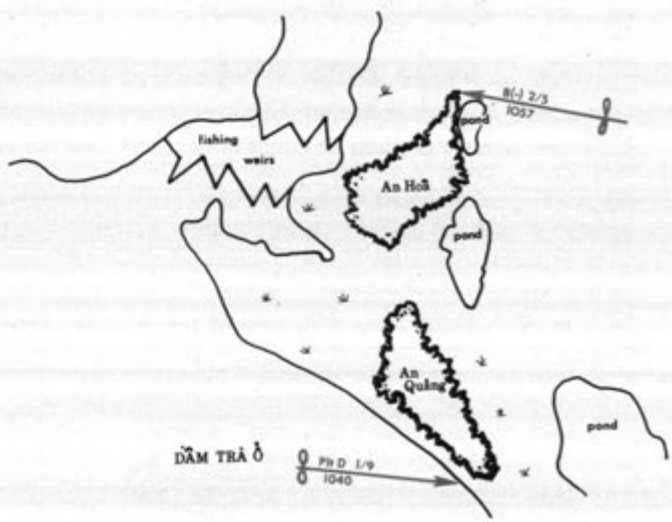
At 0926 the first platoon of Company B, 2d Battalion, 5th Cavalry was on the ground and was receiving furious automatic weapons fire from both An Quang and An Hoa, the village three hundred meters to the north. Fortunately there was good cover and only one man was wounded. At this juncture the commander of all elements conferred on the radio net and the unanimous and obvious conclusion was that there was indeed a sizeable enemy force at hand and this force was prepared to stand and fight. The next decision to be arrived at was just what the potential of this enemy force was and how much terrain did they occupy.

After fire was received from An Hoa, Colonel Nevins flew over this village at low level to determine the disposition of the enemy. Once again he observed a number of well-equipped hostile troops moving to defensive positions. Also, as to be expected, he received considerable small arms fire from the area. However, he exacted his own toll of enemy dead during the process. A quick conference between Colonels Karhohs and Nevins brought about the decision to insert the remainder of the reaction force at the north end of An Hoa and thus seal off both villages. It was also decided that Charlie Troop would retain operational control of all units until the situation was further developed.

Another drama was developing at the comand post of Charlie Troop at their base camp. Immediate airstrikes had been requested but for one reason or another there were no O1 aircraft available for a forward air controller (FAC) to fly. In a display of close teamwork and cooperation with a sister service Charlie Troop provided one of their *UH1D* lift ships to get the FAC, Captain John Lewis, over the target area. For the next hour and forty-five minutes Lewis displayed the highest degree of professionalism and courage by vectoring and putting in several airstrikes, all the while subjecting himself to intense hostile fire. These strikes were conducted between and during the air assaults of additional troops.

Shortly after the initial contact was established it was noticed that groups of enemy troops were attempting to exfiltrate the battlefield around the right flank of Charlie Blues. Not devoid of resources, Colonel Nevins offered the use of one of Delta Troop's (the ground troop of the squadron) rifle platoons to assist the Blues in blocking the avenue of escape. At 1040 the third platoon of Troop D, 1/9th Cavalry was air assaulted next to Charlie Blues and completely sealed off the southern exits.

With the decision to commit the remainder of the reaction force there was still the reservation of "let's wait and see" before any additional units would be committed to the fray. The decision was very short in coming. At 1057 when Bravo Company (-), 2/5th Cavalry was air assaulted at the northeastern edge of An Hoa, intense fire came from well emplaced enemy troops. It was quickly decided by all the commanders concerned that the situation had been sufficiently developed to the point that there was no doubt about the fact that a large enemy force had been discovered. It was time to phase into reinforcement and exploitation.



ACT III
(Reinforcement and Exploitation)

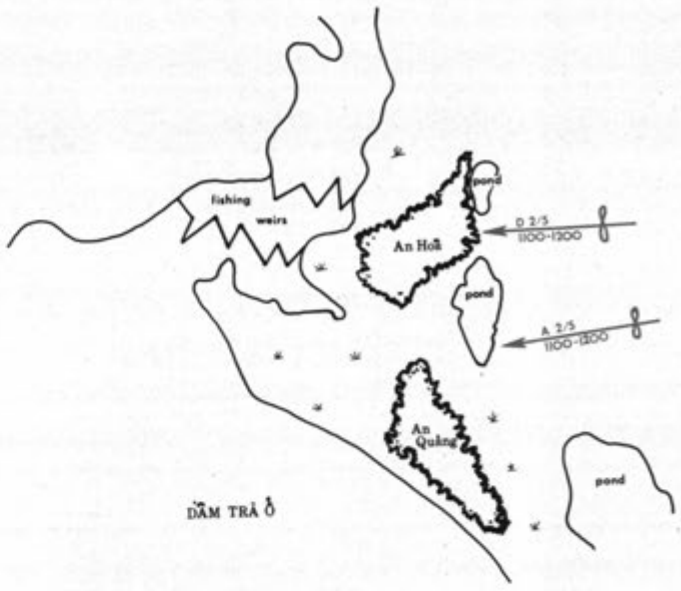
The well practiced machinery of the airmobile division was quickly put into motion and within a very short while two companies, A and D, 2/5th Cavalry were on their way. It was at this point that Colonel Karhohs decided the magnitude of the operation had reached such scope that it was time for his battalion commander, Lieutenant Colonel Joseph McDonough, to assume operational control of all elements.

This did not end the mission of the cavalry troop for the two rifle platoons came under Colonel McDonough's control and continued their blocking mission. It also meant that the aircraft of the troop, flying in teams, would continue their aerial reconnaissance and screening of the battlefield. This would provide all around security for the ground elements and would increase tenfold the difficulties of enemy exfiltration from the contact area. This screening had been in process throughout the engagement and would continue even through the night.

Within an hour's time, Company D, 2/5th Cavalry was air assaulted on the beach area three hundred meters to the east of An Hoa and Company A was assaulted just to the south in a position four hundred meters to the east of An Quang. By this time Air Force fighters were stacked up overhead waiting their turn. Between each troop lift the unrelenting pressure was maintained on the enemy by the superbly accurate bombing of the fighter pilots.

One must witness first-hand the extent and thoroughness of the defenses of a fortified village in order to comprehend the tenacity with which the enemy can occupy and hold on to such a village. Without a doubt he suffers a number of casualties but his fortifications can withstand all but a direct hit by large ordnance. Based on experience from Phan Thiet, far to the south, to Duc Pho, far to the north, Colonel Karhons directed that an intensive artillery and aerial bombardment be used to devastate the fortifications before any ground assault would be attempted.

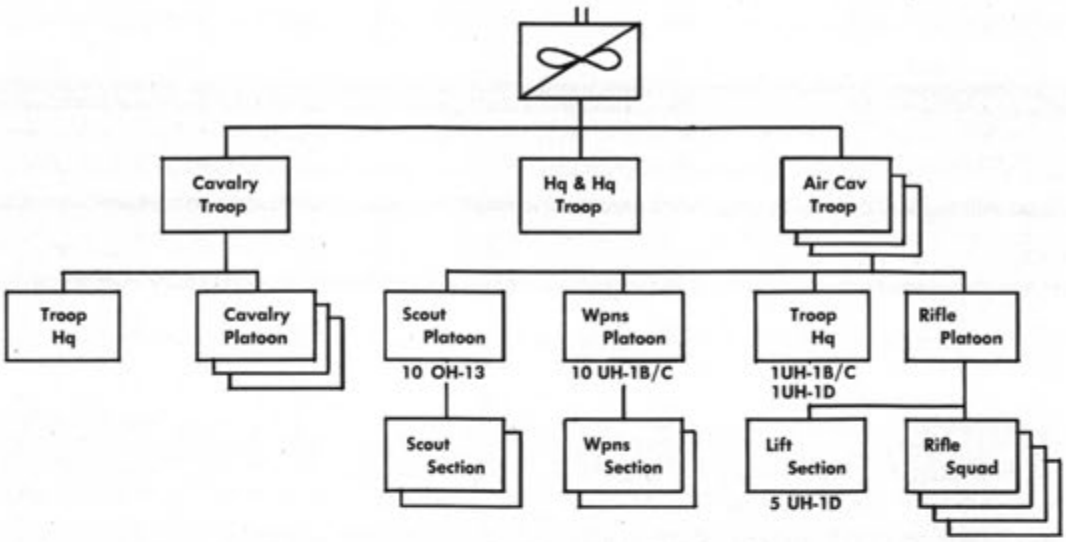
While this hot steel was falling on the target area a platoon of *M48* tanks and four twin 40mm antiaircraft vehicles (dusters) were proceeding to the area. Once again the aircraft of the troop were employed in yet another mission, *OH13S* scout aircraft were used to guide the tracked vehicles over the best route. This had previously proved to be a highly successful means of delivering armor to the battlefield in an area where it is necessary



to pick a suitable route around the many pitfalls found in the rice paddies and on the poor roads.

In an effort to beat the onrushing hours of darkness an assault was initiated at 1530 by Bravo and Delta companies on An Hoa. Bravo company attacked from the north and Delta company moved in from the southeast. Both companies used tanks and dusters and both units encountered a fierce, fanatic enemy who was still well entrenched and was determined not to give ground. In the area of the Delta company assault one of the dusters became immobilized and the company suffered four men killed and eight wounded. Neither company could penetrate the elaborate defensive bunker complex. Besides the bunkers, there were a number of snipers positioned high up in the palm trees. It was decided to redeploy all units in a cordon about the two villages and continue the artillery shelling of the area.

As the pressure continued, Colonel Nevins directed the Delta Troop commander, Captain Michael Cromley, to take additional elements of his troop and reinforce the squadron units already on the ground. Thus at 1615 Delta Troop (-) was constituted with the Charlie Blues under its operational control. Delta then began to extend its cordon north toward Company A 2/5th Cavalry. By 2010 all units were established in a tight cordon from the north of An Hoa around the eastern sand dunes to the southern end of An Quang. It was also decided to extract the first platoon of Company B, 2/5th Cavalry from their somewhat tenuous position between the two villages. This lonely platoon had almost been forgotten up to this point but indications pointed to the enemy strength being at least



one battalion. At 2115 hours the platoon was extracted under the cover of darkness.

Now the bombardment recommenced in full fury. The only avenue of escape remaining was to the west over the water and this was blocked off by a continuous low-level screening conducted by the aircraft of Charlie Troop. The weather was hazy and the on-again off-again proposition of artillery illumination made flying difficult, but not for one minute was the vulnerable west without air cover.

The cordon proved its worth as enemy troops attempted to escape. One group made their way toward the positions of Company A, 2/5th Cavalry and made a futile effort at breaking out. They then threw several hand grenades into Delta Troop's position but were repulsed by the alert sky troopers. Several of the enemy were killed in this foray.

ACT IV
(Victory)

The early morning hours of 29 June found the cordon still intact. A cessation of all fires was observed in order that a large number of civilians could be evacuated. During the previous day's battle, groups of civilians had made their way out of the villages. Firing had been stopped on these occasions and several hundred civilians had been evacuated from the area of contact.

The enemy was not yet defeated; Delta Troop began to receive sniper fire from the southeast corner of An Quang. Once again airstrikes were called for and the Air Force responded with alacrity and efficiency. They made 16 separate strikes that day and much of their ordnance included 2000 pound bombs which left quite a hole. These bombs achieved remarkable results. It appeared obvious that the remaining forces of our adversary had regrouped and consolidated in An Quang and they still had a sufficient number of bunkers to present a stiff resistance. However, the heavy bombs eventually devastated all defenses. The Charlie Troop men said the ground actually trembled even at their location each time one of the bombs detonated.

A push began in An Hoa while the bombardment continued on An Quang and by noon 31 enemy bodies were found. By early afternoon our forces pressed into An Quang and met no resistance from a thoroughly beaten and demoralized enemy.

As happens so frequently in such a battle only conjecture can be made as to the unit designations of the opposing forces. In this case it was only after some prisoners were taken and documents were examined that it was determined that the 9th Battalion, 18th NVA Regiment had been reduced to an ineffective combatant. A total of 84 enemy bodies was found. There were also 21 individual weapons, 25 packs, and 1200 rounds of ammunition captured. This does not tell the full story for even as late as a month and a half after the engagement NVA soldiers were captured who participated in the Dam Trao Lake Battle. They related how some 150 enemy troops were killed and a number of others wounded.

EPILOGUE

The "cav concept" does not have its only application in a village environment. It has been successfully employed in the Ia Dang Valley, Phan Thiet, the An Lao Valley, Duc Pho, the Bong Son Plain, the Song Re Valley, and Chu Lai. Its success has thrived on the resourcefulness and imagination of the troop commanders, squadron commanders, and brigade commanders. It is **their** cav concept which has ushered in a new and dramatic approach to warfare which capitalizes on mobility, firepower, and the indomitable spirit of the Sky Trooper.

SHORT, OVER, LOST or...TARGET

A range for firing novel ideas which the readers of ARMOR can sense and adjust. This is a department for the new and untried from which the doctrine of tomorrow may evolve. Items herein will normally be longer than letters but shorter and less well developed than articles—about 750 words maximum is a good guide. All contributions must be signed but noms de guerre will be used at the request of the author. ON THE WAY!!

NEGLECTED WEAPON

by Arthur W. Shantz, Jr.

The decision to delete the Davy Crockett weapon from the TOE of the Armor and Mechanized battalions leaves a support requirement unfilled. This is the need for a weapon within the battalion framework which is capable of delivering massive and simultaneous supporting fires. Policy dictates that these be non-nuclear. The commonality concept and I think sound military reasoning both indicate that it must not be limited to the delivery of any one kind of ordnance. Is there such a weapon? There most certainly is. And, what is more, it has been in the inventory since the early 1960's.

I refer to the 115mm multiple rocket launcher *M44*. This weapon is capable of projecting some forty-four missiles up to seven kilometers in the matter of a few seconds. Yet, to judge from the reports coming back from Vietnam, and the discussions in such professional journals as *ARMOR*, you would think such a weapon never existed. Perhaps its existence and its considerable potentialities have been overlooked.

Multiple rocket launchers have not always been in such eclipse. During World War II these weapons, beginning with the famous Russian *Katutsyia*, were used to great effect by our own Army and the *Wehrmacht*, as well as by the Red Army. The Navy got into the act as well, mounting rocket projectors on landing craft for close-in pounding of landing beaches. Multiple rockets, however, did not go out of style with the coming of the A-bomb. They were used extensively in Korea. And today they figure prominently in the TOE of both the Russian and West German Armies. In Vietnam the Navy is still using its rocket ships with powerful effect.

This popularity is not unwarranted. While multiple rocket launchers are by no means as precisely accurate as artillery, they are capable of saturating a given area with fire in an amazingly brief period of time. One would think that the value of this feature would be self-evident in preparation for a breakthrough or in shooting from the hip against a fleeting target (for example a VC ambush) where intensity of firepower is more important than accuracy. Everything said here about high explosive ammunition goes double for toxic agents or smoke.

The most important argument in favor of multiple rockets is the tremendous shock effect they have on target personnel. Evidently the intensity of a rocket barrage leaves even veteran troops dazed and confused, an effect equalled only by nuclear weapons and by massive air strikes. This should be of particular note to armor since so much of its mission is the creation and exploitation of shock on the battlefield. In this regard rockets are superior to aircraft in that there is no lag between calling for close rocket support and its delivery, since the rockets are already on the battlefield. And, unlike nuclear weapons, rockets result in neither political nor radioactive fallout.

There are problems inherent even in adapting an already existent weapon. The multiple rocket's rate of fire is sure to require extensive logistical support. Just as certainly, there will be jurisdictional disputes. However, there is really only one thing to say about the multiple rocket launchers. Use them! Mount them on *M113s* or carry them in by helicopters, but use them! Develop a fragmentation warhead as has been done for the 2.75 inch rocket, but use them! This weapon is too valuable, too versatile to continue ignoring it.

4th Place

"A modern, resourceful and bold commander
will happily exploit the dark of night,
and will move purposefully with his troops under its cover
in order to gain operational advantage over a night shy enemy."

-General Günther Blumentritt

THE 24 HOUR SOLDIER

by Captain William A. Izzard

Why don't commanders train for night operations? This may seem like the question of an uninformed person, ignorant of the doctrine and methods regarding the conduct of our night training. Unforunately, it is a valid question, and one which too few commanders have taken the time to answer or even consider.

Science has given us so many devices with which to see at night that our ability to use our eyes and ears seems to be a fading skill. Moreover, our confidence in our own ability to operate with unaided vision at night has decreased. We depend heavily on metascopes, infrared vision devices, xenon searchlights and other more sophisticated equipment. We even feel insecure without a flashlight at night. This reliance on aided vision would seem to indicate that we are esssentially night blind. Without these night vision devices we are reduced to our own senses for sight. And soon, fear of the unknown, lack of confidence in our ability, and fear of confusion reduce us to marginally effective night fighters. Where did this lack of confidence begin? To answer this question, it is first necessary to note the development of night operations. We must also determine where our training is faulty, and what should be done to correct the faults.

Few commanders today will argue against the value of a highly trained and well-disciplined night fighting unit or against the necessity of night operations. Notable military tacticians did not always agree on this. Frederick the Great, for example, avowed never to fight at night. Napoleon, feeling only slightly less apathetic toward night combat, had little faith in such operations.

CAPTAIN WILLIAM A. IZZARD, *Armor, was commissioned in 1962 from Pennsylvania Military College. He graduated from the Armor Officer Basic Course and Airborne Course in 1962. He was then assigned to the 3d Battalion, 68th Armor, Germany, where he served as battalion mortar platoon leader, motor officer, company executive officer and company commander. In 1966 he returned to CONUS and was assigned to command a basic training company at Fort Polk, Louisiana. He was graduated from the Armor Officer Career Course in April 1967 and is now assigned to MACV.*

The Russians, however, thought differently. In 1794 they defeated a numerically superior Polish force near Warsaw in a daring and brilliantly executed night attack. World War II produced many examples of successful night operations in both Europe and the Pacific. Most of these, however, were conducted by the Russians and the Japanese. The Allies failed to take maximum advantage of night combat. The renowned military historian, B. H. Liddell Hart, stated that commanders were obsessed with the confusion of night operations and, therefore, chose to fight during the day.

World War II Allied commanders shunned night operations because of the fear of confusion and lack of control. As a consequence, many commanders planned their daily scheme of maneuver to end, if possible, before night. This was noted, and capitalized on, by the enemy. After the Allied invasion of Normandy, German General Diestel, Commanding Officer of the 364th Infantry Division, wrote,

> We were never hurried because of the systematic-organized tactics of the Allies. We always knew there would be a pause at night when the enemy would regroup for the next day's operations. It was these hours of darkness that enabled us to retire without suffering many casualties.

After World War II, we finally realized the importance of night operations and began to train our soldiers to use and protect their eyes at night. The basic principles of night fighting—the techniques of off-center vision, scanning, the use of red goggles, and the use of the senses of touch, smell, hearing, and taste—were taught as important elements of night fighting. As these basic principles of night vision were being taught, we began work with tank-mounted searchlights to solve the problem of our night-blind tanks. The most important development, however, was our recognition of the importance of developing a proper night fighting attitude in our soldiers.

During the twelve-year period immediately following World War II, several experiments were conducted regarding man's ability to function effectively at night. The British and Canadian discoveries that the average man, without training, could maneuver his way through a dimly lit maze using only off-center vision, were notable.

Experiments conducted by the U.S. Army Human Resources Research Office (HumRRO) determined that the temporary blindness caused by looking

into a distant searchlight accounted for poor marksmanship when small arms and machinegun fire were directed against the light. Likewise, forward observers found difficulty in adjusting accurate artillery fire on the light, as did tank crews in engaging the light with a 76mm tank gun. A later experiment, conducted by HumRRO, determined that a soldiers' performance was proportional to the amount of night training he received and varied with the difficulty of the task.

As unrelated as these experiments may seem, they led to the following conclusions:

1. Training objectives must be oriented toward mission requirements.

2. A certain minimum amount of night training in each phase of operations is necessary to maintain the desired degree of proficiency.

3. Proper individual night fighting attitudes must be developed for any training to be successful.

These three conclusions represent the basis from which our night training must proceed. The last conclusion is the one we tend to disregard. Our soldiers do not, unfortunately, possess the proper night fighting attitude.

Let us examine each of these conclusions in detail.

Armor units must be able to operate at night as skillfully as they do during the day. This requires training. Since training time is limited, commanders must ensure that only mission oriented night training is conducted. There is no place for numerous bivouacs with little or no integrated night training. In order to attain the desired skill levels, commanders must keep in mind their final mission goal of delivering a silent, deadly blow to an enemy unit, in the dark of night. As Major A. Seaton stated in the January 1954 *Military Review*, "Until a unit or formation is able to move across difficult country in absolute darkness and deliver a silent assault, it is not trained for night fighting." The mission, and only the mission, should dictate the type training required. With the mission in mind, what are the procedures for developing an effective night fighting unit?

After the basic principles and techniques of night vision and night movement have been explained, the actual instruction and evaluation of the unit should begin. A good starting point would be to require the troops to recognize silhouettes of personnel and equipment projected in a dull red light on a screen located in a totally darkened room. By use of the basic techniques of night vision taught previously, soldiers will be able to accurately identify the projected silhouettes. As training progresses, it will soon become evident that some personnel have better night vision than others. These soldiers should be utilized to aid less confident individuals in developing better night vision proficiency, and in steadying the responses of the unsure soldiers during night field training exercises.

Classroom instruction is logically followed by field training. Here, developmental research can, and should be of assistance. Goggles tinted to simulate varying degrees of night illumination should be developed for use during daylight training. Such a training aid would enable a unit to train for night operations during the day, thereby being afforded a maximum degree of control and observation. Mistakes, possibly undetectable at night, could be noted and corrected on the spot.

Confidence will build slowly as training progresses from the simple to the more complex. In all phases of training, however, one should progress only as rapidly as the unit absorbs and understands each training objective. In many instances, a night operation has become a complete waste of training time because the unit did not understand what had been taught previously. As a result, the exercise lost its training value and turned into a series of confusing and meaningless maneuvers. Further, the attendant confusion caused the troops to lose their confidence in the value of night operations.

To help preclude a loss of confidence, all personnel should be made aware of the fact that night movement must be slower and more deliberate than day movement. Commanders at all levels should realize this, and not place upon their subordinates unrealistic demands of time. Unwise or unreasonable tactical employment of a unit will cause the unit to race through the maneuver and lose complete control.

Another factor to be considered in building confidence is the development of the senses of taste, touch, hearing and smell. To help develop these four important senses at night, squads or tank crews should be formed into dismounted patrols, given a patrol route, and instructed to obtain certain information noted during the patrol. The information must be pre-planted so that the thoroughness of patrol may be tested. Collecting the information will test and sharpen their ability to "see" at night. It will also provide further training in night land navi-

gation. A patrol of this nature could detect the presence of an enemy by cooking odors, noises and lights. Since noises carry a long distance at night, considerable information could be gained about a unit with poor night discipline. By the feel of the terrain, the patrol could also identify the type of terrain its units may have to cross in a pre-dawn attack.

When the basic dismounted skills of night fighting have been learned, the mounted phase of training should begin. Since driving is part of every mounted night operation, at least minimum skill in infrared and blackout driving should be attained by all members of each crew. Due to the rapid turnover of crews, more night driving is required than is received during field training exercises, Army training tests and tank gunnery exercises. All crew members must be taught, and required to perform their duties without the aid of lights. Gunners and loaders are frequently just along for the ride. As a result, they quickly lose interest in the training. Gunners should be required to operate their controls and read their instruments under turret blackout conditions. Loaders should never need to see a round of ammunition to identify it or to see a coaxial machinegun to reduce a stoppage.

As stated earlier, soldiers have considerable difficulty in accurately engaging a searchlight aimed at them. This simple fact can be capitalized on by proper use of the searchlight against an enemy. Conversely, the technique of ranging on, and effectively engaging, the light should be practiced. A unit must know both how to employ and to defeat searchlights in order to understand fully their use.

Current Army training doctrine is that 25 percent of all platoon, and 50 percent of all company, tactical exercises will be conducted at night. Army Training Program 17-37 states:

> Sufficient night training will be scheduled to achieve proficiency in night operations appropriate to individual and unit night discipline, night firing, night vision, infrared vision devices, tank searchlights, artificial moonlight as required.

The allotted training time is sufficient provided that commanders use it effectively. Unfortunately, many lull themselves into believing that they are actually training their units for night operations when, in truth, they are merely existing in the field at night. Considerable training time is wasted through unit commanders relying extensively on night road marches and tactical night occupation of assembly areas, to the exclusion of all other night training. Such needless repetition of training can only cause the troops to hope for a quick end to the march, a hasty occupation of the assembly area, and a chance to go "administrative" again. Where does the training value in such a situation lie? More adequate use of the time could be made by integrating into the road march a simulated minefield or other appropriate obstacle to be overcome. The road march could terminate realistically with a night passage of lines or relief in sector of another platoon. This platoon could then be required to execute a night withdrawal.

Once in the assembly area, many units rapidly lose their tactical posture. The guards often regard their tours as details rather than as responsibilities, because they are relatively sure nothing will happen before morning. I hesitate to count the number of times I have been able to locate a company assembly area by its characteristic "fumbling in the dark" noises, or even more obviously, by the numerous flashlights dotting the area which are being used to locate a relief guard or lace a boot. It is a poorly disciplined unit that permits its personnel to use flashlights to get dressed.

Why are these deficiencies not corrected? Sadly, they continue to exist because the officers and noncommissioned officers pretend not to notice. If these leaders noticed, they would have to get out of a warm sleeping bag to correct the faults. A short-cut method often used is to shout across the assembly area, "Get those lights out over there, we're tactical." Amazing, but all too true.

The most common fault in our night training, however, is our disregard of the soldiers themselves. In our sometimes ill-conceived attempt to look busy, we train all day and then expect the troops to function well at night. When the troops wonder why there is so little rest, they are told there is a training schedule to follow. As a result, the unreceptive mind wanders off into the night.

Would it not be better to schedule day training so as to facilitate night training? Compensatory time should be used prior to night training to place the personnel of the unit in a more receptive mood for the demanding, and hopefully realistic, training to follow. The human element is the key to successful or unsuccessful night training. We must approach night training by first realizing the fears and motivations of our soldiers, and then develop this train-

ing so as to minimize fear and maximize motivation.

Soldiers have a sense of fear at night, both of the unknown and of the confusion they are certain will arise during night operations. If not already present, fear is easily aroused at night. As it grows, it leads to illusions, mass panic and false reports. Thus, soldiers' imaginations lead them to believe that night combat is too difficult and unreasonably dangerous. German General Blumentritt in a 1953 article in *Military Review* said of fear:

> "Night, therefore, affects the imagination as well as the nerves. The tendency is to imagine dangers which do not exist. All senses are strained to the utmost, and quite harmless objects, sounds or movements seem sinister. If hunger, fatigue, and combat excitement are added, all of these influences are intensified and there is just a narrow gap separating the troops from panic and mass hysteria."

Fear is further aggravated by a loss of direction and control, two areas with which commanders should be particularly concerned. A possible solution minimizing fear lies in a Japanese manual on night operations which states that discipline is needed to repress individual weaknesses and that silence is necessary to provide calm behavior.

Commanders must instill in their subordinates the idea that darkness can be an ally as well as a foe. To do this, they must develop confidence in order to repress fear. Virtually anyone realizes that motivation aids in developing confidence. But few commanders think of conducting and evaluation night training with troop motivation as a guiding factor. Motivated soldiers are the initial ingredient in producing a successful night fighting unit.

"One of the keys to successful training is developing in our men the proper attitude toward training . . . Proper training will also foster pride and confidence in the individual." In his *Guidelines for the Leader and the Commander,* General Bruce C. Clarke thus clearly defined the commander's training responsibility. These ideas apply particularly to night training because of the increased problems involved with human behavior and unit movement and control.

In developing a proper attitude in their subordinates, commanders must make their men feel that they are important to the unit and not just so many serial numbers. Before training commences, all must believe in the need to learn night tactics. Now this is especially true in view of the extensive use of such tactics in Vietnam. Developing and maintaining interest in night training is a difficult task for any commander, but it can be simplified by encouraging competition between units and by emphasizing that the task is not too big to master. Commanders must recognize the intense human need for recognition and praise. They must give credit where credit is due. None of these techniques are of any use if they are applied in an impersonal or half-hearted manner. They must be combined with the evident personal interest of commanders to improve and maintain proper troop attitudes toward training. Again, according to General Clarke, "The outstanding commander is a master of the combination of knowing how to do a job and knowing how to motivate his men to do a job."

It took a world war to make us realize that we needed to develop the ability to fight successfully at night. Science has invented remarkable devices to aid us in seeing at night. But the success or failure of a night mission still rests with the commander and his men. Unless we begin to approach night training from a human point of view, and use science only to enhance the ability and confidence of our troops, we are wasting money and lives. All commanders should begin night training with motivation and attitude in mind; first of themselves, then of their units. A twenty-four hour soldier must first believe he is one before he can succeed at being one.

BIBLIOGRAPHY

Army Training Program 17-37, Department of the Army, 9 August 1966.

Bailey, C. J. and Howard C. Olson, *Illumination and Terrain as Factors Affecting the Speed of Tank Travel,* U. S. Army Human Research Office, George Washington University, Washington, D. C., March 1958.

Blumentritt, Guenther, "Operations in Darkness and Fog," *Military Review,* XXXIII, 28 July 1953.

Clarke, Bruce C., *Guidelines for the Leader and the Commander,* Military Service Division, The Stackpole Company, Harrisburg, Pennsylvania, 1963.

Gordon, Donald A., *A Survey of Human Factors in Military Night Operations (with Special Application to Armor),* U.S. Army Human Research Unit, Fort Knox, Kentucky, November 1957.

Landis, Albert B., "Night Attacks, The Effect in WW II," Military Monograph, The Armor School, Fort Knox, Kentucky, 1947.

Seaton, A., "Techniques of Night Fighting" *Military Review,* XXXIII, January 1954.

Yadav, H. S., "Night Attack," *Military Review,* XXXVIII, April 1958.

IF THIS COPY IS NOT YOURS

SEE PAGE 64

BE SURE WE KNOW YOUR CURRENT ADDRESS

1st Place

HERRINGBONE

A Useful Combat Tool

by Captain Jacob R. Degenhardt, Jr.

The herringbone formation is one of the combat formations most frequently used in Vietnam. Rather than taking the stand that the herringbone is a new technique born in Vietnam, it seems more prudent to await "Letters to the Editor" from the readers of *ARMOR* in the hope that its true origin may come to light. The author first became acquainted with the herringbone concept on a visit to the 1st Squadron, 4th Cavalry, 1st Infantry Division and gratefully acknowledges the contributions and suggestions of members of that unit.

Essentially, the herringbone is a counter-ambush formation which may be used successfully by any column of armored vehicles be they tanks, ACAVs (Armored Cavalry Assault Vehicles), APCs or armored cars.

CAPTAIN JACOB R. DEGENHARDT JR., *Armor, was commissioned in 1962 from the United States Military Academy. He graduated from the Armor Officer Basic Course, Ranger Course, and Airborne Course in 1962. He was then assigned to the 1st Squadron, 14th Armored Cavalry Regiment, Germany, where he served as a platoon leader, troop executive officer, maintenance officer, and troop commander. He returned to CONUS in 1966 to become the S3 and then S3(Air) of the 2d Squadron, 11th Armored Cavalry Regiment, Fort Meade. He accompanied the regiment to Vietnam and served with it in combat for one year. Following a year of duty in Vietnam with the 11th ACR, he returned to CONUS in 1967 and attended the Armor Officer Career Course. He is currently assigned to the Staff and Faculty of the Engineer School.*

To execute this formation, vehicles move into position as shown in Figure 1. The unit commander may prescribe the herringbone as a standard formation to be taken up at the halt in the absence of other instructions. It is then initiated, without command, by the lead vehicle pulling to one side of the route of march, facing outward and halting. The interval between vehicles may vary from 10 to 50 meters. The objective is to concentrate the forma-

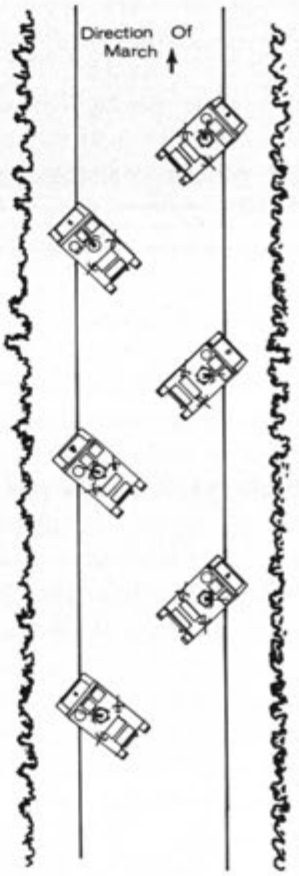


FIGURE 1

tion sufficiently to achieve overwhelming firepower to the flanks while maintaining sufficient dispersion to force the enemy to employ aimed fire. A relatively tight formation enables the unit to fight an ambush as a team, thus leaving the flanks of each vehicle protected by another vehicle.

When taking up the herringbone, vehicles should pull well on to the shoulders of the road or trail. This will clear a center lane and allow movement along the entire length of the column for command and control, resupply, medical evacuation, reinforcement and the passage of administrative vehicles from the ambush area. In addition, should there be a ditch, the vehicles will be in a position to cover it with fire. While it is true that there may be mines on the shoulders of the road, it is equally true that there may be some on the road itself. Rather than to become involved in a useless game of Russian roulette with mines in an ambush site, it is better to attempt to keep the road open and to cover the ditches with fire.

The herringbone concept logically can be extended to a mobile formation. The transition is simple and merely makes use of the leapfrog technique which is similar to movement by alternate bounds. Figure 2 gives a graphical representation of a troop executing the movement. The first platoon halts in the herringbone pattern. The second platoon passes through the first and halts in the herringbone, while the third platoon continues to march and passes through both platoons before it, too, halts. The first platoon then passes through the others and the formation continues up the road. The speed with which this leapfrogging action is accomplished is dependent primarily upon vehicle commander and driver coordination. Futhermore, it may be done either slowly to permit a minesweeper team to clear the route in front of the column or rapidly if the commander chooses to disregard the mine threat.

The herringbone is not an all-purpose road-traveling formation. When escorting administrative convoys, the formation would be used by the combat vehicle escort only at the halt whether the halt is administrative or the result of an ambush. The mobile herringbone is designed to be used by a column consisting of combat vehicles only, which is moving through a danger area. It is a formation well suited for a unit expecting imminent contact or in actual enemy contact.

Figure 3 illustrates the use of the herringbone by a column of armored vehicles encountering an ambush. The head of a company or troop column has

Armored Cavalry Assault Vehicles of the 11th Armored Cavalry Regiment take up the herringbone formation during a search and clear mission in Vietnam.

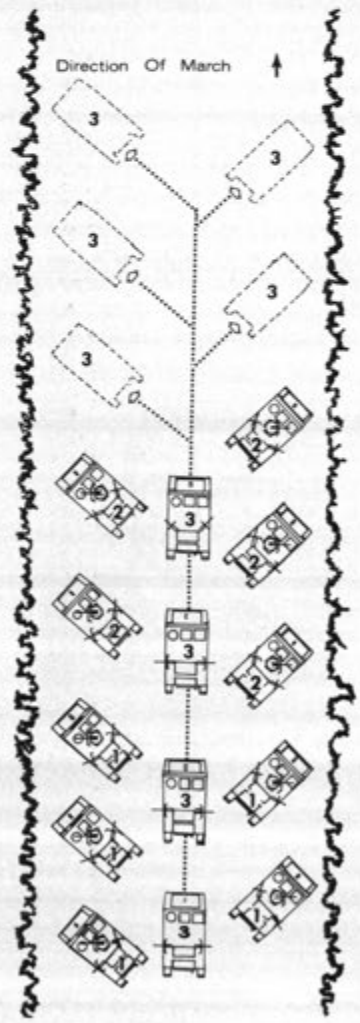


FIGURE 2

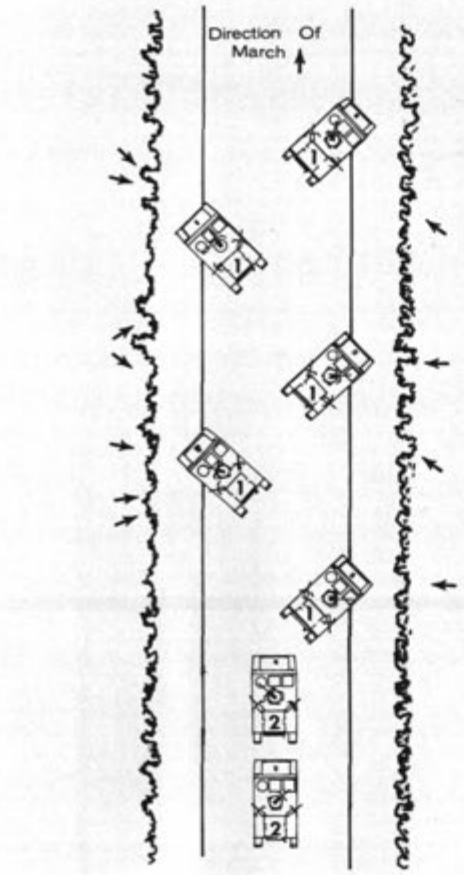


FIGURE 3

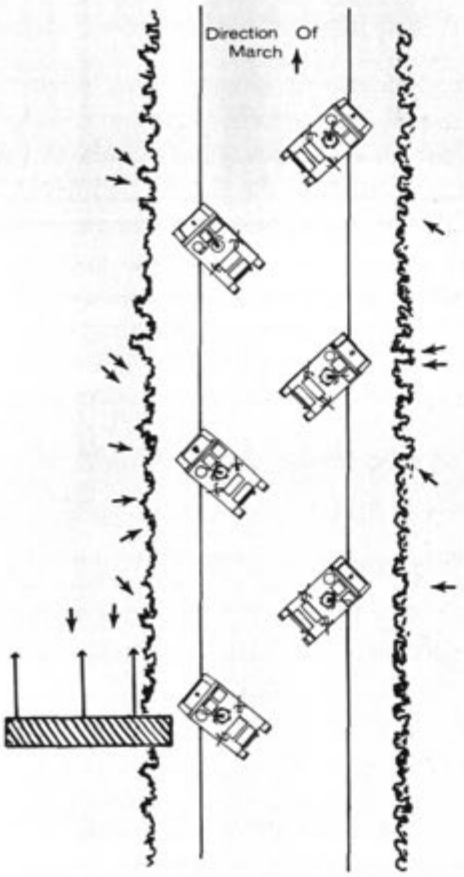


FIGURE 4

assumed the herringbone formation after the lead platoon triggered an enemy ambush and became heavily engaged from both sides of the road. As is usually the case, the jungle on both sides of the road is too dense to roll the flank of the ambush by an armored sweep. At this point, the commander, even though still unsure of the enemy strength and as yet unaware of which is the strong side of the ambush, begins to leapfrog his unengaged platoons into the ambush zone until either his entire column is engaged or he reaches the far end of the ambush zone.

This is a boldly offensive counter-ambush reaction. Some might argue that it is foolhardy. However, rarely, if ever, is an armored unit in Vietnam fortunate enough to entice the Viet Cong to mass against it. The purpose of the maneuver is to fix and hold the entire ambushing force, if possible, in order to permit a higher commander to attempt the annihilation of the enemy force by the application of massive fire support and the maneuver of reaction forces. The essential key to success in this maneuver is fire superiority in the ambush zone. Were the Viet Cong ever to achieve sustained fire superiority over a concentrated American armor unit, it would be an entirely different matter.

Figure 4 portrays an armored unit in a stationary herringbone within an ambush zone. While the formation is categorized as stationary, the vehicle themselves are not necessarily static. They may adjust their positions within the formation to avoid being pinpointed by recoilless rifle or mortar fire. If available, a dismounted force sweeps the flank of the stronger side of the ambushing force. The herringbone serves as a good base of fire for the maneuvering infantry. Fire is shifted as the lead element of the dismounted maneuver force comes abreast of each vehicle in the column.

Throughout the action, by keeping the center of the road open, the commander is to move about his command with a certain degree of protection, to resupply his forces with ammunition and evacuate wounded from the ambush zone.

The herringbone is a formation born of experiment which responds to the unique demands of stability operations. It has proved to be an effective fighting technique in Vietnam. Application of this formation to operations in a different theater or to a different type war is left to the reader's imagination. The herringbone formation is another tool at the commander's disposal and, as such, it will be studied by all with an interest in mounted combat.

2nd Place

MAINTAINING THE MOMENTUM OF THE TRAINED SOLDIER

by Captain Elwood L. Fairbrother, Jr.

As Army officers, we can be either directly or indirectly responsible for formulating and conducting training programs of various types. Because this task is frequently passed down the line, we may have been given it at a relatively early stage in our career, after little or no formal guidance, and with only limited practical experience on which to rely.

When this situation presents itself, the most common line of reasoning is often:

> This task presents no extraordinary challenge to me. Haven't I, at some time or another in the past, received a course of instruction similar to the one I now have to organize? Even if I haven't had an identical course, I can probably recall a course, which, after changing a few words and ideas here and there, will adequately produce the desired results. If I am really caught unaware and at a loss for knowledge, all I have to do is refer to the appropriate field manual, technical manual, or other publication, extract pertinent information, and put it into the standarized lesson plan format.

You and I both know that what does happen in many instances is precisely as outlined above or something very similar to it. However, this is a long way from what is right, and it is up to you and me to correct this much too prevalent approach. In this light, all components of the training program should be evaluated in an effort to remove irrelevant, outdated, and impractical practices. From reviewing the origin of an idea down to the supervision of the newly trained individual, we should constantly be on the alert for ways to improve the training process. It is primarily through our firsthand, on-the-ground, individual approach that revision and improvement will be realized.

Before citing specific examples of what we might do, we should first analyze the organization and mechanics of the established Army training program. The first objective of this program is to train individuals to fill vacancies occurring within the active Army. After individuals have been trained, the next step is to form groups of individuals and train each group as a unit. Finally, the Army turns its attention to the training and maintaining of reserves, to include specialists and cadre destined to be used in the event of general mobilization.

To aid in the attainment of these various objectives, the Department of the Army prepares general and basic training policies and then issues periodic directives for implementation. Training given by individual Army units is based on the directives received through the chain of command and is conducted following a series of guides. These guides are field manuals, technical manuals, Army training circulars, Army subject schedules, Army regulations, and Army training tests.

As previously stated, the individual receives the first priority in the training process. This training begins when the soldier enters the Army and continues throughout his service. Initially he is taught the basic military skills. At later stages, he is introduced to a military occupational speciality and taught the principal skills of this speciality. Upon the successful completion of this phase of training, the individual soldier is considered qualified to perform his skill in a specific assignment within a unit.

Once he arrives in his unit, the soldier is taught to function as a member of a team. Unit training develops tactical proficiency and perfects the operating procedures and employment of manpower, weapons, and equipment. It continues to emphasize individual training by providing the opportunity for the soldier to learn the value of teamwork and to practice his individual skills.

Now that we have noted the training sequence, let us analyze the various processes of individual training. Broadly conceived, the purpose of individual training is to familiarize the new soldier with his surroundings and to acquaint him with his responsibilities as a soldier. During this period, he receives orientation on what is expected of him during his service. The commander who is responsible for the initial conduct of individual training makes every effort to eliminate personal problems and bring about a rapid adjustment on the part of the new man. Practice, drills, and physical training are given in order to develop discipline, coordination, and teamwork. The specific purpose of this training is to instill in the new soldier precise and orderly habits. As he gradually progresses, he develops proficiency in weapons, first aid, marksmanship, and maintenance of his individual equipment. Thus, provided with a firm foundation in the fundamentals, the soldier is then directed toward the development of his skill in a particular military job. It is assumed that, with the application of his knowledge and skill in the later phases of training, a high degree of proficiency will result.

the Army is not as efficient with human beings as it should be

The first phase of individual training is basic combat training. In this phase of training, all enlisted men without prior military service receive the training prescribed in the appropriate Army Training Program. Eight weeks in length, basic combat training has the broad objective of training the new soldier in the fundamentals of soldiering. Some of the specific objectives to be attained, as outlined in Army Training Program 21-114, include:

- An understanding for, and confidence in, the achievements and traditions of the Army.
- Appreciation of military courtesy and customs.
- Moral responsibility in military service.

- An understanding of the individual's role in the Army.
- Physical health, stamina, and agility.
- Personal hygiene.
- Confidence in weapons.
- An understanding of the fundamentals of combat operations.

The next stage of individual training is advanced individual training. It, too, is eight weeks in length. The broad objective of this phase is to develop within the individual a general knowledge of the organization, mission, and function of the unit within the branch to which he is assigned, and to qualify him to perform duties in a military occupational specialty. Specific objectives to be accomplished are outlined in the appropriate Army training program for the unit, supporting Army subject schedules, or in the programs of instruction of the service schools. This phase of training is usually conducted in training centers, service schools, or in TOE units. The instruction itself may be accomplished by on-the-job training, schooling, or a combination of these two. Upon successfully completing this phase of training the individual is awarded the Military Occupational Specialty (MOS) for which he was trained, and he is considered to be qualified for assignment as a replacement to units having a need for his particular skill.

After this individually trained soldier arrives in a unit, what can we do, not only to prevent deterioration of previously taught skills, but to enhance them? How can we assure that our efforts will contribute to the soldier's learning process and thus maintain the momentum of the learning process which he has received up to this point?

In spite of the elaborate training super-structure discussed previously, the Army is not as efficient in its dealing with human beings as it should be. Not only must human beings be trained, but also human beings must administer and manage the entire training effort. Consequently, human beings are the source of the training problem.

With the preceding in mind, we, as commanders and training supervisors, should focus our immediate attention on those items which serve as obstacles to effective training and, over which, we can exert the most influence.

Of primary importance is the requirement for the unit instructor to possess the necessary technical knowledge to conduct an effective class. However, not only should the principal instructor have this knowledge, but also the unit officers and noncommissioned officers—individuals to whom the soldier looks for guidance—should have it. A failure on their part to answer questions accurately will lead to a lackadaisical and unreceptive learning attitude within the unit.

Daily activities of a unit should follow clear-cut guidelines set forth in a training schedule. If this is properly posted and followed, all in the unit know what to expect and can prepare themselves both mentally and physically.

The training effort should not be over-centralized. Any unit is made up of diverse individuals, each of whom has varying degrees of different skills.

your subordinates may actually be an obstacle to training

It is doubtful that one individual possesses more talents than a combined group of individuals; consequently, one individual should not, either directly or indirectly, dominate every aspect of the conduct of unit instruction. Centralization of instruction, concerning either a technical or complicated subject which is governed by concrete guidelines, is an excellent method of ensuring uniform teaching. However, it should be administered by a committee of individuals, each capable of contributing to the end product.

A means of guarding against over-centralization is to ensure that the authority of junior officers is commensurate with their responsibilities. When this is lacking, the resulting situation is not only conducive to over-centralization, but it, by itself, can become an obstacle to effective training. Closely connected to the preceding is failure to use the chain of command. By going over the heads of your subordinates, you are defeating your training purpose. Having been left out of the planning phases, they are prone to feel no responsibility for the success or failure of the project at hand. Consequently, your subordinates may not fully support the effort, and may actually themselves be an obstacle to effective training.

No matter how detailed the plans for a period of training, the results will be less than anticipated if the required training materials are not sufficient to meet the training need. The more technical a subject, the greater the desirability for a training aid. In all cases be sure to have a sufficient quantity of pictures, mockups, and actual equipment to benefit the entire class.

If you desire that maximum benefit be derived from your instruction, prevent excessive absences from scheduled training. In being absent, not only does the absentee miss the instruction and therefore remains deficient in that area of training, but also his fellows are inspired to seek means to avoid attending class. If the instruction is the sort that requires group participation, the absentee causes his fellow students to carry his load, which in turn, serves as an obstacle to effective training.

Instruction must not be conducted carelessly. If maximum benefit is to be obtained, careful planning, preparation, and execution must be evident to the student. These qualities are indicators to the student that the material is important. Effective instruction will cause him to exert an extra effort to obtain the knowledge imparted by the instructor. Available training time must be used effectively. If time is wasted, the student feels that it is his time that is being wasted and, consequently, he will build up mental resistance to learning.

The obstacles to effective training discussed above are only a few of those that could possibly exist in a unit. Each one of us has to ensure that the individual soldier's training momentum, initiated in preliminary training, is not impeded nor destroyed in the unit. The following checklist, based on William A. Gill's book *Systems and Procedures,* might prove to be useful in assisting us in this task.

Before Starting the Program—

- determine what will be done
- when it is to be done
- who is to do it
- how it is to be done
- what we have to do it with

During the Program—

- do what is correct
- in the correct manner
- on time
- using resources made available

After Finishing the Program, Ask Yourself—

- what has been done
- how well it was done
- whether it should continue to be done
- how it could be done better

If these principles are firmly adhered to, our efforts will enhance, rather than impede, the attainment of our final goal.

BIBLIOGRAPHY

Baker, Robert A., Senior Staff Scientist, US Army Armor Human Research Unit, Fort Knox, Ky. "Managing Army Training: Current Issues in Command and Administration," (Unpublished).

Gill, William A., *Systems and Procedures* (Englewood Cliffs, N. J.: Prentice-Hall Inc., (1959).

CAPTAIN ELWOOD L. FAIRBROTHER, JR., *Armor, was commissioned in 1960 from Norwich University. Following graduation from the Armor Officer Basic Course in 1961, he was assigned to the 2d Squadron, 10th Cavalry, where he served as a platoon leader and troop executive officer. In 1962, Captain Fairbrother was assigned to the 4th Squadron, 7th Cavalry, where he commanded a troop and served on the squadron staff. In 1964, he was assigned to the 2d Squadron, 9th Cavalry where he again commanded a troop and served as squadron S3. Returning to CONUS in 1966, he was assigned to the Basic Training Center at Fort Bragg. He completed the Armor Officer Advanced Course in April 1968 and is currently assigned to U.S. Army, Vietnam.*

WASHINGTON AREA ARMOR BALL

The traditional Armor Ball held annually in the Washington, D. C. area has been scheduled for Friday, 7 June 1968 at the Bolling Air Force Base Officers Club. Further details and reservation forms will be mailed to those in the Washington area about one month before the occasion. For further information call (202) OXford 6-8529

5th Place

What About

The "Other War"?

by Captain John P. Irving, III

As our small column moved out the main gate and down the dirt road in a swirl of dust, not a single Vietnamese was anywhere in sight. Even so, we moved cautiously through the deserted rubber plantation which bordered the road on both sides and limited our visibility.

Not more than 1500 meters from the relative safety of the 25th Infantry Division base camp, the four *M113* armored personnel carriers of our small unit swung abruptly to the left and off the road. They entered a small hamlet of 20 to 30 mud walled, thatch roofed huts. The personnel carriers moved rapidly to the left and right edges of the village while the remainder of the column, two ¼ ton trucks and an *M577* medical vehicle, huddled near the center.

A tactical mission? No. An ambush? No. Just the first visit of the Medical Civic Action Program (MEDCAP) team to our assigned village.

We jumped out of the vehicle and moved through the hamlet. Still no sign of life. I thought, "Why bother with this place, no one lives here." Then, picking our way along the single scar of a road toward the rear of the village, we spotted some ducklings and paused to look. They were swimming peacefully in a shallow muddy pool. Then I heard a baby cry, a sound instantly muffled.

"Listen," I said to Captain John Claxton, "there must be someone in there!"

"Yes, I told you there're people here, they're just hiding," he answered. Since he was the squadron S2, knowing such things was part of his job.

Soon the radio crackled out an "All Clear," and we relaxed enough to get down to the business of setting up the *M577* which had brought the squadron doctor and his team. They quickly established their mobile aid station right in the middle of the road and sent the interpreter Ly Van Minh to round up the villagers for "sick call."

Here was my first physical contact with complete, abject poverty: houses with dirt floors, dried mud walls, and rice straw roofs. As I stood there unbelieving, I saw two big black eyes staring at me out of the gloom of one of the huts. Peering closer, I saw that they belonged to one of the prettiest little girls I had ever seen. Her face was dirty and thin and wore no smile, but it had the timeless beauty of the Orient.

Then realization of the *why* of our being here overwhelmed me. This was the reason—the children, the promise of the future, a better life. If we could but bring a smile to that little face, all of this would not be in vain.

Reluctantly the people came. They came out of the holes they had dug beneath the corners of their houses, holes for protection from the war. They came out of curiosity, out of fear, and in some instances, out of genuine need for the medical treatment which our *bac si* (doctor) could provide.

The 3d Squadron, 4th United States Cavalry, in which unit I served as S4, is part of the 25th Infantry Division. It is based in Cu Chi, Republic of

CAPTAIN JOHN P. IRVING III, *Armor, enlisted in the Massachusetts Army National Guard in 1955. Following graduation from the Fort Benning OCS he was commissioned in the Engineers. In 1963, he requested active duty. He attended the Armor Officer Orientation Course after which he was assigned to USATCA where he served as a company commander and battalion S3 and executive officer. In 1964 he joined the 3d Squadron, 4th Cavalry, 25th Infantry division in Hawaii and in 1965 went to Vietnam with that unit. There he served as S4, S3 (Air) and troop commander. An April 1967 graduate of the Armor Officer Advanced Course, he is now assigned to the Staff and Faculty at The Armor School.*

This was the reason—the children, the promise of the future, a better life. If we could but bring a smile to that little face, all of this would not be in vain.

Vietnam (RVN). We were given responsibility for the New Life Hamlet refugee village Bac Ha #2 as our part of the Civic Action Program in Vietnam. The importance of this program was emphasized as early as the summer of 1964 when the Chairman of the Joint Chiefs of Staff, General Earle G. Wheeler, said:

> The problem out there is not only a military problem. It is a political problem, it is an economic problem, and I believe even a social problem. . . . The point is that the final touch out there is not going to be the achievement of a military victory. I believe parallel to our achievements in the military field there must be equal accomplishments in the political field if you are going to obtain in the long term, a free South Vietnam able to pursue its own destiny.

As we basked in the warm Hawaiian sun prior to our deployment in February 1966, little did we think that we of the dashing, glorious cavalry would be fighting this kind of a war also.

Now, our responsibility was broad. We had to provide immediate protection for the war refugees who settled at Bac Ha #2 and at the same time guide them toward self-protection through the establishment of a Popular Force training program. The major part of our mission was to assist in any way possible toward the development of the village and its people.

The culmination of this development and a good measure of its value would be the election of a village chief.

The first MEDCAP visit could not be regarded as a great success. However, it served as the nucleus for an ever expanding program of help to our adopted friends. To me, it became a concrete symbol of the value of positive action, no matter how small, in overcoming the terrible results of man's inhumanity to man.

Captain Richard Joiner, the S5, had primary staff responsibility for the coordination of the effort. But, ideas and help came from everywhere in the squadron.

The S1 provided the interpreters without whom the mission would have been impossible.

Initially, the S2 found the people hostile and uncommunicative. But eventually he was able to fill in many gaps in his intelligence picture. The villagers became very cooperative after seeing the positive results of our program. Many times they volunteered the exact locations of mines in the

road which we would otherwise have found the hard way.

Coordination for the protection of the team that went into the village was provided by the S3. This normally consisted of the Ground Surveillance Section of the Headquarters Troop, and the two APC's designated for the squadron commander and the S3. This was the equivalent of a scout section and it proved to be adequate. An infantry squad from one of the line troops or the Aero Rifle Platoon was also used during the early stages.

My S4 shop became a staging area for the movement of materials and goods sent from the people of the United States of America to the people of the Republic of Vietnam.

Lieutenant John Barovetto was my transportation section leader. Quite often he went to "our" village. He then wrote to his mother of the primitive conditions and lack of clothes, soap, and little things like candy and toys. She mentioned the contents of the letter at a club meeting. This resulted in a deluge of contributions. When the boxes finally stopped arriving in the mail, we estimated we had received over 1500 pounds of generosity.

The Maintenance Officer, Captain Richard Barnhart, probably provided what was to be the most ingenious form of help to our project, a portable shower. It was mounted on a 1½ ton trailer. A frame constructed of aluminum tubing and covered by canvas gave the users a degree of privacy. Although some of the people had to be taught that soap was for washing and not eating, the shower proved to be of unlimited value. The shower made possible a degree of hygiene that was essential to the medical program. A little harder to measure, but of obvious importance, was that it served as a welcome break in the serious daily routine of a peasant village. The children, who were the best customers, thought that taking a shower was the best game they had ever played.

None of this rapport or progress would have been possible without the untiring, dedicated efforts of the squadron surgeon, Captain Eugene Geortzen, M.C. His ability to diagnose and treat superstitious peasants made the difference between success or failure of the program. A complicating and discouraging obstacle to be overcome was that he had to work through an interpreter. A typical treatment would begin with the doctor asking an old woman who had obvious pain written on her face:

"Where does it hurt?"

A flurry of wild gesticulating and a baffling exchange of words would follow.

The answer, "I don't know."

"Can she point to it?"

"She say she hurts all places. What means point?"

Then the doctor and the interpreter fly into a pantomine to clarify the meaning of the word "point." This goes on and on. Sometimes 30 minutes were required just to give two aspirins for a headache. Progress was slow and painful.

The Viet Cong were concerned over our presence and attempted to undo at night what we had accomplished during the day. They made frequent visits designed to terrorize the peasants and to disprove our ability to provide protection.

One night they came to the hut of Tran Cong Vinh. who had been a member of the VC before he became discouraged and disillusioned, and came to live at Bac Ha #2. Vinh was an outspoken critic of the VC and their aims. On one otherwise quiet night the enemy came and discussed the matter with him. He was given a choice: "Come back with us now or die!"

"Never," he spat back at them.

The bullet that killed Vinh also went through his daughter's head as she clung to her father. The two of them had been dragged kicking and screaming out of the house and into the street where we found them dead the next morning.

Only after the villagers realized that we were sincerely trying to help them were we able to influence or guide their progress. The MEDCAP team and the donations of soap were good foundations for this but could only be a beginning.

Within an infantry division or an armored cavalry regiment, there is a considerable amount of construction equipment available. There is equipment that can be diverted to civic action projects when it is not needed elsewhere. We were especially fortunate in that our division was augmented with an additional engineer battalion and an engineer light equipment company. Through a great deal of judicious planning and diplomatic negotiation, we were able to divert enough equipment to build a well-drained road down the center of the hamlet and provide a rudimentary drainage system.

We stayed well away from the local political activities, but these also progressed under the shield of our presence. The people seemed to have forgotten the assassination of Tran Cong Vinh and were becoming more expressive. The government realized that they were ready to take part in the upcoming election. Therefore, the inhabitants were hastily screened, issued identification cards, and registered as voters. Now they would have a village chief, someone with whom we could real directly. Prior to this, all coordination had to be done at the district level.

After this election, progress came at a relatively fast pace. In recognition of this major step forward the government renamed the village Tan Thoi. We gave them barrier material to build a protective fence around the hamlet. Now there was a chief whom we could advise on how to organize and train a Popular Force group selected from the able-bodied men, so that they could defend themselves. Bricks were obtained through the Civic Action Program to enable the people to build a much-needed school for their children.

Soon the time came for me to leave. My tour of duty was over. But the job, in spite of the progress, was far from finished. I made my last visit to the now bustling hamlet of Tan Thoi with mixed emotions and unarmed. I thought of that first day and how quiet it had been. The stillness had been broken only by curt commands, the crunch of boots, and the echoes of a firefight off to the north.

Now the village was filled with the laughter of children and the gossip of people. The thought of sudden death possibly lurking in every hut had been wrapped around me like a wraith, now only the children were wrapped around me. What used to be an ugly scar on the landscape had been transformed into a gravel road marking the center of the village. Down at the end of the road stood a new eight-room brick school. Along the main street were the inevitable corrugated metal shacks which housed everything from souvenir shops to laundries.

Progress? Yes, progress. Gone were the mosquito-breeding mud holes, the hollowed eyed look of fear on the faces of the children, and the need for us to be constantly on the alert for an ambush. No it isn't "Main Street, USA," but these people would not want that anyway.

These are but a few of the problems met and accomplishments made by one small Armor unit in fighting the "Other War." The key to its success is, as are all endeavors involving people, attitude. Without the desire to help on the part of all, from the squadron commander down to the last private who repaired drainage ditches in the hamlet, our people-to-people endeavor would have been a miserable failure.

The job goes on. You could be part of it soon, and, I could again.

Is There A Sprocket In Your House?

Is there a sprocket in my house? EEK! Right here in my new government quarters? Instantly, it is evident to the new Armor wife that the career, and this way of life, her husband has chosen is going to be like no other she has known. It is going to be full of differences and topsy-turvies. With a merry twinkle, her tanker is quick to explain that the sprocket belongs in the motor pool on a tank along with a whole series of end connectors which make up a track that should never ever be loose, for if it is, he is undoubtedly going to be late for dinner!

While he is on the subject, he might just as well take the time to explain a few of the terms that will make her a knowing, intelligible and full-fledged Armor wife. The first thing to know is that armor and knights did not go out with Arthur, but are definitely "in" at the motor pool unless they are "out" at the range. When armor is out at the range, it is not the rooster that hails the first light of dawn, but rather the SHA-BOOOOMS resounding across the countryside as the rounds hit the target (*OUR* tanks never hit elsewhere). When he talks of the coming IG or the CMMIs, he is not referring to the next special at the grocery store. Or when he mentions his "201," he is not referring to his own private secret agent.

Being fully aware of how conscious of fashionable hues she is, her noble knight wants her to understand that she can recognize the "friendlies" by the yellow they wear. She must also know that there is more to OG than the hue, for when he wears OG, he is going to see that all the tanks and troopers are tucked snugly in their appropriate rows rather than the little tykes back at the quarters. She, in turn, colors her Armor commander red-white-and blue since it isn't just doctors, ministers, and firemen who are paged forth from football games, theaters, parties, and quiet evenings at home. And nobody, but nobody, is going to beat her tanker to the scene of the happening.

This beginning lesson in how to communicate cavalry style is delivered while dining on a packing box by candlelight—so she doesn't see the shockingly nude windows clutching the walls. Confidingly, Sir Knight draws her attention back to his words of wisdom with the fact that he is the one who is in the Army in Armor. She and the children are without rank.

While the Armor wife shies from sprockets, the

BETTY WINDSOR BOWEN graduated with a major in advertising from the University of Missouri. She married Lieutenant Colonel Thomas W. Bowen, a frequent ARMOR author, in 1948 immediately following his being commissioned in Armor from USMA. Then followed life with the Constabulary in Germany, tours at Forts Riley, Hood(3), Knox(2), Germany again, West Point, Carlisle Barracks and Vietnam from which she and her children Jan (now 18) and Tommy (10) were evacuated.

JAN BOWEN, the illustrator, was born in Nuremberg, Germany. In her early years she tastefully decorated the walls of various Army quarters to the delight of the critics and the distress of her parents. Having attended 10 schools on three continents, she is now a high school senior and plans to enter Hollins College in the fall.

Colonel Bowen is in Vietnam, and like Tommy, promises ARMOR a contribution.

Armor children seem to know instinctively just what things tanks and troopers and *esprit de corps* are made of. She hears the little ones before the TV set yea-yea-ing, "Mom, look! 1st Squadron to the rescue!" She sooths the irate cub scout because at charades—although he acted out standing tall in the turret with arms folded in pass in review style—the dumb dodos didn't guess he was a tanker. She reassures the little daughter it really is quite all right even if "most of the kids in the civilian third grade have never been off this continent." Returning to the post after a four-month absence, she quiets the booming three-year-old who is squealing, "Hooray! Hooray! Pretty Army houses!" Even the Armor toddler knows she is home the minute she spots the rows of barracks.

By this time our typical wife is experienced in most of the ups and downs connected with Armor life. She is quite adjusted to the fact that in Armor there is a "thing" about flexibility and mobility except when it comes to time—if she isn't on to that, she's out with the rusty sprockets. She also has her own definitions of just what flexibility is—like when she runs out of schools-I-have-attended lines on the children's application blanks; or having an opportunity to use all of the foreign languages she did not learn in school; or how to amuse toddlers while standing in line after line after line or sitting for hours on planes, trains, buses and ships; or how long she has to boil water to get the hepatitis bug before it gets her family.

Flexibility is finally getting to travel in Europe and then traveling to Bastogne and St. Vith after making a crossing of the Rhine; it is how it feels to have people in foreign countries crowd around to stare at and watch the American (and America); it is even having the President of the United States of America request her and her children to participate in Operation *Evacuation.*

The biggest flexibility on the Armor wife's list is entitled "Around Her Neck She Wears A Yellow Ribbon." It takes a great deal of thought, elimination of choices, strength and courage to solve the dilemma of where she is to go while her trooper is far, far away. He is going so very far away that when his sun is rising, her sun is setting. When she is eating ripe orange oranges and ripe yellow bananas, he is eating ripe green oranges and ripe green bananas. Because her today is his tomorrow and his yesterday is her today, any ESP messages are apt to get hung on the big dipper before getting through.

Eventually, she finds a house in the civilian world which is going to look proud flying the colors. It is a good place to be, but it is not without its differences and its hazards. There are people who stand on the corner with "Silent Vigil for Peace" signs. In the quiet calm of the church the minister in the pulpit preaches: "Our military is not applying the proper tactics to win the war at the earliest opportunity and within moral boundaries." (Do ministers study combat tactics in the seminary?)

While assisting at the church center where college students go to speak out democratically, she hears visiting conscientious objectors claim: "We owe the government of the United States of America absolutely nothing, as it does nothing for us." The self-named "non-violent students," who actually quit going to college years ago, violently claim the right to have her listen to how much they, and not her trooper, want peace. (Why don't they go tell it to Ho?)

Yet another day she reads, "Famous baby doctor leads a march on Washington, D.C., burning draft cards along the way." Why, his book on baby and child care practically raised the children. His guidelines were the ultimate in how to raise a child into a healthy, happy, adjusted, well-disciplined, adult American. The Armor mother casts a long, hard, penetrating look at the children—and wonders! His book cured the croup, eased the measles and disciplined the children, but now, she asks herself, where does she go to burn her Doctor Spock book? She sends it out to wherever it is that rusty sprockets go!

The knights of Armor might be gratified to see the guidelines of flexibility, mobility, duty, honor, country stir smoothly into the family pudding and fill the void left by the now absent book.

ARMOR'S ROLE IN TODAY'S ARMY NATIONAL GUARD

by Major General Winston P. Wilson
Chief of the National Guard Bureau

The soon to be completed reorganization of the Reserve Components will have a pronounced impact upon Armor in the Army National Guard.

To begin with, four of the 15 divisions stricken from the troop list are armored divisions. Gone are such famous and familiar names as the "Empire," New York's 27th Armored Division; the "Lone Star," 49th Armored Division from Texas; the 48th Armored Division from Georgia; and California's "Grizzly" 40th Armored Division.

Because Army National Guard units are permitted to accept the ancestry of the unit from which they are formed, the numerical designations and nicknames may not be lost completely. The 40th, for example, will appear in a new troop list as the 40th Armored Brigade (Separate) in California, while the 49th will show as the 49th Mechanized Brigade (Separate) in Texas. In like manner, it will not be surprising to see the 48th appear as Georgia's brigade of the 30th Mechanized Division, or the 27th as New York's brigade of the 50th Armored Division.

Armored cavalry regiments also felt the pinch under the new reorganization. Of the seven which were formerly in the troop structure, only four remain intact. Gone are the 150th of West Virginia, the 108th from Mississippi and the famed "Essex Troop," the 102nd from New Jersey.

When the Selected Reserve Force (SRF) was designated in 1965, the National Guard Bureau conceived the concept of decentralization of subordinate units. None of the SRF divisions were formed within the geographical boundaries of one State. With the implementation of this new major reorganization, the decentralization concept has been carried to full fruition.

Of all the major Armor units, not one is constituted in its entirety in any one State. Tennessee's 30th Armored Division has one brigade in Alabama and one brigade in Mississippi. New Jersey's 50th Armored Division reaches to New York for one of its brigades and Vermont for another. The 30th Mechanized Infantry Division of North Carolina has one brigade in Georgia and one brigade in South Carolina.

Each armored division in the Army National Guard has 11 maneuver battalions (five mechanized and six armor) as well as one armored cavalry squadron. These units are equitably divided among the three brigades. The mechanized infantry division has 10 maneuver battalions (six mechanized and four armor) and one armored cavalry squadron. The separate armored brigade is tailored with two armor battalions, one mechanized battalion and an armored cavalry troop. The two separate mechanized infantry brigades have only one mechanized battalion and an armored cavalry troop as their armor punch. Of the five remaining infantry divisions, each contains one armor battalion, one mechanized infantry battalion and one armored cavalry squadron.

The structuring of major armor units across State lines continued into the armored cavalry units. Pennsylvania's 104th ACR will now have one of its squadrons in New Jersey, and Ohio's 107th ACR will have a squadron in West Virginia. The 116th ACR of Idaho will turn to Nevada as the location for one of its squadrons, while the 163d ACR from Montana will have one of its squadrons in Oregon. Rounding out the armored cavalry list are two separate armored cavalry squadrons (one in California and one in Mississippi) and two separate air cavalry troops (one in Rhode Island and the other in Mississippi).

As with any reorganization, no matter how large or small, there are inherent problems which must be faced. Among these problems are the loss of large numbers of units, increase in strength of remaining units and the structuring of major units with subordinate units from two or three States. The uniqueness of these problems becomes ap-

GAINS AND LOSSES OF MAJOR ARNG ARMOR UNITS

TYPE UNITS	BEFORE REORGANIZATION	AFTER REORGANIZATION	NET
ARMORED DIVISIONS	6	2	−4
MECHANIZED INFANTRY DIVISIONS	0	1	+1
ARMORED BRIGADES (SEPARATE)	2	1	−1
MECHANIZED INFANTRY BRIGADES (SEPARATE)	1	2	+1
ARMOR GROUPS, HHC	2	5	+3
ARMORED CAVALRY REGIMENTS	7	4	−3

parent when one realizes that Armor leaders from the Army National Guard have not been faced with them before.

To utilize National Guard armories and to maintain Guard units in the maximum number of communities, the National Guard Bureau has authorized split units. Simply stated, this means that, in the past, where a company might have been the smallest drilling unit in a community, we may now find one or two platoons in its place. While this system presents valuable opportunities for much enhanced small-unit training, it adds a new dimension to the area of responsibility of the unit commander, who now finds his unit in two geographical locations, miles apart.

Also to be considered is the impact of the increased manning levels in the units. Although some 1100 Guard units were removed from the Army National Guard troop list under the reorganization, the paid drill strength of 400,000 will provide 93 percent or higher manning levels for those units retained. The new levels will initially require imaginative training schedules in armor units because of equipment requirements and limitations which automatically accompany a major reorganization at the outset.

Finally, the structuring of major units across State lines will call for the ultimate in staff functioning. Detailed planning, coordination and supervision must be done.

All of these problems are of paramount importance to the success of any unit's mission, and especially is this true of the Army National Guard with its dual mission—Federal and State. The dual mission is unique to the National Guard alone of the Reserve Components. Guardsmen are available for active duty in time of war or national emergency, in support of the active Army's war plans, and at such other times as the national security may require augmentation of the active forces. Additionally, they stand ready with organized, equipped and trained units to function effectively in the protection of life and property and the preservation of peace and order within the confines of their respective States under call of their Governors. In the dual capacity, the National Guard serves as the most readily available force ever.

With the new reorganization, this ready status of the Army National Guard takes on even more prominence. Although units and strength have been reduced, the resultant configuration allows more efficient units tailored to perform at maximum efficiency under less normal conditions. Specifically will this doctrine be true of Armor units. Potential of the units under the new structure will be stronger than it was previously because of the increased manning and availability of equipment. In short, the new reorganization actually offers the first real opportunity for the entire Army National Guard to approach the level of intensified training now enjoyed by the Selected Reserve Force units.

The most significant aspects to burst through the reorganization are: (1) the Department of Defense now includes the entire Army National Guard structure, with the exception of the nearly 100 add-on units for the State mission, in its world-wide contingency plans; and (2) the Department of Defense will supply and equip each Army Guard unit in keeping with its war plans assignment. Although this support will be accomplished over a three to five year period, its culmination will result in an overall training level rise to the point that the entire Army National Guard will be a mobilization-ready force.

To this end, Armor units of the newly reorganized Army National Guard continue in the same proud tradition of their ancestral units whose deeds throughout this nation's conflicts have become legend.

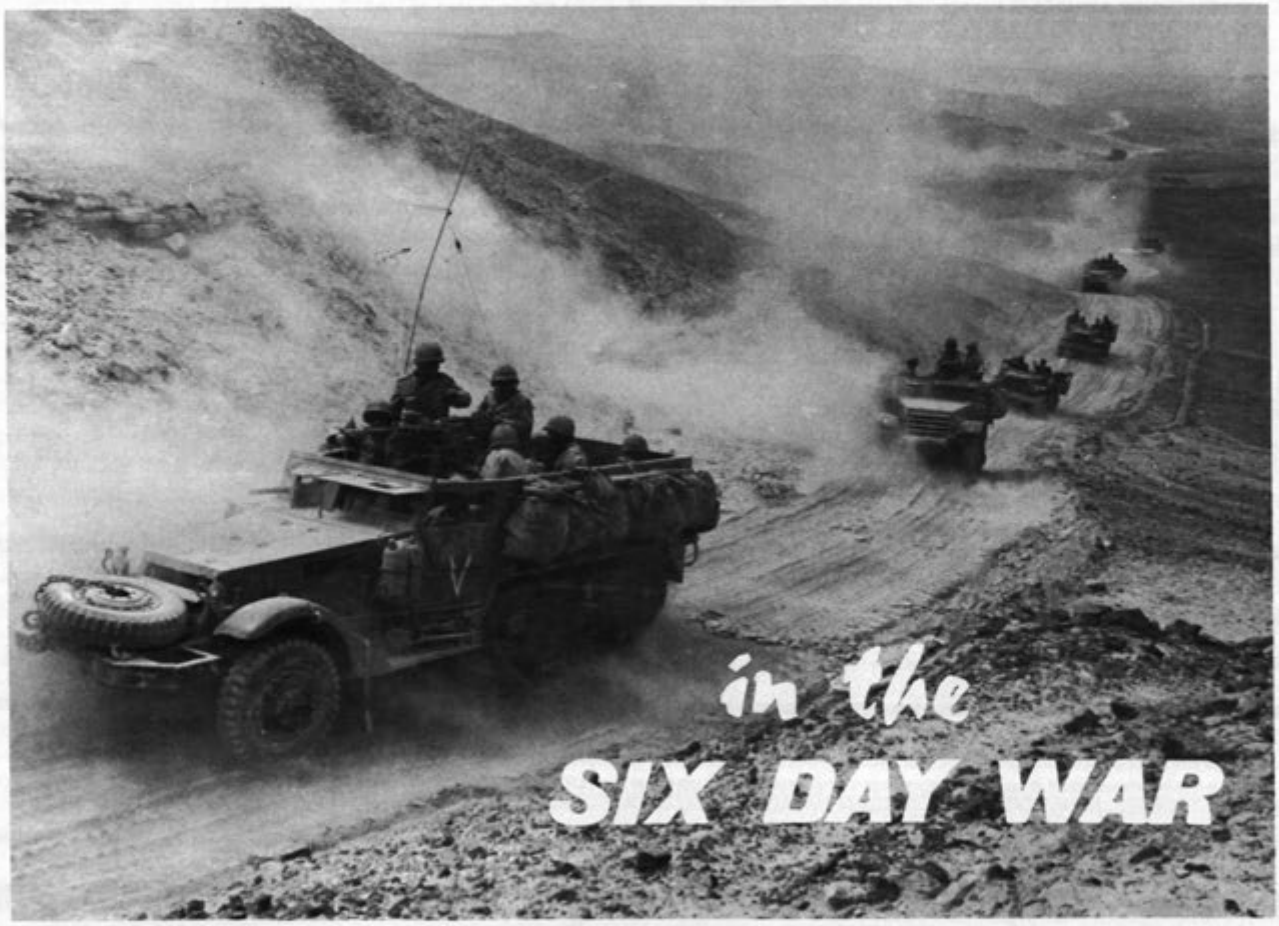
MANEUVER BATTALIONS OF THE REORGANIZED ARNG

NUMBER OF UNITS	TYPE UNIT	MECHANIZED BATTALIONS	ARMOR BATTALIONS	TOTAL
2	ARMORED DIVISION	10	12	22
5	INFANTRY DIVISION	5	5	10
1	MECHANIZED DIVISION	6	4	10
1	ARMORED BRIGADE (SEPARATE)	1	2	3
2	MECHANIZED BRIGADE (SEPARATE)	2	0	2
	SEPARATE MANEUVER BATTALIONS	9	13	22
TOTALS		33	36	69

ARMY NATIONAL GU

JARD ARMOR UNITS

The ISRAELI ARMOURED CORPS



by COLONEL DOCTOR J. L. WALLACH
—ISRAELI ARMY

Though almost a year has elapsed since the termination of the war, it still seems too early to attempt an authoritative and exhaustive account of the Six Day War. There is no doubt that such an account could result only from a prolonged and difficult investigation, particularly since the war itself was so swift and short.

Nevertheless, we may venture some interim conclusions. Before turning to these points of special interest, it seems appropriate to give the foreign reader, who is perhaps less acquainted with the sequence of events, a brief description of the forces involved and the principal occurrences. The author assumes, however, that the political background is more or less known.

PART ONE: THE FIGHTING

ENEMY PLANS

From captured documents it is obvious that on 26 May 1967 a full state of alert had been declared in Egypt and that at least from that date forward a full-scale offensive against Israel was being considered. The Egyptian intention was to wipe out the Israeli Air Force in the first action and then to cut off Elat and the southern Negev from the remainder of Israel. Needless to say, the conquest of Elat would have completed the process which had begun with the blocking of the Straits of Tiran on 23 May.

COLONEL DOCTOR JEHUDA L. WALLACH *was born in Germany in 1921 and subsequently emigrated to Palestine in 1936. Two years later he joined Haganah, the underground army. He was commissioned in 1944. During the "War of Independence" he rose from captain to major in command of an infantry battalion. Following the war he became commander of the Givati Brigade and was promoted to colonel in 1950. In 1954 he made an official visit to the Dutch, French and Swiss armies. During the 1956 Sinai campaign he commanded a divisional task force and an armored brigade. Colonel Wallach received a Doctor of Philosophy degree from Oxford in 1965 and has since been senior lecturer in military history at Tel Aviv University. During the Six Day War he served on active duty with the Israeli Army Information Office and since has directed research leading to an official history of the Israeli Armoured Corps.*

From Syrian maps and documents, now in our hands, we have learned that the Syrian intention was to launch a two-pronged offensive quite similar to the one they attempted in 1948-49. One route of advance was to run roughly through Mishmar Ha Yarden—Zefat—Nazareth, and the other across the Jordan Valley south of the Sea of Galilee toward Afula. Both axes would finally converge on Haifa.

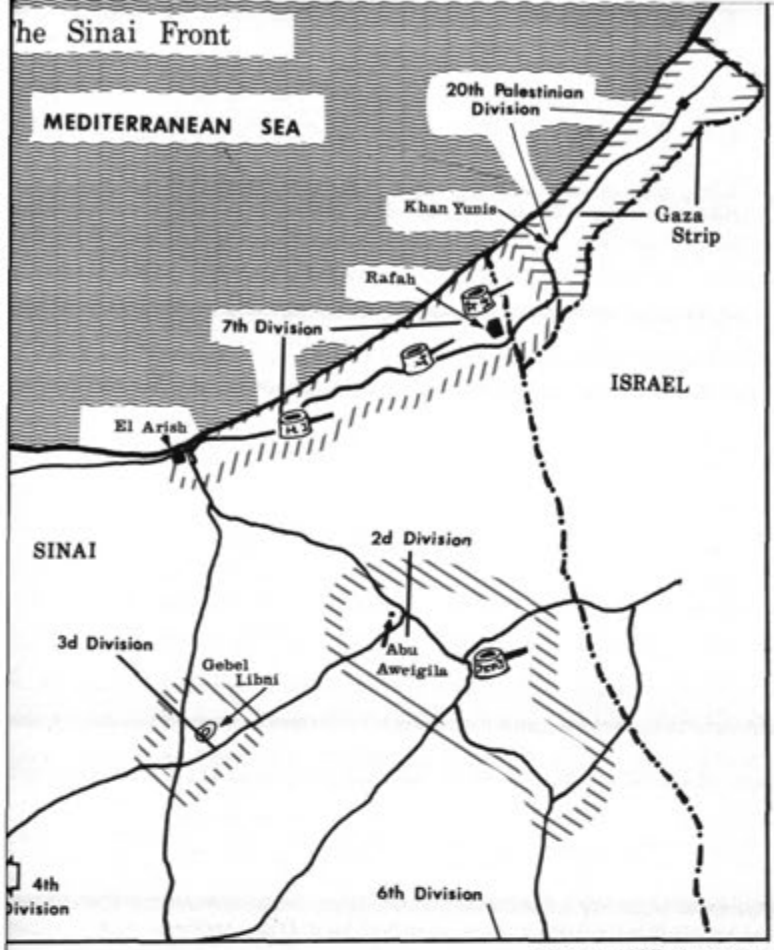
It seems that the concurrent mission of the Arab Army of the Hashemite Kingdom of Jordan was to encircle the Israeli part of Jerusalem, seal it up and seize it. Secondly, the Jordanian Army was to split Israel in two at the narrow waist between Tulkarm and the sea. An additional task, strongly demanded by the Egyptian High Command, was to paralyze the Israeli airfields all of which were within the range of medium artillery from Jordanian territory. Significantly, two Egyptian commando battalions had been transferred to Jordan for that purpose.

In addition, it had been planned that Iraqi troops would participate in the war against Israel. These troops were to move through Syrian territory. In fact an Iraqi brigade had arrived in Jordan.

THE SINAI FRONT

To the south of Israel, Egyptian positions in the Gaza Strip were manned by the 20th Palestinian Division. The sector of Rafah—El Arish was held by the 7th Division. Covering the central axis Umm-Gataf —Abu Aweigila—El Qusaima was the 2d Division. The second line at the mountain Gebel-Libni was held by the 3d Division. The famous 4th Armored Division, the so-called strategic reserve of Egypt, was positioned in the Bir Gifgafa area, which might also be regarded as the third line of defense. The 6th Division was blocking the southern axis. Also in the south was a special armored force of divisional size named after it commander, "Force Shasely." At the beginning of the crisis "Force Shasely" had been posted on the northern axis. But, when the Egyptian planners decided upon cutting off the southern Negev and Elat it was logical to transfer this force to the southern sector. Moreover, a certain number of armored units of the 4th Armored Division had also been directed into the sector held by the 6th Division.

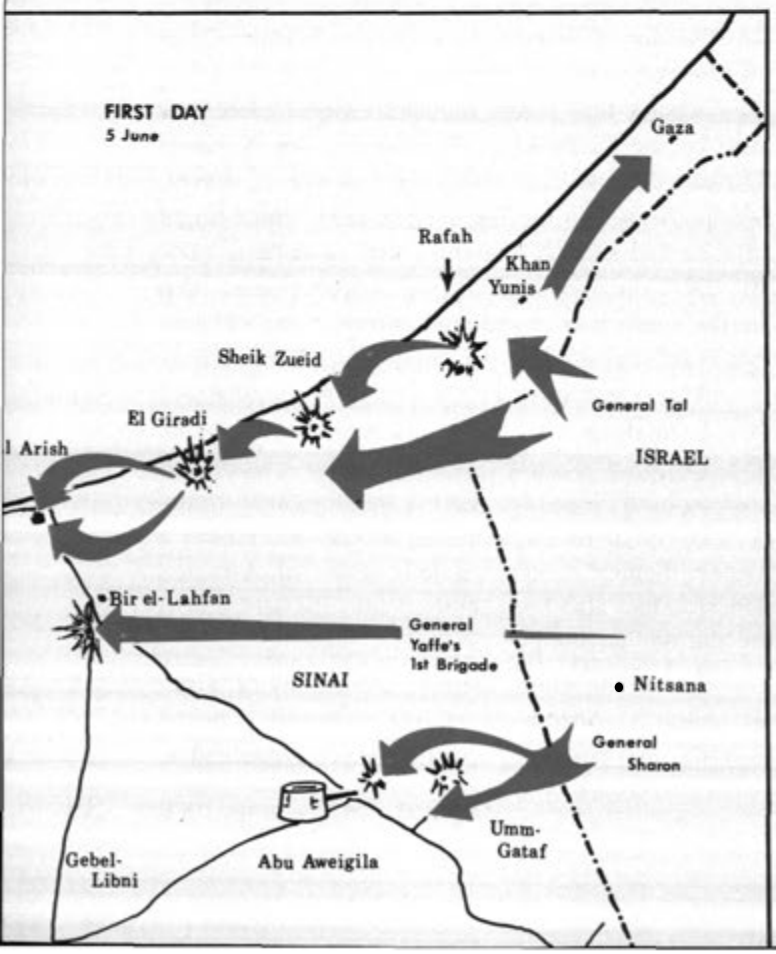
In the far south, flanking the Straits of Tiran at Sharm El Sheikh, there was stationed a mixed brigade composed of paratroopers, commandos,



Maps by SSGT James Klett

"Our main purpose, of course, was not to occupy as much territory as possible, but to destroy the enemy's divisions."

—BRIGADIER GENERAL TAL
Commander of the Armoured Corps



shore artillery, anti-aircraft artillery and supporting elements.

The total number of Egyptian troops in the Sinai peninsula was approximately 100,000. These were supported by over 900 tanks and apparently the same number of artillery pieces. One should keep in mind that, although the Palestinian Division still had a number of obsolete *Sherman* tanks, the Egyptian armored forces were mainly equipped with Russian armored vehicles: *T34, T54, T55* and *Stalin 3* tanks, *SU100* assault guns, and *PT76* light amphibious tanks. Also included were *APCs* like the *BTR40,* the amphibious *BTR50,* and the *BTR 152*. There is no doubt that from the mechanical point of view the *T55* tank is the best medium tank in use at the present time.

THE ISRAELIS ATTACK

In the breakthrough and breakout phase of the campaign in the Sinai theater, the Israelis deployed three divisions. These were commanded by Brigadier Generals Tal (Commanding General of the Armoured Corps) Yaffe, and Sharon (Director of Military Training). Each of their divisions comprised a considerable number of armored troops. [*In the Israeli Army a brigade is both administrative and a tactical unit. Normally it has organic combat and service support troops. A division is solely a tactical grouping consisting of a flexible mix of brigades tailored for a given operation.* EDITOR]

Tal's divisions, consisting of armored units and paratroopers riding on armored personnel carriers [*which generally in the Israeli Army were half-tracks.* EDITOR] and employed as armored infantry, made the initial breakthrough between Khan Yunis and Rafah. There they had to face five or six enemy infantry brigades which were supported by about 100 tanks, including *Stalin 3s,* and a large number of artillery units. These enemy forces were deployed in heavily fortified localities covering an area 60 kilometers in depth between Rafah and El Arish.

While briefing his troops before the battle, General Tal stressed the importance of the initial encounter, since this represented the first contest of arms in 11 years between the Israeli Defense Forces (IDF) and the Egyptian Army. He demanded the accomplishment of the mission at any price. Tal's forces reached El Arish that same evening (5 June) after breaking through the fortified positions of Sheik Zueid and El Giradi without paying much attention

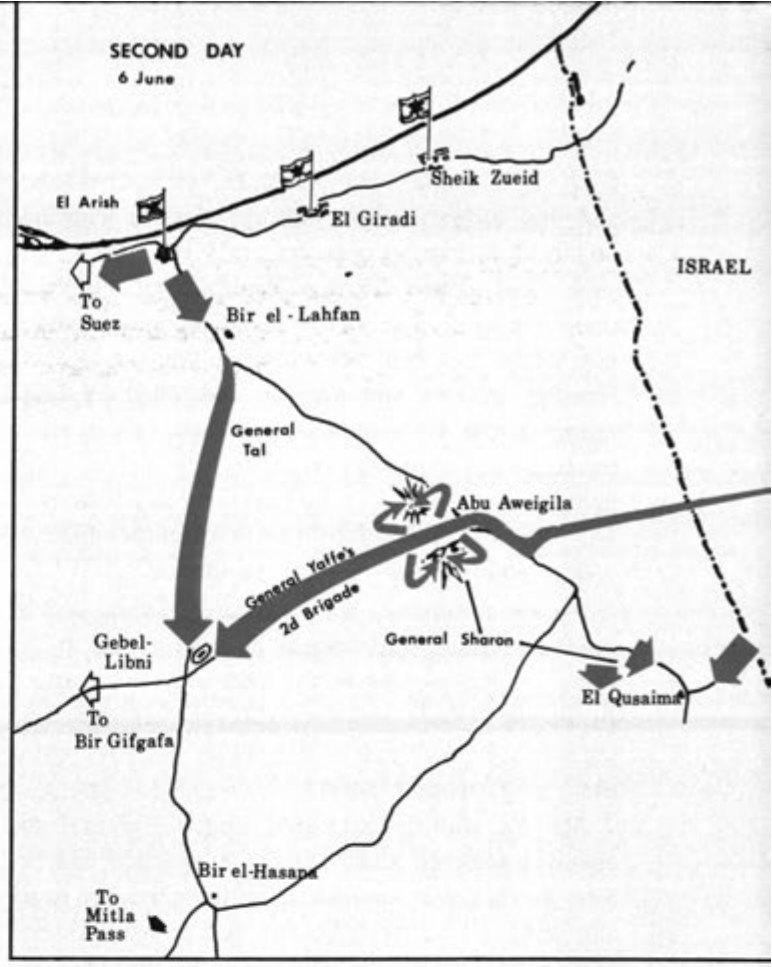
to mopping up. They deliberately disregarded the fact that the positions were manned again by Egyptian troops after the tank units had passed through. The mopping up was done by armored infantry during the night and the next day. From El Arish, Tal's division advanced on two routes. The main effort went in a south-westerly direction toward Bir el Lahfan, while an improvised armored force, at a later stage reinforced by armored paratroopers, advanced on the coastal road toward the Suez Canal.

While General Tal's command was fighting in the northern sector, General Sharon's division crossed the frontier in the central sector astride the central axis Nitsana—Abu Aweigila. Soon contact with the Egyptian main position at Umm-Gataf had been established and Sharon's tanks set out to destroy pillboxes, gun positions, and enemy tanks in order to prepare for the combined night attack of infantry, armor, paratroopers, engineers and artillery. In this setpiece attack on the Umm-Gataf position, which was a masterpiece of planning and execution, the armored units exploited the breakthrough of the infantry into the fortified trenches of the main positions and rushed forward to encounter the enemy tanks and to play havoc in the enemy's rear.

One armored brigade of General Yaffe's division started a cross-country move at H-hour over difficult terrain between Tal's and Sharon's forces and reached the Bir el-Lahfan area from an unexpected direction as well as at an unexpected time. Yaffe's force came from the west over sand dunes, which the Egyptians considered impassable for large tank forces. It reaches its objective on the evening of the first day, thus cutting off the enemy's lines of communication northward to El Arish and between El Arish and Abu Aweigila. During the night all enemy attempts to hasten reinforcements into El Arish were repulsed.

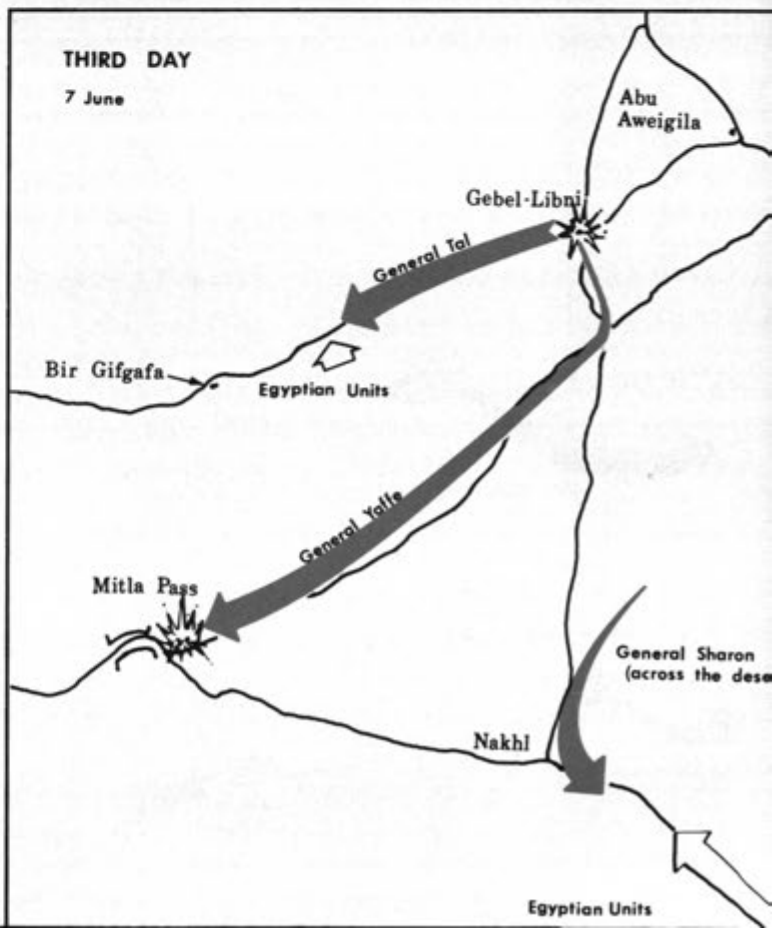
Early the next morning General Sharon's forces were asked to clear the Nitsana—Abu Aweigila road in order to let a second armored brigade of Yaffe's reach its area of maneuver in the vicinity of Gebel-Libni. Though fighting at Umm-Gataf still continued at that time, the armored brigade under Sharon's command cleared all its vehicles off the road and Yaffe's troops advanced while fighting continued on both sides of them. Doubtless that was an unusual feat. It was like the Children of Israel in Moses' time crossing the Sea of Reeds unscathed.

Enemy resistance at Bir el-Lahfan was broken by Tal's tanks while Yaffe's were isolating the battle



"The second enemy was the terrain, and it became apparent that not the vehicle and its armament are the fundamental factor but the commanders and the soldiers who operate the equipment."

—COLONEL URI BEN-ARI, Armoured Brigade Commander



area. Then Yaffe sped his tanks, via Gebel-Libni and Bir el-Hasana, toward the eastern entrance of the Mitla Pass in order to block the enemy's escape route toward the Suez Canal. The tanks raced there paying heed neither to logistical considerations nor to the fact that this relatively small force was crossing an area still actually controlled by large enemy forces. Only about nine tanks, half of them towed by the remainder owing to lack of fuel, some halftracks with armored infantry and one battery of self-propelled armored artillery reached the objective and established the directed roadblock.

In the meantime, Tal's armored forces moved on the northern and central axes westward to the Canal, trying to prevent the enemy from escaping. In the Bir Gifgafa area they succeeded in encircling considerable enemy armored forces and destroying them in a running battle.

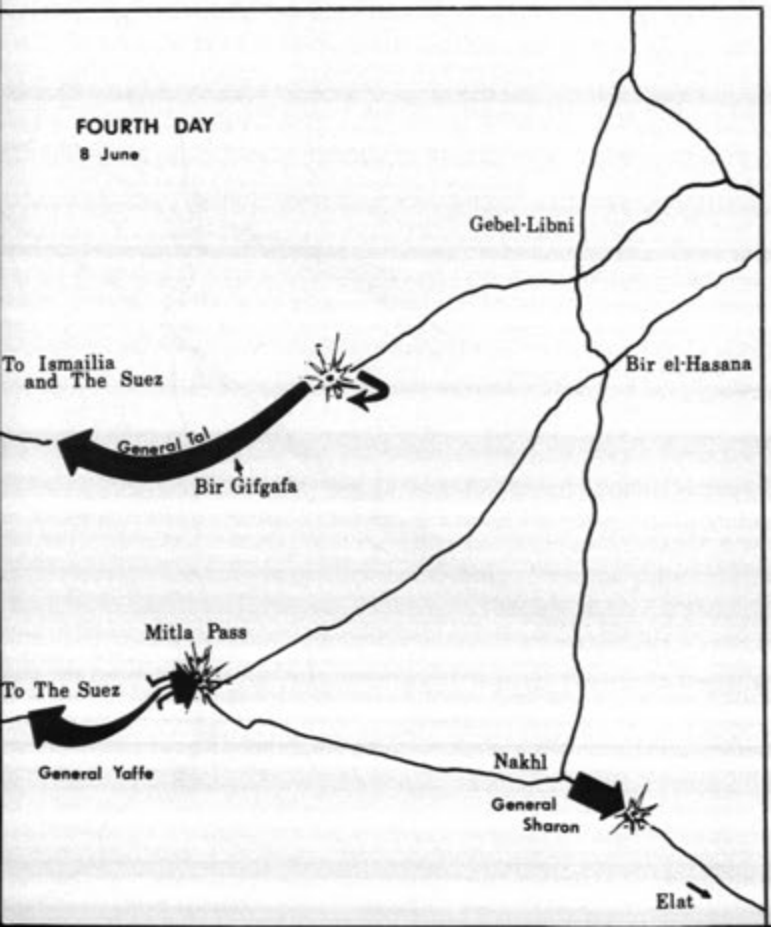
Sharon, with his armored brigade, chased the enemy southward and managed to reach Nakhl before the tanks of the 6th Egyptian Division could slip away to the west. Sharon laid an ambush and the enemy, unable to fight his way through, was wiped out.

When Tal's and Yaffe's forces reached the Canal and the shore of the Gulf of Suez and blocked the crossings, vast Egyptian forces trapped in the rear made desperate attempts to break out. But very soon all organized effort ceased and the leaderless Egyptian soldiers took to the dunes in the hope of somehow reaching the Canal. As soon as these stragglers laid down their weapons the Israeli troops let them continue on their way to the Canal providing them as best they could with food and water.

©NEWSPHOT LTD, Tel-Aviv—Courtesy Israeli Embassy, Washington

Needless to say, the Israeli armored forces already enjoyed the fullest support of the Israeli Air Force.

In four days fighting Nasser's army in Sinai had been destroyed.



THE CENTRAL FRONT

At the center of Israel, meanwhile, the Arab Army of Jordan had deployed its seven infantry and two armored brigades as follows:

- one infantry brigade in the Jordan Valley along the northern frontier with Israel to prevent an Israeli breakthrough in the valley which would result in separating the western bank from the eastern bank.
- one infantry brigade at the northern edge of the western bank to block the entrance of Israeli troops to the Samarian mountain ridge.
- two infantry brigades facing westward in order to oppose an Israeli advance up the same ridge from the coastal plain.
- an additional brigade holding the Jerusalem area reinforced by a battalion of *M48 Patton* tanks. This could be further reinforced by a brigade positioned as general reserve halfway between Jerusalem and Jericho.

• still another infantry brigade in the Hebron Mountain area.

• two armored brigades kept in the Jordan Valley as a main reserve. Two additional independent tank battalions were deployed, one in the northern sector of the western bank area and the other in the Hebron area.

The total number of tanks in the Jordanian Army was approximately 270, partly American *M48* tanks and partly British *Centurion Mk. III* tanks. The Jordanian artillery had about 150 guns including British 25 pounders, American 155mm *Long Tom* and American 105mm self-propelled howitzers. It should also be remembered that one infantry brigade of Iraqi reinforcements had already reached the Jordan Valley.

Though the Samarian and Judean Hills are by no means ideal tank country, Israeli armored forces also played an important role in the destruction of the Army of Jordan there. Israeli tanks even took part in the fighting inside the built-up area of the Old City of Jerusalem. Moreover, the fact that one armored brigade, fighting over difficult terrain, reached the mountain ridge between Ramallah and Jerusalem in a very short time was of decisive importance for the fate of the city. The chief pillar of the Jordanian defense system collapsed. The whole area from northern Jerusalem up to Ramallah, including this town itself, was cleared of enemy forces. Then armored troops sped down the hills of the Judean Desert and reached Jericho destroying en route numerous Jordanian tanks and armored artillery pieces.

To the north, the Israeli armored brigades captured Jenin and Nablus, waging fierce tank battles in which their obsolete tanks were pitted against modern Jordanian equipment, mainly *M48* tanks. Finally, part of the Israeli armored forces descended into the Jordan Valley and blocked the river crossing.

THE NORTHERN FRONT

Further to the north, on the Syrian-Israeli border, four Syrian infantry brigades (instead of the usual three) manned the fortified positions at the edge of the plateau. These were backed by another two brigades in the second line. The so-called "Shock Forces," composed of two armored brigades and two mechanized brigades, had been divided into three parts. One mechanized brigade moved southward in the direction of Deraa in order to render assistance to Jordan (at least that was the official reason given). One armored brigade advanced into the forward central fortified area. The remainder of the "Shock Force" was kept in reserve between Damascus and El Quneitra. The total number of Syrian tanks engaged in the war with Israel was about 360. These were accompanied by a similar number of guns of various calibers. The Syrian armored vehicles were mainly of Russian origin and of the same types as those in the Egyptian Army. There were also a number of World War II German *Panzer IV* tanks deployed in the forward area as dug-in pillboxes.

Israeli forces on the Syrian frontier were on the defensive during the Sinai battles. However, in the face of the ceaseless shelling of the Israeli settlements in Upper Galilee, it became imperative to silence the Syrian gun positions by capturing the Syrian Plateau. Despite the steep slopes and huge boulders on one hand, and the extremely well-fortified positions on the other, Israeli armored forces were employed there successfully. Our tanks felt their way up the slope step by step, until they reached the top and could race toward El Quneitra. They were joined by armored troops which, in the meantime, had been shifted from the Nablus area to the Syrian front. To the north, another armored force, advancing alongside infantry forces, reached the Mas'ada area. All three forces advancing up the Syrian Plateau demonstrated extraordinary armor performance over terrain absolutely unsuited for large armored bodies.

PART TWO: THE LESSONS

IDF ARMOR DOCTRINE

As for the Israeli Defence Forces on the whole, the Chief of the General Staff, General Rabin, has already stated that:

> Here and there it will doubtless be necessary to adopt certain features of our training to the lessons to be drawn from the experience of the war. However, even now it is quite clear that the doctrines upon which IDF's action has been based have proved their worth in essential matters.

The Armoured Corps is no exception. Since the end of the Israeli War of Independence in 1949 and the formation of the odd cease-fire lines between Israel and its neighbors, the doctrine of IDF has been that in case of war fighting should be shifted as early as possible to enemy territory.

OBSERVATIONS OF ISRAELI COMMANDERS . . .

"Only three tanks led all the time, but their gunners were excellent and at ranges of 3000, 2000 and 1000 meters we hit the enemy every time, even though they were always the first to fire, having positioned themselves in such a manner as to be able to sight us first."

—BRIGADIER GENERAL TAL

"Up until this stage, the Syrian resistance had been stubborn. They fought us and hit us. We succeeded in destroying them by virtue of the tanks trampling them and the very efficient short range gun-fire, from one hundred to five hundred meters."

—COLONEL ALBERT, Armoured Brigade Commander

". . . to my mind it was proven that the Centurion tank is by far superior to the T-55 and T-54 Russian tanks; and especially in one aspect—which gave our boys their self-confidence: the additional 20 tons of armor steel."

—LIEUTENANT COLONEL MOTKE, Brigade Commander

". . . a tank battle started. Each of the two unit commanders screamed that the other was shooting at him. I told one of them to stop firing, and the other commander was to inform me whether he was shot at, and vice versa. It became clear then that enemy tanks were somehow mixed in with our tanks. We were able to destroy their tanks from as close as ten, twenty and thirty meters."

—LIEUTENANT COLONEL MOTKE, Brigade Commander

There is no arm, apart from the Air Force, which can do this better than armored forces. And, the entire training program of the Armoured Corps has been focused on this mission. The deployment of armored forces in the south of Israel during the waiting period from the middle of May 1967 and the defensive deployment along the Jordanian and Syrian borders before the start of the offensive there show, however, that the Armoured Corps can fulfill defensive missions.

Nonetheless, during the Six Day War, armored soldiers regarded the phase of containment and defense as transitory and every effort was made to shift the aggressive action and transfer the fighting to enemy territory. Except for some abortive Syrian attacks in the north, no enemy soldier ever entered Israeli territory.

RATIO OF FORCES

During the Sinai Campaign of 1956 it became apparent that armor is of the utmost importance in the main theater of war, the huge spaces of the Sinai. At that time the IDF ground forces were mainly conventional infantry and the Israeli armored forces comprised only a small proportion of the total.

Owing to the demonstrated need for armor, IDF energetically set out to strengthen its Armoured Corps. During the eleven years that elapsed after the Sinai Campaign, new formations were created, new equipment purchased and obsolete equipment modified.

It was no secret, however, that both quantitatively as well as qualitatively, IDF armor was inferior to that of its adversaries. On 7 June 1967 the Chief of General Staff mentioned during a press conference at the height of the fighting:

> We have never revealed, and I hope we never shall, what the size and numbers of the Israel Defense Forces are. I had occasion prior to the events of the recent days to be asked whether it was true that we had 600-800 tanks, and I can only say that whoever relied on this estimate was mistaken.

Nevertheless, in spite of this intelligence error, IDF was quantitatively and qualitatively inferior.

Due to the priority of the Egyptian front, the best armored vehicles were directed south, leaving the more obsolete vehicles on the other fronts. The inferiority of IDF armored forces in the north was

particularly great. In view of this, the achievements of the Armoured Corps were spectacular.

THE PRINCIPLE OF CONCENTRATION

In spite of the necessity to disperse its armored forces, the IDF adhered to the principle of concentration. The history of modern war provides scores of examples where armored forces have been dispersed on the defensive as well as on the offensive to support non-armored forces. In this way the striking power of armor was lost and its power squandered. IDF avoided this blunder even in sectors where initially only small armored forces were deployed with relatively large non-armored forces. Adherence to this principle is evidenced by the concentration of strong armored formations in the three divisions of Generals Tal, Sharon, and Yaffe in the south; by the converging armored formations on the mountain ridges of Judea and Samaria and by the unstinting reinforcement of armored forces in the conquest of the Golan Plateau.

Our enemies acted differently. This is surprising since the initial deployment of the Egyptian Army had in fact indicated their intention to concentrate their armored forces. The Syrians believed, at least theoretically, in a concentrated deployment of armor as indicated by the term "Shock Force" which they gave to their armored forces. Considering actual practice though, it is no wonder that the mailed fist of the IDF prevailed over its enemies.

TRAINING AND OPERATIONAL DOCTRINE

The superiority of the Israeli armored forces was due mainly to a proper operational doctrine and to the high standard of training of all ranks to include the reservists. One task still to be undertaken by the Armoured Corps, as by all the other services, is the review of the training pamphlets and assessment of how they stood up under the cruel test of reality. Judging by the final results we are entitled to say even now that the main components of the training and operational doctrine have successfully passed the test.

Above all, this is true with regard to the standard of armored gunnery. Many achievements can be cited such as long-range sniping by tanks, firing in motion and night firing. Most significant were those occasions when armored vehicles with inferior characteristics clashed with superior ones and nevertheless won. These achievements should be credited not only to a proper training program, but also to practical experience acquired away from the firing range and maneuver areas during the border incidents on the Syrian frontier. Before the 1967 war, these were a common occurrence.

Most encouraging with respect to the training methods were reserve crews who were no less efficient than regular crews. One should mention that the waiting period, lasting from the middle of May until the morning of 5 June, contributed toward this efficiency. Reserve units had an opportunity to refresh military skills.

LEADERSHIP AND COMMAND

In the sphere of troop leadership, the Armoured Corps also put into practice the principle of "commanders in the front rank" as exemplified by the order "Follow me!" The highest command levels were on the battlefield. In this way they obtained their information by personal observation and were able personally to influence the actual battle. Evidence of the commander's forward location is to be found in the casualty lists which include a considerable number of commanders of all ranks.

An army led in such a manner responds more swiftly and vigorously to the ever-changing battle situation than one whose leaders are far behind the front relying on normal channels of communication. Usually, in the give and take of armored battle, the situation changes much too rapidly to permit effective command from a distance.

Training and leadership assume added importance if one takes into account that the scale of these armored battles, even though perhaps a sideshow in world affairs, ranks them among the largest in military history. The total number of tanks engaged in June 1967 in the Sinai Desert exceeded the number which took part in any single tank battle in the Western Desert and North Africa in the years 1940 to 1943. As far as the author of this article knows, only in two instances have greater armored forces been engaged—in the battle of Kursk on the Russian-German front in the summer of 1943 and in the employment of a Russian armored army group against the Japanese in Manchuria at the end of the Second World War.

AIR SUPERIORITY

The attainment of air superiority over the battlefield by the Israeli Air Force in the first hours of the war greatly aided the armored formations. However, that does not mean that the Israeli Armoured Corps would not have acted without it. In fact, at the time General Tal's troops moved out to break

into the enemy sector near Khan Yunis and Rafah, they did not realize that the air battle was being won. What is more important, the Egyptian troops opposing them did not know it either and their fighting spirit was intact. As a matter of fact, since Tal's force started its offensive almost simultaneously with the commencement of the air battle, the outcome was still in the balance.

However, as already mentioned, air superiority once achieved, enormously facilitated the armored forces movement. No doubt the speed of advance would have been much slower had the armored columns been exposed to enemy air attacks. Above all, air attacks would have hindered the advance of supply and maintenance echelons. Under the menace of hostile aircraft, it might have been possible to advance the support elements only in the hours of darkness and necessary to disperse them over a large area during the day.

ARMORED FORCES "LONG WIND"

As early as the Sinai Campaign of 1956 the vigorous progress of the Israeli armored formations was apparent. Since then the Armoured Corps has set itself even higher standards compared to those achieved at that time. Though it was not impossible to test these standards during peacetime maneuvers, the only limitations which could be imposed upon the maneuvering troops were physical ones resulting from technical difficulties and from difficult terrain or arbitrary ones imposed by the maneuver umpire and his staff. Always lacking was the great unknown factor of actual enemy interference.

When setting the standards, the question arose as to how long armored units could move and fight without a breathing spell. To help answer this, we had the benefit of experience gained in the 1956 Sinai Campaign. During peacetime maneuvers, however, there was no way to create the mental stress which accompanies real war and taxes heavily the individual soldiers. During the Six Day War our armor crews exceeded every estimate. For example, the forced march of an armor unit toward the entrance to the Mitla Pass, in response to General Yaffe's orders to block the Egyptian escape route there, demonstrated great endurance. The accounts of the crews who blocked the pass pose the question of what might have been their battle efficiency had the campaign lasted a few days more. There is no guarantee that a war will always be short and swift. This is ideal. One should plan for worse.

GAINING AND MAINTAINING THE INITIATIVE

Military history teaches that the side which takes the initiative gains great advantages since it is able to dictate the type of war it wants to wage phase by phase. Military history also teaches that the initiative is not always easy to keep. There have been instances where the enemy managed to recover from the initial shock. Then, by exploiting the fact that his adversary had moved far ahead of his own supply and maintenance bases, while he himself had shortened his lines of communications, the enemy turned the tables. The hunted became the hunter. Such a pattern occurred to each side in turn during the 1940-43 armor battles in the Western Desert. Only after the Allies gained the strategic initiative following the Battle of El Alamein did the Germans really lose the game.

In the Six Day War the IDF took the initiative from the start and kept it to the end.

Twice the enemy tried to regain the initiative. in the Egyptian theater of war. First he made an attempt to block the advance of the improvised combat team on the coastal road in the direction of El Qantara. The second attempt was made in a night counterattack through the central road against an armored lager not far away from Ismailia on the Suez Canal. However, these actions could not turn the scales in the enemy's favor.

It has always been clearly understood that the fate of Jerusalem would be decided by the possession of the mountain ridge between Jerusalem and Ramallah. Armored troops speedily seized this key terrain feature. The movement of these formations toward Nablus from the north and the south, the conquest of this town by a tank force, and the descent of armored troops into the Jordan Valley toward the Damiya Bridge and Jericho sealed the fate of the Arab Army of Jordan. Except for its opening moves—the storming of the High Commissioner's Palace in Jerusalem, the shelling of Jewish Jerusalem and Israeli airfields in the coastal plain as well as the Valley of Esdraelon and some casual shellfire on Tel Aviv—the Jordanian Army never maanged to gain the initiative and conformed to the scheme of maneuver of the Israeli armored forces.

Even on the rocky and heavily fortified Syrian Plateau the tempo of Israeli success was set by the armored troops. There were some sectors where the Syrian positions at the edge of the escarpment were stormed by the infantry, as might have been

expected. There were, however, other places on the same front where armor penetrated the enemy positions without infantry support. Once the initial lodgement on the edge of the escarpment had been achieved, it was armor which decided the pace of advance and the depth of penetration. And it was armor which played havoc in the enemy rear and prevented any attempt on his part to reorganize his forces. In sum, it was the successive arrival of the armored formations which provided the momentum for the short campaign against the Syrian Army.

What was characteristic of all these operations was the rapidly changing situation created by the speed of our armored forces' advance. This denied the enemy commanders a balanced appreciation of battlefield realities on which to base decisions. Moreover, the Israeli armored forces ignored their own exposed flanks, their loss of communications and the danger of encirclement. With the best armor tradition in mind they understood that the fate of the campaign often depends on the tempo of the advance and upon threatening the enemy's rear. When the enemy rear collapses, most problems are resolved.

An example of this attitude was the advance from Rafah to El Arish in the Sinai. It had been necessary to break through the enemy positions at Sheik Zueid and Giradi three times because tanks which were fighting on this axis had not stopped to mop up these positions. After breaking through these positions, the tanks' early appearance at the gates of El Arish was a complete surprise. At the same time the mechanized paratroopers under Tal's command finally eliminated enemy resistance in the Rafah forts.

The enemy expected a slow advance—some kind of systematic struggle for each defensive line. However, Yaffe's tanks galloped straight to the mouth of the Mitla Pass through an area still occupied by superior enemy forces and blocked the emergency exit to the redeeming Canal.

On the Jordanian Front, armored forces at Ramallah, Jenin and Nablus did the same when they bypassed enemy positions by a force march over difficult terrain.

Also, the initiative was gained and maintained by the Israeli forces because the enemy did not recognize suitable terrain for his armor. The march by Yaffe's tanks across the desert to Bir el-Lahfan on the first day is an example of this. The enemy was also badly surprised by the appearance of IDF armored troops on the Syrian Plateau in places where obviously nobody had expected them.

Courtesy Israeli Embassy, Washington

Israelis soldiers inspect an abandoned *Stalin 3* in the Sinai.

PROBLEM AREAS

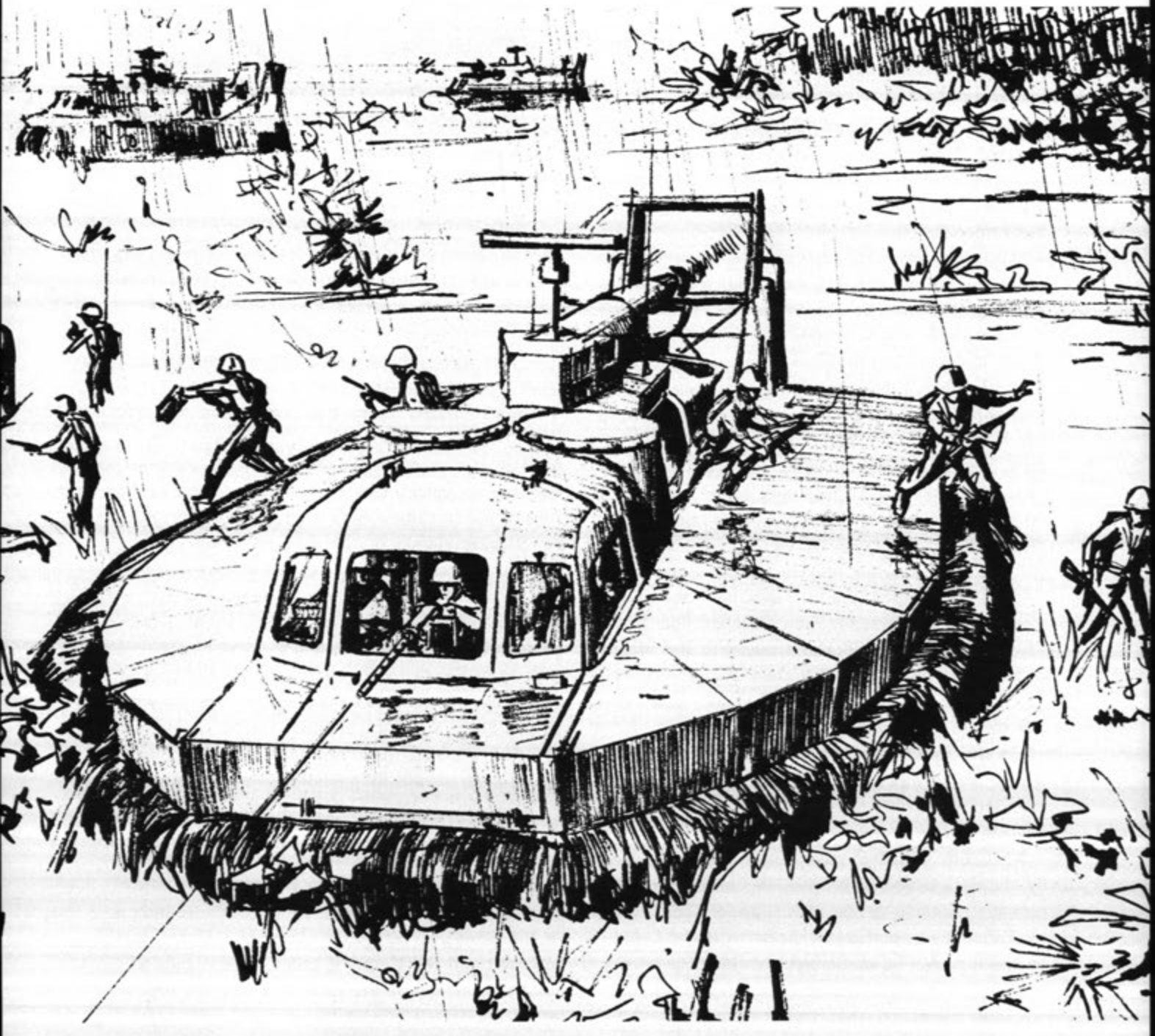
It would be contrary to the tradition of thoroughness of the Armoured Corps to ignore certain problems which have emerged from the Six Day War. These problems demand close study. Some of these problems have already been touched on, but one point deserves special attention.

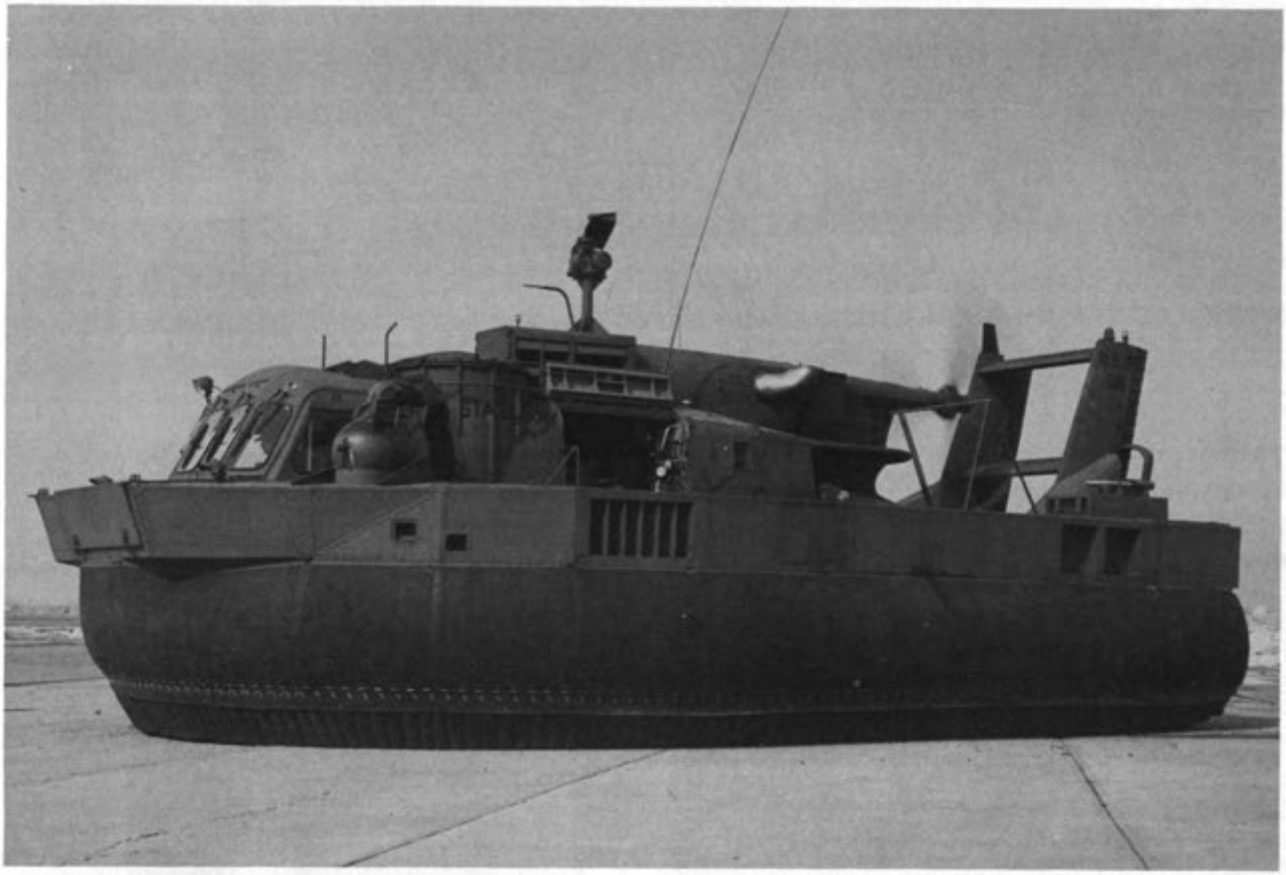
The Armoured Corps had, before the Six Day War, laid down a clear operational concept of deploying reconnaissance units in battle. However, one cannot ignore that these units suffered quite substantial casualties. This in itself requires a renewed examination of the subject. It would be a mistake to assume *a priori* that the existing doctrine is incorrect. Possibly it had not been properly understood or had not been properly translated from theory into practice. Maybe the reconnaissance soldiers displayed too much bravado in the heat of the battle and were too eager to perform missions beyond their actual capabilities. But it should not be ruled out that a doctrine which seemed perfectly logical and proper in peacetime was defective in the cruel test of war. Our reconnaissance doctrine must be reexamined.

Much further study is required in order to derive all the lessons. Should this be done properly, there is every reason to believe that the right solutions to the problems facing the Armoured Corps can be found and the Corps, if called upon, again will fulfill its function as the spearhead and the mailed fist of the Israeli ground forces.

Plane, Boat, or Combat Vehicle?

by LTC Carmen R. Milia





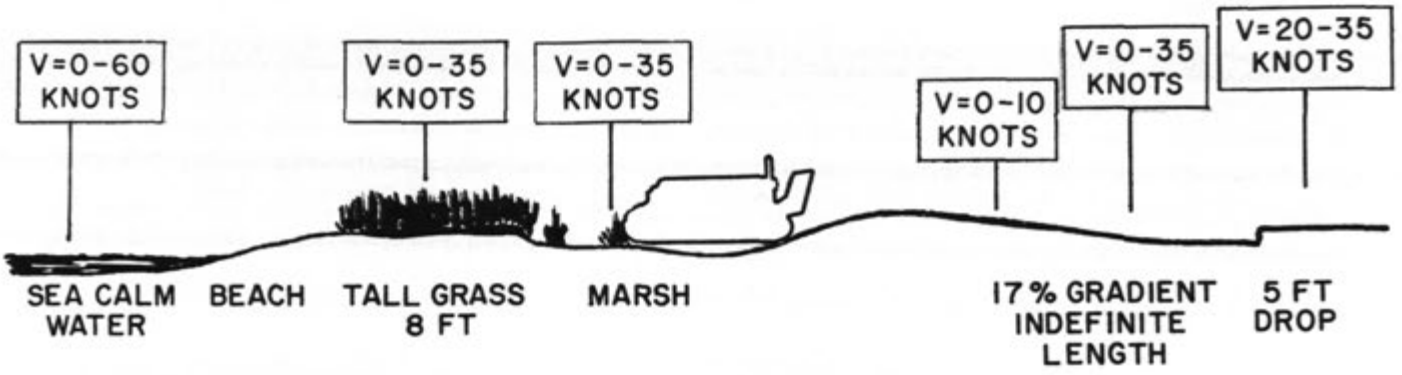
One day in early February, 14 cavalrymen signed out from Fort Knox to begin a new and unique assignment. At Aberdeen Proving Ground, Maryland, these troops were teamed up with five aviation-related mechanics to form the crews and a maintenance nucleus for the first Army air cushion vehicles (ACV).

In the swamps and sand of the proving ground and across the open water of Chesapeake Bay amidst the snow and ice of February, it was the mission of these nineteen volunteers to train, to innovate, to test and to challenge the concept of an ACV in the role of a combat vehicle. Because the doctrinal concept involved flat trajectory weapons on a fast moving vehicle, it seemed only natural that the job should fall to Armor people.

LIEUTENANT COLONEL CARMEN P. MILIA, *General Staff (Armor), is a 1950 graduate of the United States Military Academy and holds a Master of Science in Aeronautical Engineering from the Georgia Institute of Technology. He served in the 64th Tank Battalion, 3d Infantry Division during the Korean War earning the Silver Star and other decorations. He has served in six tank battalions, in USATCA, on the faculty of the Armor School, and on the staff of the Combat Developments Command Armor Agency. Presently he is the Department of the Army Systems Officer for the* ***Sheridan*** *and the* ***Shillelagh*** *as well as being the Assistant Chief of Staff for Force Development project officer for air cushion vehicles.*

Air cushion vehicles are not new. In six countries, France, Great Britain, Israel, Japan, Russia and the United States commercial models of ACV's are now, or will be, available in the foreseeable future. The Europeans, especially the British, have been notably adept at finding commercial applications of this "is it a plane, is it a boat." A new British monthly magazine *Air Cushion Vehicles* is completely devoted to the design, components and applications of these vehicles. The considerable unclassified literature available points up Russian interest in this field. This interest has been increasing steadily over the past few years.

Our own military services have been evaluating the concept for some years. Names like "zero ground pressure machines," "ground effects machines" and "Hovercraft" abound in the writings of visionary



military men published during the 1950's. But these machines were never accepted because, in addition to technical problems, the operational concept was questioned.

When used over land, the ACV is outperformed by both the wheel and the track. Over open water, ACV performance is not cost-effective as that of the boat. But when a vehicle is needed over a variety of flat ground, water, swamp, snow or ice, then the ACV must be considered a competitor.

WHAT CAN AN ACV DO THAT A CHOPPER CAN'T?

The question most often posed to the ACV enthusiast is "What can it do that a helicopter can't?" The answer is that it can carry more for a longer period of time—and then fight. When it gets to where the fight is, it can stop, set down on land, swamp or water and fight indefinitely. Like yesterday's gasoline driven tanks, it carries an auxiliary power unit for its radios and electrically driven guns. Unlike a helicopter, it has an unlimited loiter time and does not have to return to base. With a share of armor protection to protect the critical areas, the ACV is able to give a good account of itself in a scrap.

In a concept analogous to an aircraft carrier and its fighter planes, the effectiveness of the ACV will depend to a large degree on its assigned riflemen for firepower and protection. With a substantial three to four tons payload, the current Army ACV will lift all the soldiers that can find a seat inside the cabin and can perch on its outside deck. During previous combat experiences, over 25 Vietnamese soldiers have been carried through the Plain of Reeds at speeds in excess of 40 knots.

ARMY DEVELOPMENT

The development of the combat vehicle concept for the ACV did not follow the normal developmental cycle. There was no experience factor within the Army to supply the necessary personnel, materiel and training guidance leading to the fielding of these unconventional vehicles. Questions like "What makes up an ACV crew?", "What is the rank and MOS of the driver?", and "Should the vehicle commander by the pilot?" had to be addressed.

AN ARMY ACV UNIT IS BORN

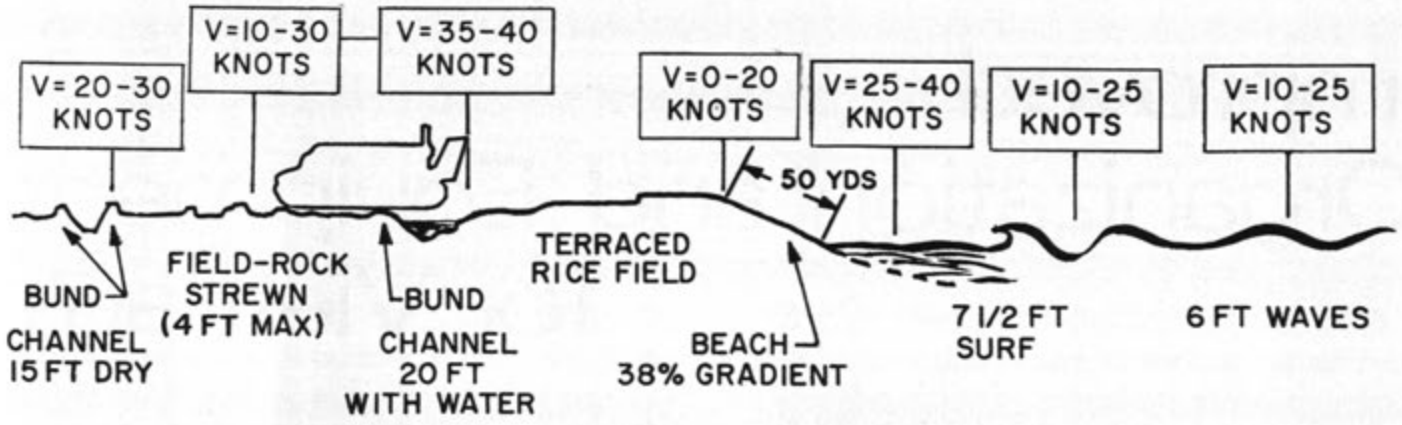
With the cooperation and recommendations of the Armor Center, the Department of Army selected Major (then Captain) David G. Moore to be the leader of the first ACV unit. The first platoon sergeant was Staff Sergeant Ronald Crosby of the 16th Armor Group at Fort Knox.

Before these pioneers could train the first crews it was necessary for them to learn the techniques and skills that were necessary to form this novel unit. For this, Major Moore and Sergeant Crosby were assigned to a similar Navy unit, then in training at Mare Island near Oakland, California. The two accompanied the Navy unit to Vietnam, learning by every trick, and every mistake, experienced by the Navy.

It might be interesting to mention here that the well-publicized Navy ACVs were commercial vehicles manufactured in England and then modified to suit the Navy's need. The Army craft on the other hand, were manufactured from the ground up in the United States to meet Army specifications of weapons selection and location, armor protection, avionics and human engineering.

By the time the ACV leaders had returned from Vietnam in December 1967, Fort Knox and Fort Eustis had selected the remaining crewmen from an abundance of volunteers.

The idea to integrate the ACV unit into an armored cavalry unit derives mainly from its intended operational employment as a fast moving, weapons-mounted, rifleman-carrying, communicating combat vehicle. But the logistical backup needed to support such a unique weapon gave another



reason. Fortunately, the strange blend of aircraft, tactical recovery vehicles, aluminum welders and aircraft engine mechanics needed is already found in the armored cavalry squadron. The armored cavalry squadron is almost unique in having both combat vehicles and helicopters. Such a unit seemed a natural to support logistically the fledging ACV platoon.

While the exact mixture of weapons systems has yet to be unveiled by the Army, one can easily imagine that a versatile blend of machineguns, grenade launchers, and other small arms will be the bare minimum. There would seem to be no technical or operational bar to mounting recoilless rifles, small mortars or even antitank/assault missiles for bunker busting.

DRIVER SKILLS

To drive an air cushion vehicle requires a youthful, well-coordinated individual who can handle stick, pedal and throttle controls not unlike those of a helicopter. Steering is accomplished by the action of a rudder against moving air. As a result, steering at low speed becomes mushy. Movement at high speed within the influence of close terrain requires sound judgment, concentration and the ability to anticipate the terrain. Therefore, the training of ACV operators appears to be a more difficult task than training a tank driver, but it is considerably simpler than training an airplane or helicopter pilot.

HANDICAPS

Lest we be blinded by our enthusiasm for a new system, we would do well to emphasize some of the shortcomings of the ACV. In solving some of Armor's trafficability problems in marginal terrain, the ACV may have created others. By virtue of its aircraft turbine engine, the ACV is an expensive, noisy, water and dirt spraying, fuel-gulping machine. Stealth and deception are sacrificed. The terrain must be basically flat. Hills with over a 17 percent gradient can not be climbed by the currently available models. Obstacles over four feet high can not be negotiated. The ACV can push over a 3-inch tree but hedgerows, treelines, steep canals, built-up areas and power lines are obstacles to free maneuver. It has also been found that it is beyond the skill of a driver to stay on a narrow road or a narrow embankment such as a rice paddy dike.

WHAT MIGHT THE FUTURE BRING

The comments presented here have deliberately been restricted to what is being done now or is to be done in the immediate future. In the natural process of development, subsequent generations of ACV's can be expected to be more compact and to have further improved operating capabilities.

The current disadvantages of high cost, noise and large dimensions are attributable to the high powered aircraft turbine engine and its forward thrust propeller. Do away with the aircraft engine and propeller and these shortcomings disappear.

Besides furnishing the power needed to inflate the air cushion, the engine of today's vehicle also turns the forward thrust propeller. Some companies, both in the United States and abroad, now suggest that the propulsion power should be provided by more conventional means such as wheels, tracks or water screws. The air cushion would still lift the vehicle from the friction of the ground, but forward thrust would be applied by a conventional power train. Besides improving its capability to traverse obstacles, this technique would certainly reduce the cost, noise, size and complexity of the entire vehicle.

A marriage of ACV and wheeled/tracked vehicle technology, could eventually lead to an entirely new generation of Army strike vehicles combining the virtues of both its ancestors to give optimum mobility over all types of terrain. An Army research program is certainly warranted in this area.

Improved Organization and Equipment for Vietnam

by Major General Arthur L. West, Jr. USA-Retired and
Colonel Donn A. Starry, Armor

In their previous article "Go or No Go in Vietnam" (ARMOR March-April 1968), General West and Colonel Starry described the Vietnam environment as it affects the operations of armor and mechanized units and their equipment. In this article the authors summarize the high points of the MACOV team findings on organization and equipment. ARMOR has learned from the Pentagon that this discussion remains valid today and that many of its recommendations will become realites about the time that this is being published. In addition to those points treated here, armor and mechanized infantry battalions in Vietnam are being reorganized to include separate headquarters and service companies. EDITOR.

ORGANIZATION

Most armor-mechanized units in Vietnam were found to be organized under the "E" series Tables of Organization and Equipment (TOE) as opposed to the later and more up-to-date "G" series. In addition, there were in effect considerable modifications to TOE, either by local command directive for implementation within the command, or by the more formal process of application to Department of the Army for a Modified TOE (MTOE). Incumbent armor-mechanized unit commanders, officers, and key non-commissioned officers were asked to participate in the MACOV program to gather all data relating to organization and equipment requirements for operations in Vietnam. The meld of all these factors and considerations produced MACOV recommendations for organization and equipment changes to improve the combat potential of armor-mechanized units in Vietnam. Of course, application of these recommendations to the Army in Vietnam depends on approval by Department of the Army, and application of the recommendations to the Army world-wide must be the subject of further evaluation. Most of the suggested changes reflect a kind of war and a kind of enemy we may encounter again in other emerging areas. Their long term impact on Army organization and equipment development should therefore be carefully evaluated.

A number of general changes applicable to all, or to several, armor-mechanized units for employment in Vietnam were suggested by the MACOV study:

- Conversion to the more modern "G" series TOE will authorize armor-mechanized units in Vietnam a good number of the personnel and equipment changes already made by local command directive, or by MTOE action, and will in addition standardize these organizations, facilitating implementation of The Army Authorization Documents System (TAADS) prescribed by Army Regulation 310-44 as modified by DA Circular 310-44, 5 Nov 67.
- Extensive civic action programs require addition of an S5 (Civil Affairs) section to battalion/squadron and regimental staffs.
- Battalion/squadron staffs require an assistant S2 to permit round-the-clock operation of command posts and operation centers and to coordinate collection of intelligence, which in Vietnam is available from a wide variety of sources.
- Another clerk is required in battalion/squadron S1 sections to handle the administrative workload.
- Battalion/squadron supply sections normally perform direct exchange clothing operations and ration breakdown tasks which require two additional enlisted personnel in S4 sections of those units.
- In units where the *M113* has been substituted for the *M114* as a scout vehicle, two additional crew-

men per vehicle are required to man the weapon kits mounted on the *M113* and make the vehicle a fighting track.

- In units using the 5-ton truck as a cargo carrier, half the 5-tons should be replaced by the *M548* full tracked cargo carrier to afford a cross-country resupply capability in forward areas away from base camps.
- Mechanized infantry and armored cavalry units need a lightweight vehicle launched bridge preferably *M113* mounted. Provision for an AVLB section equipped with such a lightweight launcher should be made in headquarters and headquarters companies/troops of those battalions/squadrons.
- Wheeled wreckers need assigned full-time driver-operators to replace mechanics who now operate those vehicles as an additional duty.
- Communications platoons require additional switchboard operators to permit round-the-clock switchboard operations.
- Ground surveillance radar sections need to be reorganized and reequipped, substituting the *AN/PPS-5* radar for both the *AN/PPS-4* and *AN/TPS-33* sets, each of which has proved less than operationally satisfactory in Vietnam.
- Flamethrower sections, consisting of the *M132 (M113* mounted) flamethrower, serviced by tracked service units when these are available, should be included in each battalion/squadron TOE.

MECHANIZED INFANTRY BATTALIONS

In mechanized infantry battalions the most pressing requirement is for a fourth maneuver element to provide the organizational flexibility demanded by operations in Vietnam. The composition of this fourth maneuver element became a major MACOV consideration. Two organizations were developed: one with a headquarters and headquarters company and four rifle companies; the other with a headquarters and headquarters company reduced considerably in strength, three rifle companies, and an armored cavalry troop. In the latter organization, the antitank, mortar, and reconnaissance functions normally performed by platoons in the headquarters and headquarters company are all performed by the armored cavalry troop, permitting reduction in headquarters company strength.

The four rifle company battalion has the advantages of: (1) adding more fighting infantry to the present organization without a concommittant increase in command-control strength; (2) adding to the present organization another subordinate unit identical to those already assigned and requiring few if any changes in techniques of employment; (3) keeping the variety of assigned equipment types in the battalion at a minimum; (4) maintaining cross-country mobility, indirect fire support by the heavy mortar platoon, and other attributes of the present battalion. Disadvantages are: (1) tanks, normally required for most operations, must be attached from other units thus dissipating the limited tank strength of the theater force; (2) insufficient heavy vehicles (tanks) for penetrating jungle too dense for the *M113;* (3) limiting large caliber direct fire weapons to the 90mm recoilless rifle, which is generally considered cumbersome and somewhat too heavy for dismounted operations of any duration in Vietnam.

The three rifle company and one armored cavalry troop battalion overcomes many shortcomings of the four rifle company battalion and at some saving in personnel resources. Among the advantages of this organization as they were seen by the MACOV study are: (1) improved flexibility in organization for combat afforded by the organic presence of the armored cavalry troop; (2) organic tanks capable of penetrating heavy jungle; (3) an organic large caliber direct fire capability in the tank gun; (4) considerable increase in firepower with 87 fewer personnel; (5) combining under a single command the combat support elements normally found in the headquarters company; (6) organic tank support obviating the need for tank attachment and permitting greater flexibility in theater employment of tank battalions; (7) providing an organic force ideally suited to line of communication security missions which is a continuing requirement likely to increase as stability operations progress.

Whatever its composition, the changes already described as being applicable to all armor-mechanized units are suggested for mechanized infantry battalions. In this particular battalion, evaluation of the maintenance function suggests formation of a company maintenance section for the headquarters company, separating that function from the battalion maintenance platoon. In the rifle companies themselves suggested changes include: (1) deletion of 106mm recoilless rifles from weapons platoons and retaining the *M125* 81mm mortar); (2) deletion of weapons squads and organization of rifle platoons into four rifle squads—a frequent innovation in many units; (3) retention of one 106mm recoilless rifle per platoon mounted on an *M113* for direct fire at longer ranges.

ARMOR BATTALIONS

Like their infantry counterparts, tank battalions need a fourth maneuver element. In addition, there appears to be a need to separate the headquarters and headquarters company into a headquarters company and a separate service company. In addition to changes common to all battalions/squadrons, the tank battalion in Vietnam requires the following in headquarters and service companies: (1) an additional mortar forward observer team for the fourth line company; (2) an additional welder and welding set mounted in an *M548* for on-site field welding; (3) sufficient armored ambulances to provide one per line company; (4) two additional company mess teams to support the fourth tank company and the service company.

In tank companies the following changes are suggested: (1) a dozer kit for one tank in each platoon—a reflection of the frequent jungle clearing requirement; (2) addition of an *M113* for use as a company command post; (3) a turret mechanic assigned to the company; (4) substitution of the *M79* grenade launcher for the caliber .45 submachinegun on each tank.

DIVISIONAL ARMORED CAVALRY SQUADRONS

In headquarters and headquarters troops of divisional armored cavalry squadrons, MACOV evaluation suggested, in addition to changes common to all battalions/squadrons, the addition of one welder with kit mounted in an *M548* (as in the tank battalion) for on site field welding. In armored cavalry troops, mention has already been made of the requirement for two additional crew members in scout vehicles where the *M113* replaces the *M114*. In addition, MACOV evaluation suggests substitution of the 81mm mortar for the 4.2 inch mortar in these units because of the minimum range restrictions of the latter weapon and the fact that the forward firing capability of the *M125* 81mm mortar carrier makes it a superior performer.

Air cavalry troops in these squadrons are recommended for reorganization under the new "G" series TOE for the air cavalry troop of the air cavalry squadron, airborne division (17-78G). This organization provides an air cavalry antitank rocket platoon rather than the aero-weapons section, and eliminates light and heavy scout sections, replacing them with four aero-scout squads. Additional door gunners, and avionics personnel are provided. In most cases these are now present by MTOE. Replacement of the two *UH1B* model helicopters in the supply and maintenance section with the *UH1D* aircraft is suggested to provide additional airlift when required.

ARMORED CAVALRY REGIMENT

In the 11th Armored Cavalry *M113* have been substituted for *M114* in scout sections, and tank sections have been replaced by two *M113*, forming in fact an additional scout squad. Except in the mortar squads, all *M113* are of the ACAV configuration already described. Because of the minimum range restrictions of the 4.2 inch mortar, it is not uncommon to find mortars centralized at troop or squadron level. Because of its more favorable minimum range, the 81mm mortar is suggested to replace the 4.2 inch in these squads.

The regimental headquarters and headquarters troop requires some additional personnel for awards and decorations and casualty reporting functions.

As was the air cavalry troop of the divisional cavalry squadron, the air cavalry troop of the regiment is suggested for reorganization under TOE 17-78G, modified but slightly by addition of a seven-man mess team.

Common changes already suggested for all battalions/squadrons apply to the organic squadrons. Tank companies should be identical to those suggested for tank battalions. Field artillery batteries should be reorganized under the "G" series TOE with the addition of a recovery vehicle, and an *M113* for use by the battery commander as a command post.

AIR CAVALRY SQUADRON, AIRMOBILE DIVISION

A revision of the temporary or "T" series TOE for this squadron to be published as a standard series TOE is based on recommendations of the 1st Cavalry Division, USARV, and USARPAC.

Major changes in the air cavalry troop of this squadron include: (1) addition of a series platoon; (2) deletion of the maintenance section from troop headquarters; (3) organization of antitank and rocket squads; (4) addition of two scout sections to the aero-scout platoon.

MACOV evaluation of the cavalry troop of this squadron developed conflicting requirements for retaining the present wheeled vehicle configuration, or for mechanizing the troop by addition of *M113*. All factors considered, the wisest course of action seemed to be to retain the wheeled equipment, and to provide armor-mechanized capability from outside the division when it is required.

CAVALRY TROOP, SEPARATE AIRBORNE/LIGHT INFANTRY BRIGADE

Cavalry troops of separate brigades in Vietnam were found to be organized under one of three different TOE, all with extensive modifications. All troops were wheeled vehicle equipped, and experience showed their employment varied considerably from mission to mission. One such troop has seen primary employment as an infantry company, while another has been habitually employed as an air-mobile company. The majority of the data collected indicated a requirement to convert to tracked vehicles in these troops in order to provide the cross-country mobility now lacking, and to increase firepower. It is therefore suggested that these troops should be organized as are the troops of the 11th Armored Cavalry—that is with *M113* ACAV replacing the *M114* in scout sections, and two *M113* replacing tanks in tank sections.

EQUIPMENT

In these final paragraphs we will highlight only the most significant of a number of minor equipment modifications appearing as requirements to the MACOV study group.

The *M1* cupola in this tank is difficult for the tank commander to use. The *M2* caliber .50 machinegun in this cupola is hard to load and operate. Since tank commander's hatches are seldom closed in Vietnam, most units have removed the *M2* machinegun from the cupola, mounting it atop the turret forward of the commander's hatch. In most cases this is done by shortening the legs of an *M3* mount and welding it in place. This permits easy access to the gun for loading and operating and allows a longer belt of ammunition to be fired without reload. The *M19* cupola, housing the *M85* machinegun, would afford a significant improvement in the machinegun capability of the *M48A3* tank, and evaluation suggested replacement would be in order.

Many units in Vietnam have modified one or more tanks by installing a cutting bar, welded from fender to fender across the front of the tank, as an aid to brush cutting when traversing jungle. This cutting bar is usually fashioned from a dozer blade tip. It has proved effective in clearing landing zones, access routes and trails through dense vegetation. Most tank commanders expressed the view that all tanks except those equipped with the dozer kit should have this modification applied.

Armament for the *M113* has been described in the discussion of the ACAV vehicle. Study confirmed a requirement to up-gun the *M113*, even in its ACAV configuration. As a consequence it is suggested that *M2* caliber .50 machineguns on half the combat tracks in Vietnam be replaced by a forward firing high velocity 40mm grenade launcher or an equivalent weapon system.

Belly armor on the *M113* will not sustain detonation of many of the larger antitank mines used by the Viet Cong. Most units line the deck of crew and driver compartments with sandbags to reduce mine damage and personnel casualties. To further reduce mine damage, USARV has initiated installation of titanium armor plate kits beneath driver and crew compartments on the *M113*. Should this prove a successful expedient, and not seriously degrade the swim capability and agility of the track, it is suggested for wider application.

A boom hoist attached to the front of the *M113* has been improvised for removal and replacement of major automotive assemblies, and to make possible using the *M113* as a recovery vehicle in areas where terrain or going prohibit use of the *M578* light recovery vehicle.

The need for a short gap spanning capability in mechanized infantry battalions suggests a requirement for a vehicle launched bridge for the *M113*, rather than to burden mechanized infantry units with the heavier tank chassis mounted AVLB.

A small, lightweight dozer kit has been applied to the *M113* by some units as an aid to traversing paddy dikes and canals. Selected units employed primarily in Delta and paddy areas need to be equipped with this kit.

Capstan kits and other expedient devices need to be standardized and made available for issue to units when missions take them into areas requiring extensive aids to movement.

SUM AND SUBSTANCE

The single most striking feature of the entire survey of armor-mechanized operations in this strange war was that our armor-mechanized units and their equipment enjoy a much greater utility in Vietnam than many thought possible at the outset. This reflects most favorably on the versatility and flexibility of our organizational principles and on our equipment. The more so since neither the organizations nor the equipment were designed primarily for the kind of war which we are fighting. Even more striking, however, is that again in this war the prime factor is the imagination, the inventive genius and the persistent determination of the American soldier.

by Colonel John C. Burney, Jr.

So You're Going To Be An Advisor?

Your chances of a future assignment as an advisor to a Vietnamese unit are pretty good! In fact, veterans of the war in Vietnam are being asked to return so that their experience can be applied in the increasingly vital advisory effort. As public pressure for the Vietnamese to shoulder more of the harder fighting grows, so grows the need for competent advisors.

As an advisor, you'll face a challenge unique for the U. S. Army. And this challenge is triple-barrelled.

MISUNDERSTOOD WAR

The first barrel is aimed at all assignees to Vietnam, advisors and non-advisors alike. It's loaded with a surprising lack of understanding by many of our countrymen of the need for and the nature of the Vietnamese War. True, this is a different type of war than our country has ever experienced. It's an insidious war in which the enemy uses such devious means as encouraging so-called peace demonstrations designed to divide our nation. His arsenal varies from psychological, political, and economic weapons to terrorism and punji stakes. The advisors, too, must be versatile; and many must be competent in economic and political areas as well as military.

To some, the threat to our nation is not apparent as it was during World Wars I and II. In Vietnam, there was no bombing of Pearl Harbor and no resulting surge of patriotism and resolve. Who can even say when this war actually began; and it may be impossible to date the end, for the enemy may simply fade away. As a result of such differences, the war is little understood in this country. And because a vocal protesting minority receives a disproportionate share of the publicity, the soldier departing for Vietnam today is unfortunately subjected to some doubt regarding whether his sacrifices are really appreciated. Of course, this is precisely the enemy's aim. We Americans should keep in mind that lack of support by people at home contributed substantially to the defeat of France in Vietnam.

CULTURAL DIFFERENCES

The second barrel of the challenge to the new advisor is loaded with what anthropologists might call "culture shock." Upon arrival in Vietnam, many are stunned by the vastly different type of soldier and military society encountered. Some of these differences can be illustrated by citing examples from a MACV-conducted study.

A continuing serious problem in the Vietnamese armed forces has been a high desertion rate. In mid-1965, a battalion desertion rate of fifty percent per year was not uncommon.

In an effort to help solve this problem, a study of desertions was directed. Efforts were focused on the area where the rates were the highest—the Popular Forces. The South Vietnamese ground forces consist of the Army of Vietnam (ARVN); the Regional

---

Colonel John C. Burney, Jr., a frequent ARMOR contributor, is now Assistant for Nuclear Planning Affairs, European Region, in the Office of the Assistant Secretary of Defense, International Security Affairs.

Forces (RF) which are provincial forces; and, the Popular Forces (PF) who are full-time soldiers whose mission is to defend their own hamlets and villages. Don't underestimate the capabilities of the RF and PF, for during the period covered by the desertion study they killed considerably more VC than did ARVN.

The officer responsible for the conduct of the study visited PF units in twenty of the forty-three provinces then in existence and accompanied many on operations. Excerpts from the study reveal many fascinating, different facets of the soldier with whom many advisors will spend a year in daily contact.

First, in the Vietnamese military, desertions are seldom desertions as we know them. Short absences are usually recorded as desertions. Thus, the soldier who leaves only to deliver pay to his family may be classed as a deserter. Furthermore, there was evidence that some desertions were merely clearing the rolls of "Phantom PFs", as they were called. These Phantom soldiers may never have been real or may have been killed months previously and were now merely names on a padded roster—names for which pay was drawn. As a result, when a headcount was forthcoming, the Phantom PFs promptly "deserted."

But why do the real PF desert? Statistical analysis showed that they deserted for many of the reasons that you might expect. Desertion rates were high where VC pressure was high. Generally, desertion rates paralleled casualty rates. Desertion rates were low where units were most secure, that is, where they were mutually supporting, where artillery support was available and where adequate weapons were provided. At the time of the survey some PFs were armed with shotguns.

In addition to these predictable causes, the study revealed several unusual reasons for "desertion" that we would not encounter in our Army. Particularly intriguing was the case of the resourceful PF soldier who deserted his platoon to enlist in a nearby ARVN unit. Upon being issued a rifle and a uniform (he had been equipped with a shotgun and black pajamas), he promptly deserted the ARVN unit and returned to his PF platoon with his newly issued equipment. The best dressed and armed soldier of the platoon, he was the envy of all! But back in Saigon, he accounted for two desertions, when in fact there had been none.

One may talk about our social mobility in American society, but there is also mobility within the Vietnamese armed forces. ARVN, RF, and PF apparently considered each other as fair game for recruiting. If a PF soldier sought the higher pay of ARVN service and his district or province chief would not release him, he often deserted.

During a visit to a newly formed RF company located at the center of a locally strong religious sect, province officials were asked if there had been any difficulty recruiting the required number. Surprisingly and in contrast to other provinces, they had had no problem forming the company. One reason was that 30 soldiers of the religious sect from an RF company of an adjacent province had deserted as a group to join the newly formed company and return to the center of their religion.

South Vietnam consists of many divisive ethnic groups with strictly local loyalties; and this situation sometimes caused desertions as well as other problems. For example, one battalion, formed in the Central Highlands, consisted largely of Montagnards. In 1965, the regiment was transferred to a distant coastal city. As a result of their strong attachment to their local area, 439 Montagnards deserted from that one battalion during a five-month period. While many doubtless joined other ARVN, RF, or PF units stationed near their homes, they nevertheless were counted as statistical deserters.

The attitude of the Vietnamese Army towards desertions and AWOLs differs considerably from ours. There, it seems to be accepted. The returning deserter was often welcomed back with open arms and surprisingly was sometimes even given his back pay. When punishment was administered, it was usually light indeed. A common penalty for desertion was two days confinement.

As you might anticipate, adequacy of medical treatment affected desertions. One platoon was visited shortly after a minor engagement in which a PF soldier had been wounded in the leg. He was evacuated to a crude civilian hospital where he lay unattended for several hours. As a result, he died from loss of blood. Upon learning this, twelve members of the platoon deserted in mass.

The study revealed one influence on desertions that was wholly unexpected. In those districts in which PF soldiers were allowed to have gardens, desertion rates were lower. The basic cause of this phenomenon was not determined. Either the PF soldiers needed the food from their gardens to supplement their meagre pay, or they remained in the PF because by so doing they could, in effect, obtain arms and ammunition to protect their crops.

Perhaps the most important contributor to desertions was misuse of the PF. They were intended

and equipped to provide local security—to defend their hamlets. Unfortunately, PF platoons were often used in offensive search and destroy missions. Having no machineguns and mortars, they were ill-equipped for heavy combat. Malemployment usually resulted in high desertion rates.

Advisors can do much to prevent such misuse and can contribute significantly to reducing the weakening effects of desertions. But to be fully effective, the advisor must understand the many facets of this sometimes puzzling, enigmatic oriental soldier. This aspect of the challenge is complicated by the fact that in many cases the new advisor will have had no combat experience, while many of his advisees will be experienced combat veterans.

Meeting this challenge can be most satisfying, for basically the Vietnamese is a brave soldier. Illustrative is an attack on a remote 25-man PF outpost south of Saigon. During a fierce assault, the VC broke into a corner of the outpost and seized four women and four children. They then called the husbands by name, saying that the dependents would be shot if the outpost were not surrendered. The defenders fought bravely on as, one by one, their wives and children were murdered. During the attack, a nineteen-year-old wife seized the radio of the fallen operator and called in artillery fire. The VC were held off until relief arrived. Twelve of the outpost's defenders were slain, but their tenacious defense caused the enemy considerably higher casualties.

We sometimes read criticism of the Vietnamese soldier's will to fight. Admittedly, he often fights a 5½-day week, but one must remember that he has been at war for more than twenty years. The Vietnamese soldier is not there for a one-year tour.

The third barrel of the challenge facing the advisor contains a demand for imaginative tactics for this unconventional war. The elusiveness of the Viet Cong guerrillas can be maddening to the newly assigned. Imagine the frustration experienced by advisors with a South Vietnamese regiment that in 1965 had a large main force VC unit trapped between a road and a river only 500 meters apart. The area extended for 800 meters along the river. With armed boats sealing the river front and troops covering escape routes to the flanks, a reinforced battalion swept from the road towards the river. Initially they encountered heavy fire, but the fire suddenly subsided, and the battalion closed on the river. They captured no VC or weapons, nor did they find even one enemy casualty. Where did the enemy go? Trapping this type of wily foe is seldom discussed at our service schools.

CREATING NEW TACTICS

However, a fine source of novel tactics is available. As the war progresses, our units are developing successful tactics to cope with "Charlie."

For example, the 1st Cavalry Division, which operates much like armored cavalry, developed several unique techniques. One was called the "lasso," which in 1966 was used successfully in the Crow's Foot, southwest of Bong Song. The Crow's Foot was a VC stronghold at the confluence of several streams. Five steep-sided valleys met in the shape of a bird's foot. At dusk, prior to the day of the assault, eighteen patrols were clandestinely landed beyond crests masking this area. During the night the patrols moved to preselected ambush positions at exit routes from the five valleys. Thus they formed approximately an eight kilometer circle or lasso. At dawn the next day, two battalions of infantry with a battalion of artillery air landed at the center of the Crow's Foot and moved up the valleys, flushing the enemy toward the ambush sites. While the enemy body count at the ambushes was not impressive, one enemy battalion, with its escape routes blocked, was trapped by the flushing forces. At a cost of two U. S. KIA, the VC lost 59 dead, and the enemy battalion commander was captured.

Once when the 3d Brigade of the 1st Cavalry didn't have sufficient troops to lasso a large objective area, it used an armored cavalry technique in reverse. In protecting the flank of exploiting armored forces, the armored cavalry leapfrogs from position to position on the flank, keeping pace with the units they protect. In the 1st Cavalry's adaptation of this technique, the 3d Brigade Commander, Colonel Harold G. Moore, ordered one reinforced battalion to search and destroy through a zone approximately three kilometers wide and ten kilometers long while forces on the flanks leapfrogged ambushes in a parallel zone in pace with the clearing forces. Incidentally, the zone assigned to the ambushing forces was called the "ZOLA," or "zone of leapfrogging ambushes." The search and destroy battalion operated in the zone of primary interest," or 'ZOPI." So you see, in Vietnam you'll have a rare opportunity to mold not only the tactics and terminology of tomorrow, but also the acronyms.

Another example of novel techniques was the same brigade's use of tanks at Chu Phong in March 1966. In this operation, described in the Sep-Oct 1967 issue of *ARMOR* ("Chu Phong Revisited"),

tanks were daringly and ingeniously used to crush a road through trackless jungle—a road which permitted artillery to reach vital firing positions. The versatile tanks ground down the jungle to form landing zones for the air cavalrymen and later linked up with air cavalrymen who had air assaulted into critical areas.

Unusual techniques, yes. However, the surface has only been scratched. How to bring the full weight of our superior military power to bear against the wily Cong will truly test the advisor's imagination and resourcefulness. Even the most successful brigades are sometimes thwarted. One such brigade twice surrounded and unexplicably "lost" an elusive NVA battalion. Months later, after most of its original members had rotated to the U. S., the brigade again tackled the NVA battalion in the same area. Aware of the enemy's previous mysterious disappearance and convinced that the surrounded battalion could not possibly have escaped through his lines, the commander organized an intense, detailed search of the area. He found the enemy and the answer to the mystery. The enemy were hidden in an extensive complex of tunnels, the entrances to which were in wells—*under the water level.*

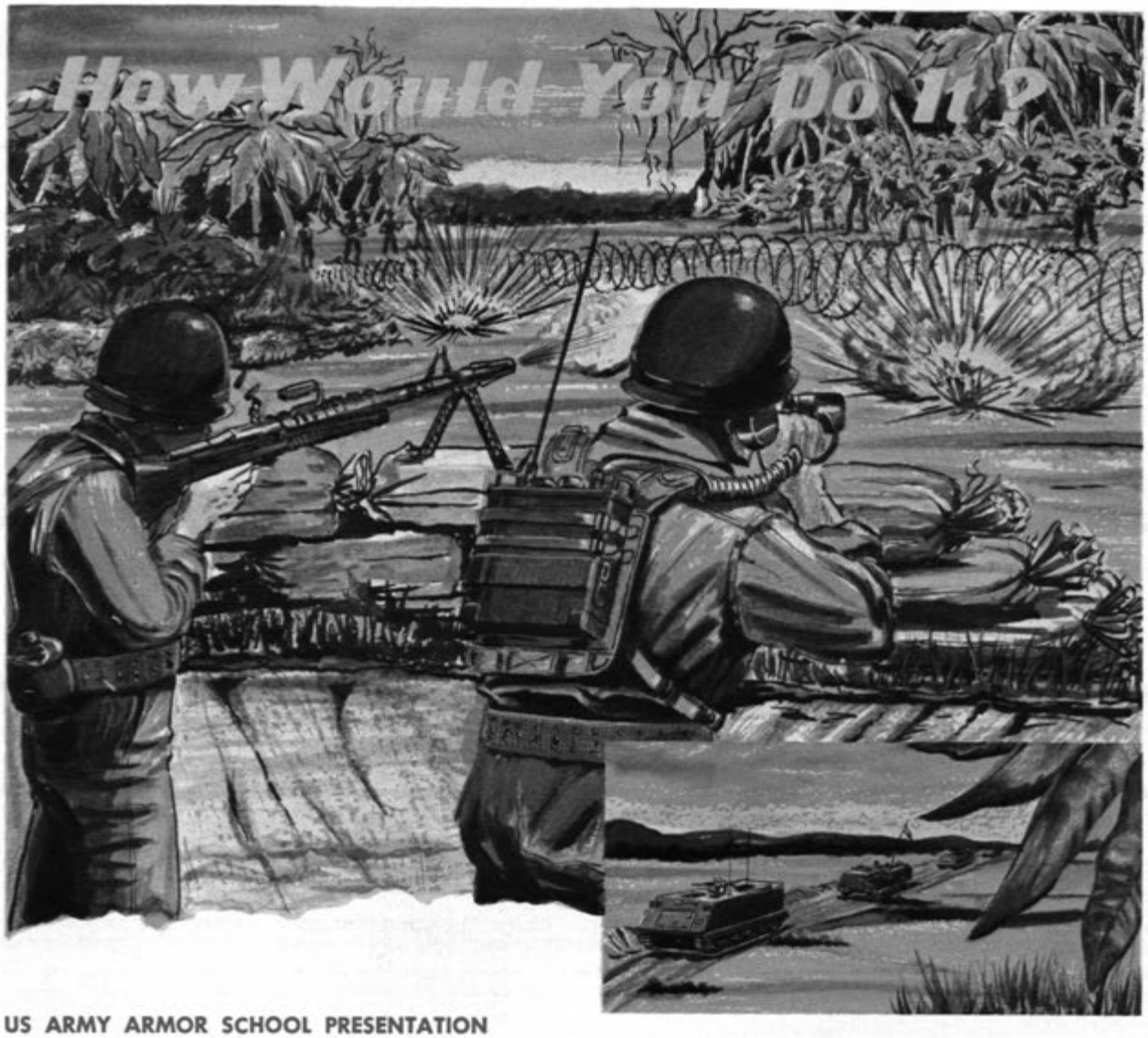
Armor officers, NCO's, and men, trained for mobile, flexible operations, should be particularly well suited for the type of warfare required in Vietnam. Hanson Baldwin indicated this in his article "P Wood of the 4th Armored" (*Army,* Jan 68). He said: 'The same principles—many of the same methods—that proved so successful in the 4th Armored's sweep across France are the hallmarks of the 1st Air Cavalry Division where helicopters are substituted for tanks."

GREAT CHALLENGE—GREATER OPPORTUNITY

Vietnam surely offers the advisor the greatest challenge ever faced by our military. He'll be engaged in a different type of war—unconventional, complex, and little understood. He must work with a completely different type of soldier than those of our army. This takes great patience and understanding. And success in battle will require different, novel tactics. "Two up and one back" just won't hack it.

But the greater the challenge, the greater the opportunity. The advisor has this opportunity in his vital, multi-faceted role. His mission is not only winning a just peace and the right of self-determination for South Vietnam. He must also build a bridge of understanding and cooperation that will make the road to victory smoother and shorter. In so doing, he'll be forging a sturdy link in the defense of the entire free world.

So you're going to be an advisor? Congratulations!



US ARMY ARMOR SCHOOL PRESENTATION

SITUATION

You are the platoon leader of the heavy mortar platoon of a tank battalion in Vietnam. You are in the process of displacing your platoon to a new location when you receive an urgent call for fire. A friendly unit is in danger of being over-run and needs rapid, close support. You immediately stop your platoon and begin to react.

PROBLEM

As the fire direction chief is orienting the M2 aiming circle on the mounting azimuth he discovers the magnetic needle has been damaged. He informs you that he is unable to lay the mortars parallel on the mounting azimuth with the aiming circle. You immediately realize:

(1) There is not enough time to secure a replacement for the aiming circle.

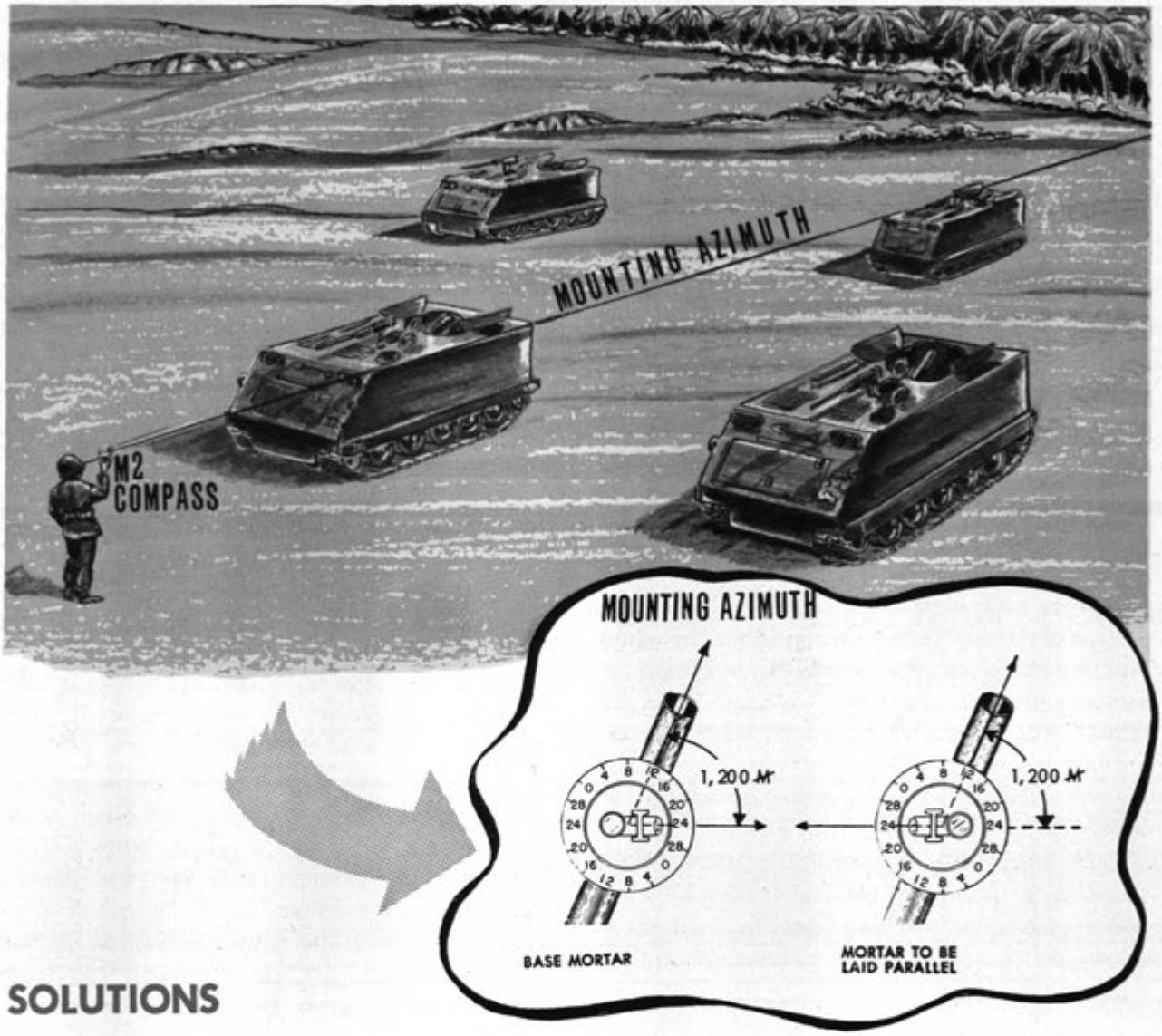
(2) It is imperative that the mortar platoon be *accurately laid parallel* for direction in order to provide accurate and safe close supporting fire.

(3) The only other magnetic instrument in the mortar platoon is the M2 compass.

HOW WOULD YOU DO IT?

AUTHOR: LT D. R. BURMEISTER

ILLUSTRATOR: JOE WARD



SOLUTIONS

GOOD—Instruct the fire direction chief to lay the tracks of each mortar carrier on the mounting azimuth with the M2 compass. With the mortar barrel centered in the carrier, it would have approximately the same azimuth as the track.

DISCUSSION—Laying the platoon parallel, by laying the tracks of each gun would provide sufficiently accurate supporting fire. This method, while not as accurate as using the M2 aiming circle, will nonetheless allow the mortar platoon to provide close support.

BETTER—Instruct the fire direction chief to lay the tracks of the base mortar (adjusting gun) with the M2 compass. The base mortar's sight will be used to lay the remaining mortars in the platoon.

DISCUSSION—This method will allow the mortar platoon to be laid within one mil parallel to the base gun. Accuracy is of prime importance when you are expected to provide close supporting fire.

NOTE—Simply pointing the guns in the direction of fire could be used in some situations. It cannot, however, be considered reliable in this situation as the requirement for accuracy cannot possibly be met with this solution.

From The Armor Branch Chief...

"AVIATION IN ARMOR" or "ARMOR IN AVIATION"

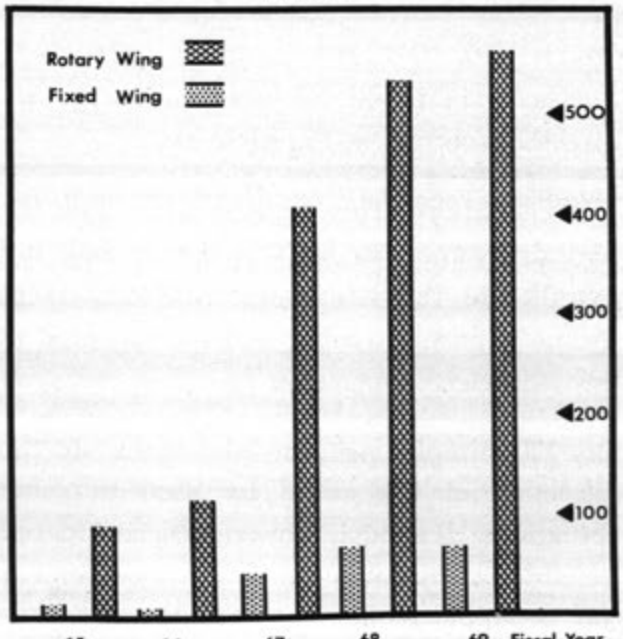
Regardless of the manner chosen to express the relationship, it has become a matter deserving our attention as professional Armor officers. It has occurred to us that many have not been given sufficient information to evaluate properly Armor's greatly increased investment in Army Aviation. This can be attributed largely to the combat-proven effectiveness of our air cavalry units in Vietnam and the equally spectacular growth of aviation throughout the Army.

AIR CAVALRY FUTURE — UNLIMITED

Since November 1966, four separate air cavalry squadrons have been activated and trained at the "Home of Armor." As the Commandant, U.S. Army Armor School, recently stated, "It is obvious to everyone that the air cavalry concept is on the move." The Commanding General, USACDC, has recently spoken on the need for "getting up to date . . . on aerial cavalry, because it's here to stay and in a very big way."

Such observations by responsible officials serve to explain the increased flight training input of Armor officers during the past two years. Figure 1 shows graphically the extent and composition of Armor's flight training input.

FIGURE 1



FLIGHT TRAINING INPUT—ARMOR BRANCH

BRANCH RELATED ASSIGNMENTS

Since the advent of the reorganized Army division (ROAD) in 1962, each divisional armored cavalry squadron has been authorized an air cavalry troop. The armored cavalry regiment is also authorized an air cavalry troop.

With 67 Armor aviators authorized for each air cavalry squadron and 18 for each air cavalry troop, the total branch related aviation requirements have become substantial. Inasmuch as these slots have been identified with the MOS 61204, they serve to provide an excellent means of insuring that our Armor officers do have an opportunity to remain in a branch-related aviation asignment. Should we fail to qualify adequate numbers of Armor officers as aviators, then other branches authorized aviation personnel will provide the needed leadership for such organizations in the future.

There are many within our ranks who believe that a real effort is essential to insure that Armor maintains a major role in developing an improved capability for mobile warfare in the future. Our younger officers who are interested in the further development of the air cavalry concept should be encouraged to participate in these endeavors. Our future as a branch will surely be judged by our ability to adapt to those constantly changing methods of warfare resulting from adoption of new armament and new equipment. Today, as was true in the past, we cannot afford to ignore the winds of change.

OTHER AVIATION REQUIREMENTS

Each branch currently authorized commissioned officer aviators (Armor, Artillery, Infantry, Corps of Engineers, Signal Corps, Transportation Corps, Medical Service Corps, Military Intelligence) must provide a portion of the total personnel required for branch immaterial type aviation assignments. These officers are required to fill those authorized positions wherein qualification in a particular branch is not considered essential. These include aviators within the aviation training base, aviation staff jobs, and assignments within some aviation units.

Armor Branch has a primary responsibility for the air cavalry units and, consequently, most Armor aviators can expect to serve with these units. Only

ANALYSIS OF ARMY PROMOTION SCHEDULES

Selection For	Army-wide Selection Rates (%) Non-Aviator	Aviator	Circular Date
Colonel	29.3	44.0	Apr 62
	30.1	50.0	Aug 63
	23.3	46.2	Mar 65
	23.1	60.0	Mar 66
	28.2	45.4	Dec 66
	25.4	41.4	Nov 67
Lieutenant Colonel	63.0	80.3	Jun 62
	68.0	66.9	Nov 62
	60.8	72.0	Aug 63
	69.6	72.7	Aug 64
	72.0	76.4	Aug 65
	74.5	76.0	Jun 66
	65.2	77.2	Mar 67
	67.3	84.1	Jan 68
Major	63.5	64.0	Jun 62
	57.7	65.9	Jun 63
	53.7	65.3	Jul 64
	63.5	63.2	Jul 65
	69.1	69.1	May 66
	75.2	78.3	Jul 67

FIGURE 2

rotary wing aircraft are authorized within the air cavalry units. Therefore, most Armor aviators will be rotary wing qualified. Armor Branch is also responsible for providing a smaller number of fixed wing qualified aviators for branch immaterial assignments. As indicated in Figure 1, the number of fixed wing school quotas now represent only about 10 percent of the total annual training input. Those officers wanting to remain in a branch-related aviation assignment should seek rotary wing qualification rather than fixed wing.

AVIATION CAREER OPPORTUNITIES

A charge frequently heard is that aviation qualification reduces an officer's chances for continued advancement compared to that of his non-aviator contemporaries. As a glance at Figure 2 will verify, quite the contrary is true. This chart compares the Army-wide selection rates for aviators with their non-aviator contemporaries since 1962. Analysis of the branch selection rates for the same period discloses a similar but even more favorable trend for the aviator.

The Armor aviator is also competing successfully for advanced military schooling. Forty-three of Armor's 135 allocations for the FY 1969 course at the Command and General Staff College were won by aviators. Six of Armor's 27 selectees for the FY 1969 senior service college classes are aviators. Since avaitors account for only 15% of the branch strength, it appears that the non-aviator rather than the aviator needs to look to his laurels.

One major concern, in regard to schooling, is attendance at the branch advanced course. Due to the critical world-wide shortage of aviators, each branch has been restricted in the number of aviators that could be made available to attend these courses. Present trends indicate that we will be able to program virtually all Armor officers, to include aviators, for this course prior to their reaching their first year of eligibility for CGSC attendance.

AS ALWAYS, PERFORMANCE COUNTS

Perhaps the most important aspect of what is said herein is that ALL Armor officers are afforded career opportunities on the basis of their demonstrated performance. Sub-standard performance does create career obstacles for the aviator as well as for the non-aviator Armor officer. There are no Armor officers who have encountered a "dead-end" which could in any way be attributed to the acqusition of an added military skill.

AVIATION APPLICANTS SOUGHT

Armor Branch has available school quotas for those company grade officers desiring to participate in the training, combat employment, and future development of the air cavalry concept. In order to meet anticipated aviation requirements in FY 69, it will be necessary for one of each five newly commissioned Armor officers to volunteer and qualify for the flight training program. Those interested in submitting applications should study AR 611-110 and consult their unit personnel officer. Armor Branch stands ready to assist or advise applicants. The Aviation Training Desk Officer may be contacted at OXford 6-8507.

NEWS NOTES

ARMOR GRADUATES
of the
UNITED STATES MILITARY ACADEMY
CLASS OF 1968

Top Row: (Left to right) Carpenter, Prince, Main

6th Row: Speidel, Herman, Tanski, Echols, Thomassey, Laughton, Aker, Einbinder, Moe, Lower, Bachman, Buckley, Simmons.

5th Row: Fisher, Perry, Pirnie, Carraway, Johnston J., Wallace, DesJardien, Schlipper, Frinak, Colglazier, Crupper, Gregor, Florance.

4th Row: Reichert, Peplinski, Nash, Flowers, Baerman, Cunningham, McClary, Stolp, Peters, Williams G., Hunt, Stephan, McCauley, Christensen.

3d Row: Maddux, Copley, Allen, Creeden, Selvitelle, Larson, Stratton, Williams G., Murphy ME., Besanceny, Swinney, Schappaugh, Kulpa, Wyman.

2d Row: Kelly R., Ader, Neswiacheny, Heckman, O'Toole, Fay, Lorentzen, Margrave, Easton, Soeder, Sayre, Llewellyn, Meinshausen, Cullen, Shaw, Heller.

Botton Row: Korda, Reffett, Stettler, Kaufman, Eustice, Jordan, Coogler, Shields, D'allessandro, Johnson D., Miller, Mente, Ptasnik, Wheless, Shaffer, Wholers, MAJ Mason (Sr. Armor Instructor).

Absent: Yoshizumi, Kelly J., Taylor, Becker, Tucker

ARMOR NCO AWARDED MEDAL OF HONOR

In ceremonies at the Pentagon, Secretary of the Army Stanley R. Reasor presented the Medal of Honor posthumously awarded to Sergeant Donald R. Long to his sister, Mrs. Marva L. Gordon of Columbus, Ohio. Sergeant Long distinguished himself on 30 June 1966 while serving with Troop C, 1st Squadron, 4th Cavalry, 1st Infantry Division in Vietnam. When his patrol was attacked by elements of an entire Viet Cong Regiment, Sergeant Long led his men courageously and then gave his life by throwing himself on an enemy grenade, thus saving the lives of at least eight of his men. Sergeant Long was the first man of Armor to earn the Medal of Honor in the Vietnam War.

1st Lieutenant Robert W. Whitton receives one of the two 1967 Armor Association ROTC Award sabers from his regimental commander, Colonel Clarke T. Baldwin, Jr., 2d Armored Cavalry. Lieutenant Whitton was born at Fort Knox and is a 1966 Distinguished Military Graduate of Murray State College (Kentucky).

GENERAL BOLES COMMANDS "OLD IRONSIDES"

Major General John K. Boles, Jr., has assumed command of the 1st Armored Division replacing Major General Richard G. Stillwell who has been reassigned to U. S. Army, Vietnam. General Boles was born into the 9th Cavalry with which his father was serving in the Philippines. On graduation from West Point in 1939 he was assigned to the 7th Cavalry and later to the 1st Cavalry (Mechanized). During the World War II, he commanded both the 83d Armored Reconnaissance Battalion and a tank battalion of the 32d Armored Regiment in the 3d Armored Division. Subsequently he commanded the 66th Tank Battalion and the 41st Armored Infantry Regiment of the 2d Armored Division. Following a tour in Panama as commander of the 45th Cavalry Reconnaissance Squadron, he attended the Command and General Staff College. He remained there for four years as an instructor, departing to attend the Army War College. He then commanded the 6th Armored Cavalry Regiment in Germany from 1955 to 1957. General Boles next served on the Army Staff and with the Joint Chiefs of Staff. From 1964 to 1966 he served in Vietnam. His last previous assignment was with the Defense Communications Planning Group.

DIESEL M113s IN VIETNAM

The 1st Battalion (Mechanized), 5th Infantry, 25th Infantry Division in Vietnam reports that their new diesel powered M113s have greater power, fewer parts to malfunction, are not prone to burn when hit and get about twice as many miles to the gallon than the gasoline fueled models they replaced. A further advantage is that now these APCs have a common fuel with those tanks with which they operate.

30th INFANTRY DIVISION REUNION

The 30th Infantry Division 22d Annual Reunion will be held in Colorado Springs 2-4 July 1968. Contact Lieutenant Colonel Saul Solow, 42 Parkway Drive, Syosset, New York 11791.

U. S. ARMY ARMOR SCHOOL TRENDS

20mm GUN INSTRUCTION

A new armament system for the *M114A1* command and reconnaissance vehicle is presently in production, and is scheduled to be in the hands of troop units during the 4th quarter FY 69. The *M139,* 20mm gun will be mounted on a *M114A1* which has been modified to accept the *XM127* power cupola. The system will enable the vehicle commander to engage soft point targets with a variety

of ammunition and modes of operation. Among the rounds available for use with this weapons system are the high explosive incendiary with tracer (HEIT), an armor piercing incendiary with tracer (APIT), and a target practice with tracer (TPT). This weapons system has been designed to be fired in five ways. The gunner has the option of selecting either single shot, a slow rate which will deliver 200 rounds per minute, a fast rate which provides continuous fire at the full cyclic rate of 820-1000 rounds per minute, a 5-round burst at the slow (200 rd) cyclic rate, or a 5-round burst at the full (820-1000 rd) cyclic rate. The ammunition feed box has a 75 round capacity and an additional 25 rounds are carried in the feed chute.

Instruction presented to the Armor Officer Basic, Armor Intelligence Specialist, and Turret Artillery Repairman classes is expected to include training on this weapon system.

SHERIDAN/SHILLELAGH TACTICS

The final draft of DA TC 17-16 *Armored Reconnaissance/Airborne Assault Vehicle (M551)* outlining interim tactics and techniques for the *Sheridan/Shillelagh* has been sent to the printer. Distribution is expected within a few months.

VIETNAM PACKET AVAILABLE

Those on orders to Vietnam are entitled to a free packet containing up-to-date information on the physical environment there as it affects armor. Also included is a frequently revised summary of lessons learned by individuals and units during combat in Vietnam. Write Director, ISD, US Army Armor School, Fort Knox, Kentucky 40121.

BLACKHORSE DONATES TO PATTON MUSEUM

The Blackhorse Regiment has long been a patron of the Patton Museum. Under the guidance of Major Bruce R. Nilsson, the Regimental Historian, it has donated a complete Viet Cong uniform with field gear, rifle, machine gun, carbine, rocket launcher, grenades, medicines, propaganda posters and numerous other items captured during their Vietnam campaigns.

Recently, 11th Cavalry members contributed $6,500 for a regimental memorial bay in the new Patton Museum planned for a 112-acre site near the junction of Highways 31W and 60. Their donation check was sent to former regimental commander and present Armor School Assistant Commandant Colonel William W. Cobb for presentation to the Cavalry-Armor Foundation.

The non-profit foundation, governed by a board of distinguished citizens and retired officers, is actively sponsoring various drives to realize the three million needed to construct the new permanent Patton Museum which is to replace the current ramshackle wooden structure. The museum is administered by the Armor School.

ROGERS HALL DEDICATED

In a dedication ceremony presided over by Colonel William W. Cobb, the school assistant commandant, a classroom building was named in honor of 1st Lieutenant George Patrick Rogers.

Lieutenant Rogers, the top man in the first OC class to graduate after the OCS was reactivated at Fort Knox in 1966, was killed in action in May 1967 while serving with the 4th Cavalry.

Present for the dedication were his widow, Mrs. Gwen Rogers, his parents, Lieutenant Colonel (USA-Ret) and Mrs. George P. Rogers, his sister and three brothers. One brother, 1st Lieutenant Kenneth M. Rogers, is also a graduate of the Armor OCS.

REMINGTON AND RUSSELL COLOR PRINTS

Many have asked us to make these prints available. Here they are, reproduced in full color on heavy art paper and at reasonable prices for your den, office or unit day room.

Frederic Remington's "Buckskins": Portraits of the Old West. A portfolio of eight, 12½ by 16¼ inch color prints including:

A Cavalry Officer	A Cheyenne Buck
An Army Packer	A Trapper
A Sioux Chief	A Breed
An Arizona Cowboy	Old Ramon

"Buckskins" Portfolio. Set of 8 prints **ONLY $3.00** postpaid.

The following large color prints are also available:

"Old Time Plains Fight" by Frederic Remington (23½ by 16 inches) **$2.00** Postpaid
"The Apache" by Frederic Remington (22 by 16 inches) **$2.00** Postpaid
"The Alarm" by Charles Russell (23½ by 16 inches) **$2.00** Postpaid
"Surprise Attack" by Charles Russell (22½ by 16 inches) **$2.00** Postpaid
AND, everyone's favorite Cavalry trooper, "Old Bill," by Frederic Remington reproduced in the original black and white in drawing style. **$1.50** Postpaid

SPECIAL: Print orders over **$10.00** will receive **FREE** and postpaid THE EVOLUTION OF ARMOR print, which regularly sells for **$3.00** each.

BOOK ORDER

QTY	TITLE	AUTHOR	$ PRICE
☐			
☐			
☐			
☐			
		SUB-TOTAL	
		LESS 10% DISCOUNT ON BOOK ORDERS OF $10 OR MORE	
		NET	
☐	"The Evolution of Armor" Print —@ $3.00		
☐	"Old Bill" Print—@ $1.50		
☐	ARMOR Binder For 12 Issues—@ $2.75		
		TOTAL ORDER $	

NAME_____

ADDRESS_____

CITY_____ STATE_____ ZIP_____

☐ REMITTANCE ENCLOSED ☐ SEND STATEMENT

MAKE CHECKS PAYABLE TO ARMOR AND SEND TO:

SUITE 418, 1145 19TH STREET, NW, WASHINGTON, D. C. 20036

THE WARS OF AMERICA **$12.50**
by Robert Leckie

The Wars of America incorporates the historical facts of time, place and execution with the human side of war. The narrative includes the economic, social and political influences on the course of events in America from the Colonial Wars through the war in Vietnam. Mr. Leckie gives innumerable insights into the personalities of our military leaders.

Mr. Leckie extends the narrations with interesting sidelights. For example, at the Battle of Chippewa in the War of 1812 the American regulars were dressed in the militia gray due to a lack of blue cloth. These American regulars routed the British regulars for the first time during the war. The Battle of Chippewa was not an important victory for America. However, the psychological effects were enduring and the battle is commemorated in the gray uniforms worn by the cadets at the United States Military Academy.

"A story pregnant with significance. . ." says Richard B. Morris in the foreword. HCS, Jr.

THE CODEBREAKERS **$14.95**
by David Kahn

The first comprehensive history of secret communication from ancient time to the threshold of outer space. 1164 pp. With illustrations, bibliography, notes and index.

THE YELLOWLEGS **$6.50**
The Story of the United States Cavalry by Richard Wormser. 480 pp. Illustrated.

"The Yellowlegs" tells the complete story of the United States Cavalry in terms of the major personalities and events from the Revolutionary exploits of Light-Horse Harry Lee to the day when Black Jack Pershing led his troops in an automobile.

Wormser's battle scenes are said to be masterpieces of informal exposition, clear and easily followed, while his story develops through lively, working portraits of such famous mounted leaders as Stephen Watts Kearney, Philip St. George Cooke, Jeb Stuart, Custer, Sheridan, and George Crook.

The best history of the United States Cavalry published thus far. An *ARMOR* best seller.

APPLICATION FOR MEMBERSHIP OR SUBSCRIPTION

TO: THE UNITED STATES ARMOR ASSOCIATION
1145 19th Street, NW, Washington, D. C. 20036

NAME _____ ☐ NEW

ADDRESS _____ ☐ RENEWAL

CITY _____ STATE _____ ZIP _____

PLEASE FILL IN ALL APPLICABLE SPACES IN 1, 2 OR 3 BELOW

1. ACTIVE DUTY MILITARY MEMBER
☐ REGULAR ☐ RESERVE ☐ ARNG ☐ USMA
(grade) (service) (branch)
(service number) (unit)

2. OTHER MILITARY MEMBER
☐ REGULAR ☐ RESERVE ☐ ARNG ☐ ROTC ☐ RETIRED ☐ VETERAN
(grade) (service) (branch)
(service number) (unit) (if veteran or retired indicate former unit)

3. SUBSCRIBER
☐ DOMESTIC ☐ FOREIGN
☐ INDIVIDUAL (FOREIGN MILITARY INDICATE RANK, BRANCH, ETC. IN 2. ABOVE)
☐ MILITARY UNIT
☐ BUSINESS, INDUSTRY, ETC.
☐ LIBRARY, EDUCATIONAL INSTITUTION

Dues for military members (including veterans) $8.50 for two years; $4.75 for one year. Cadets only—$4.00 per year. Dues include subscription to ARMOR.
Subscriptions—Domestic $12.00 for two years; $6.50 for one year. Foreign $15.00 for two years; $8.00 for one year.

FOR YOUR LIBRARY

SOUTHEAST ASIA

BATTLES IN THE MONSOON by BG S. L. A. Marshall **6.95**

HOW TO STAY ALIVE IN VIETNAM by COL R. B. Rigg **1.95**

HELL IN A VERY SMALL PLACE by Bernard B. Fall **8.95**

THE TWO VIET-NAMS by Bernard B. Fall **7.95**

HO CHI MINH ON REVOLUTION by Bernard B. Fall **6.95**

LAST REFLECTIONS ON A WAR by Bernard B. Fall **4.95**

BIG VICTORY, GREAT TASK by GEN Vo Nguyen Giap **4.50**

FIRE AND MOVEMENT by Jac Weller **6.95**

COUNTERINSURGENCY

CHE GUEVARA ON GUERRILLA WARFARE **4.50**

MAO TSE-TUNG ON GUERRILLA WARFARE **4.50**

PEKING AND PEOPLES WARS
by BG Samuel B. Griffith, II, USMC-Ret **4.95**

THE ART OF COUNTER-REVOLUTIONARY WARFARE
by John J. McCuen **8.50**

PEACEFUL CONFLICT by Edward B. Glick **6.50**

WORLD WAR II

PANZER BATTLES by von Mellenthin **5.95**

THE ROMMEL PAPERS edited by B. H. Liddell Hart **8.50**

KASSERINE PASS by Martin Blumenson **5.95**

THE MARCH TO TUNIS by Alan Moorehead **8.50**

THE FOXES OF THE DESERT by Paul Carell **5.95**

A DIFFERENT KIND OF WAR by Adm Milton E. Miles **7.95**

THE BATTLE OF THE FALAISE GAP by Eddy Florentin **7.50**

CORREGIDOR—The Saga of a Fortress
by J. H. Belote & W. M. Belote **6.95**

CAVALRY AND THE AMERICAN WEST

THE YELLOWLEGS by Richard Wormser **6.50**

SPURS TO GLORY by James M. Merrill **6.95**

FRONTIERSMEN IN BLUE by Robert M. Utley **9.95**

THE MILITARY CONQUEST OF THE SOUTHERN PLAINS
by William H. Leckie **5.95**

THE COMPACT HISTORY OF THE INDIAN WARS by John Tebbel **5.95**

THE BUFFALO SOLDIERS by William Leckie **5.95**

SOLDIERS ON THE SANTA FE TRAIL by Leo E. Oliva **4.50**

A PICTURE HISTORY OF THE CUSTER FIGHT by William Reusswig **8.50**

FAINT THE TRUMPET SOUNDS
by John Upton Terrell and COL George Walton **6.95**

GENERAL

GUIDELINES FOR THE LEADER & THE COMMANDER
by GEN Bruce C. Clarke **1.00**

THE OFFICER AS A LEADER by BG S. L. A. Marshall **6.50**

TAKING COMMAND by USMA Faculty Members **6.95**

THE OFFICER'S GUIDE by R. B. Reynolds **6.95**

THE NCO GUIDE **4.95**

THE TANK COMMANDER'S GUIDE by Warnick, Cook & Baker . **3.95**

TANK COMPANY COMMANDER'S GUIDE,
by Brier, Moore & Bahnsen **1.25**

THE CODEBREAKERS by David Kahn **14.95**

A PICTORIAL HISTORY OF THE U.S. ARMY by Gene Gurney . **15.00**

THE HISTORY OF THE U.S. ARMY by Russell F. Weigley **12.95**

DICTIONARY OF MILITARY & NAVAL QUOTATIONS
by COL R. D. Heinl **15.00**

DICTIONARY OF BATTLES by David Eggenberger **12.50**

THE MIDDLE EAST

SWIFT SWORD by S. L. A. Marshall **3.95**

THE SIX DAY WAR by Randolph & Winston S. Churchill **3.95**

DIARY OF THE SINAI CAMPAIGN by MG Moshe Dayan **5.95**
Paperback **1.95**

BIOGRAPHY

AT EASE, Stories I Tell to Friends by Dwight D. Eisenhower **6.95**

BEFORE THE COLORS FADE by Fred Ayer **6.00**

WARRIOR—The Story of General George S. Patton, Jr.
by Editors of THE ARMY TIMES **5.95**

MILITARY WEAPONS

AGE OF GREAT GUNS by Frank E. Comparato **11.95**

PAGEANT OF THE GUN by Harold E. Peterson **5.95**

CANNONADE by Fairfax Downey **6.50**

THE WEAPONS OF WORLD WAR III by John S. Tompkins **5.95**

SMALL ARMS OF THE WORLD, Smith & Smith **17.95**

FOR THE LADIES

WHAT EVERY ARMY WIFE SHOULD KNOW
by Betty Kinzer and Marion Leach **4.95**

THE ARMY WIFE
by Nancy Shea/revised by Anna Perle Smith **5.95**

LADY IN ARMS by Virginia Weisel Johnson **4.50**

SERVICE ETIQUETTE by Harral & Swartz **6.50**

THE ROLLING KITCHEN by Ruth Patton Totten **3.95**

COMING IN ARMOR.....

- *"Will The Tank Go The Way Of The Horse?"—Some perceptive answers by a Canadian officer*
- *The AH56A Cheyenne and what it means to Armor*
- *A candid portrayal of the Vietnamese cavalryman by a former advisor*
- *Richard M. Ogorkiewicz predicts tank designs for the future*
- *A look at new Soviet armored equipment*
- *A penetrating analysis of what is needed in a scout vehicle*
- *Comment on the M551 Sheridan/Shillelagh from the first troop unit to use this new Armor weapon*
- *Combat reports from Vietnam*
- *Armor and Cavalry tradition of the past and in the making*

. . . AND MUCH MORE