ARMOR

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THE SIXTH CAVALRY RIDES AGAIN!

The United States Armor Association

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ARMOR

The Magazine of Mobile Warfare

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ARTICLES

DEPARTMENTS

THE UNICORN RETURNS

The newborn 6th U.S. Cavalry clashes with J.E.B. Stuart's Cavaliers during the Eastern Campaigns in the Civil War.

Troop L marches past the Great Wall of China during the Boxer Rebellion in 1900.

Elements of the 6th Cavalry Group advance through Luxembourg in January 1945.

The only cavalry regiment constituted by President Abraham Lincoln has been restored to the Army's active rolls. Born as the 3d Cavalry on 5 May 1861, and redesignated as the 6th in August of that year, this regiment served the Nation with distinction continuously for 102 years until it was inactivated in 1963.

Now once more the regimental standard, with 36 campaign streamers and a Distinguished Unit Citation streamer, is flying proudly. Now again the troopers of the 6th join with the dragoons of the 2d, the mounted riflemen of the 3d and their historical younger brothers of the 11th and 14th, together with the many divisional squadrons from illustrious regiments, to add to the annals of the U. S. Cavalry and Armor. While they go forward to an unknown and challenging future, the men of the 6th Cavalry will know that their forebears established a standard of merit that will guide them well. True to their motto, "*Ducit Amor Patriae*" (Led by Love of Country), more than 50 past members of the regiment earned the Medal of Honor.

The 6th Cavalry saw combat in all the Eastern Campaigns of the Civil War. It gained particular eminence during the Gettysburg Campaign when, at Fairfield, Pennsylvania, on 3 July 1863, it defeated two opposing cavalry brigades and saved the Union trains. Later, the West learned that the 6th fought to win as it added 10 streamers to its standard.

Following service in Cuba, the regiment had the distinction of being the only American cavalry unit to serve in China during the Boxer Rebellion. This is commemorated by the Imperial Chinese Dragon which forms the crest on the regimental coat of arms.

As a cavalry group during World War II, the 6th led the way from Normandy through France and on into Germany. For its action in the Harlange Pocket, it received the Distinguished Unit Citation worn proudly by its officers and men today.

Then came the years of service in the Constabulary and along the border in Germany which comprise a true cold war saga.

Stationed at Fort George G. Meade, Maryland, the new 6th Armored Cavalry Regiment is commanded by Colonel Clayton N. Gompf. The squadron commanders are Lieutenant Colonels Robert F. Callahan, Ernest F. Jacobs, Jr., and Clyde H. Patterson. Formerly a squadron sergeant major in the regiment, Sergeant Major Arthur E. Carver has returned to serve as the regimental sergeant major.

Colonel Gompf, the new Regimental Commander, passes the standard with 36 campaign streamers and the Presidential Unit Citation to Regimental Sergeant Major Carver. Colonel Gilbert J. Check, looks on.

Colonel Edward M. Fickett, who commanded the 6th from 1941 to 1946, and Sergeant Major Andrew E. Castele of CONARC, a WW II veteran of the regiment, with the latest commander and sergeant major. (Below) Colonel Gompf signs the order announcing assumption of command as Lieutenant Colonel Robert F. Callahan, Commanding the 1st Squadron and Sergeant Major Carver witness another great moment in Armor history.

The Changing Balance

By COLONEL ALBERT MERGLEN, FRENCH ARMY

Colonel Albert Merglen, French Army Airborne Infantry, served with American units in North Africa during World War II, and was awarded the Bronze Star Medal. He is a graduate of L'Ecole Superieure de Guerre. His assignments have included a 1957-1960 tour as French Liaison Officer at the U. S. Army Infantry School, command of the 2d Foreign Legion Paratrooper Battalion in Vietnam, service as Chief of Staff of the French 3d Mechanized Division. He now commands the French Airborne School. Colonel Merglen is a Commander of the Legion of Honor and holds the Croix de Guerre with 9 citations. He is the author of military works in French and he has previously written for THE MILITARY REVIEW, INFANTRY, and THE AIRBORNE QUARTERLY.

One of the most discussed questions in the field of armored warfare has long been what mix of tanks, assault guns, and tank destroyers constituted an ideal balance. That this question is far from being either dead or moot today is well illustrated by this article. The opinions expressed herein are the author's. They are presented here to stimulate thought and discussion. EDITOR

The battle tank (*Panzerkampfwagen*) was the essential and decisive weapon of German armor during the years of offensive warfare from 1939 to 1942. But, from 1943 to 1945, during the defensive period, the principal weapons became the assault gun (*Sturmgeschutz*) and the tank destroyer (*Jagdpanzer*).

The best illustration of this is the production data on these weapons.

GERMAN FULL TRACKED ARMORED VEHICLE PRODUCTION 1940-1944

	Tanks	*Assault Guns and Tank Destroyers*
1940	1460	184
1941	3256	548
1942	4198	824
1943	5996	3411
1944	8328	9368
Total	23238	11235

Considering the important role which Armor will play in every war of the future, be it conventional or nuclear, general or limited, it is interesting and instructive to examine the reasons for the WWII German armor evolution, together with the military characteristics of the fighting vehicles involved. From this examination some lessons for the future may be well gained.

First, let us give a definition of the terms used—battle tank, assault gun, and tank destroyer.

The battle tank is an armored and full-tracked vehicle with its main weapon mounted in a turret which can be traversed throughout a full circle. It is designed to be the main element of armored units given strategic offensive missions. It is intended to be employed in mass and over great distances.

The assault gun is an armored and full-tracked vehicle equipped with a heavy weapon in a casemate which provides limited traverse. It is designed for close tactical engagement. Generally it is heavily armored and its speed is limited.

The tank destroyer is an armored and full-tracked vehicle with a very heavy cannon in a casemate. Its design envisions a primary role of engaging enemy tanks from a fixed position. This vehicle can displace quickly and easily.

1939: "The Period of the Offensive" begins as German light tanks spearhead the invasion of Poland and the rapid drive to Warsaw.

1940: "Blitzkrieg" becomes a household word as German tanks lead the sweep across the Lowlands and into France. [Below] 1941: German tanks roll toward Moscow during the early days of "Barbarossa."

1942: Intensity of war grew in last year of real German offensive operations as German and Russian armor struggled for supremacy on the eastern front.

Three main factors are common to these combat vehicles, but with different degrees of importance. These are *mobility, firepower,* and *protection.* Mobility is determined mainly by the ability to travel cross-country, the speed and the capability for independent operations. The firepower depends upon the force of the principal weapon, the fire control devices, the supply of ammunition and the self-defense possibilities. Protection is a function as much of the silhouette as of the armor.

It can be said that the three main armored vehicle types can be classified, in broad terms, according to the relative importance assigned to mobility, firepower, and protection as follows:

The Battle Tank: *Mobility, armament, protection.*

The Assault Gun: *Armament, protection, mobility.*

The Tank Destroyer: *Armament, mobility, protection.*

The evolution of the forms of war in which the German Army was engaged from 1939 to 1945 caused the shift of the center of gravity from one to the other of these armored combat vehicles for functional rather than doctrinal reasons.

From 1939 to 1942, in order to complete the rapid aggressive campaigns and conquests of large foreign territories—Poland, Holland, Belgium, France, the Balkans, North Africa, and Russia—the battle tank was the basic weapon of German armor. Pushing through enemy lines, crushing artillery positions and reserve bases, suddenly appearing by surprise in the rear areas, the battle tank unleashed in mass was the decisive element of the breakthrough, the deep penetration and the exploitation.

But from the end of 1942, the German Army, forced to a strategic defensive, asked for more and more assault guns and tank destroyers to form the backbone of the divisions and corps struggling against masses of enemy tanks, to lead tactical counterattacks and to stop the infiltrating enemy mechanized forces.

German generals with combat experience in armored warfare in the Russian theater of operations made clear in their reports their conviction that the era of the battle tank had closed, and that they wished to see it replaced by the assault gun and the tank destroyer.

It is of particular interest to note that he who

1943: [Insert] General Guderian surveys the front. He was among first to realize the need for defensive weapons capable of stopping Russian armor before it was too late.

decided, in 1943, to make the change in production from the battle tanks to assault guns and tank destroyers was General Guderian himself. This was the same General Guderian who had been the promoter of German armor before World War II and one of the most effective armor leaders of the initial offensive campaigns. He had, years before the war, expressed his deep faith in battle tanks in his famous book, ACHTUNG! PANZER!

As a general of armored forces he commanded:

—In March 1938, in Austria, the XVI Corps, consisting of one armored and one motorized division.

—In October 1938, in Czechoslovakia, the XIX Corps with one armored and two motorized divisions.

—In September 1939, in Poland, the same XIX Corps then with two armored divisions and one motorized division.

—In May-June, in France, again the XIX Corps, this time with 3 armored divisions.

—From June-December 1941, in Russia, the 2d Armor Group (later the Second Armor Army) with five armored divisions, four motorized divisions, and one cavalry division.

After a period in disgrace, General Guderian came back as Inspector General of the Armored Forces from February 1943 to July 1944. Thereafter he became Chief of Staff of the German Army. Faced with a situation of strategic defense, opposed to an enemy with numerical and materiel superiority, particularly in tanks, and fighting over vast areas, General Guderian concluded that the German Army had to give priority to the assault gun and the tank destroyer over the battle tank whose father he had been. And in 1944, despite the aerial bombings and despite the retreats in both the East and the West, 9368 assault guns and tank destroyers rolled out from the German production plants.

Combat results proved the wisdom of this new orientation in the choice of armored combat vehicles for the German strategic defense. By the end of 1943 the German assault guns had destroyed 13,000 Russian tanks. In the spring of 1944, the twenty-thousandth tank kill was announced. In 15 months, in the area of Rshew, one assault gun brigade with only 20 vehicles, destroyed 1000 tanks. In August 1944, near Baranow, the 322d Assault Gun Brigade went into action with 30 vehicles and destroyed 122 tanks, 40 artillery pieces and 56 heavy anti-tank guns in 11 days.

1944: Fewer and fewer German tanks are seen as German assault guns, turned to the defense, await the Russians on the eastern front.

They took a heavy toll. In the spring of 1944, the twenty-thousandth tank kill was announced, but [below] the Russians kept coming with new tanks and assault guns.

In March 1945, the 1st Battery, 210th Assault Gun Brigade, facing 28 Soviet T-34 tanks, destroyed six in 16 minutes, causing the Russian attack to fail.

From 24 to 27 January 1945, on the Kurland front, the 1st Battery of the 912th Assault Gun Brigade destroyed 57 Soviet tanks. On 21 February, in two hours, that brigade with 30 assault guns annihilated 45 tanks.

Is it not possible to draw certain conclusions about armor in the future from these facts?

Envisioning a future war in Europe, could one not conclude that the types of armored vehicles found by the German Army to be the best for the period of strategic defense from 1943 to 1945 might also be very valuable in our own time?

It seems that certain factors in the present situation could lead to such an evaluation.

First, the Free World has adopted a policy of strategic defense in Europe. The elements of the terrain and the potential enemy further favor the assault gun and tank destroyer.

With respect to terrain the large flat and open expanses of plains, which formerly favored the rush of tank masses, are now precluded from such use. Nuclear weapons and air attacks would make such employment impossible. Armored elements could best use the large wooded areas or the cities as routes to infiltrate rapidly toward the West. To oppose them, the ideal combat vehicle would be one able to use with ease all concealed routes, to hide itself rapidly, to repulse close enemy attacks and to be simple to maintain in the field.

The potential enemy is seen as totally mechanized, enflamed by an offensive spirit focusing on the big objectives of the Rhine and the Atlantic Ocean, hitting with heavy atomic blows in depth, covering the area with innumerable small armored

1945: With the situation deteriorating rapidly on both fronts, the end was near as American tanks carried the offensive into Germany.

groups which would infiltrate rapidly and mix with the population in order to avoid the allied counter-blows. Nuclear weapons would be able to cut enemy logistic lines, crush forces stopped at bottlenecks, and destroy command and communication centers. But to stop and destroy all the many little spearheads armed with classic battle tanks will require an armored vehicle with a very powerful weapon, capable of killing an enemy tank with the first round and able to survive close combat. In essence what is needed is an armored guerrilla.

The World War II experience of the Germans with the assault gun, the tank destroyer and the battle tank appear to warrant serious consideration now.

Certainly the teachings of history must be accepted with the greatest prudence. Never is it good to concentrate too much thought on the last great war. There are too many examples of armies which have been too much absorbed by the past, by the methods and materials of yesterday.

However, one should note that even if the new German Army, the Bundeswehr, has not announced an official judgment on the value and relative importance of the three types of armored combat vehicles, it has moved to equip itself with at least two of these types. A thousand new battle tanks, the Leopard of 39 tons with the 105mm gun, are being procured and issued. At the same time, eight hundred 23-ton tank destroyers (*Kanonenjagdpanzer*) are to be produced.

These numbers indicate that the German Army still attaches much importance to the main battle tanks which were the decisive factor in the rapid victories of the Wehrmacht during the beginning years of World War II. At the same time it has not neglected assault guns and tank destroyers which formed the backbone of its armor during the defensive years.

Not even the mighty 'Royal Tiger' could restore the element of offense. 1967: Remembering how the balance once changed, the new German Army is developing its weapons accordingly.

THE ARMOR OFFICER IN THE MODERN ARMY

The nature of the conflict in Vietnam and the current environment of wars of national liberation lead us to ask, "What is the role of the Armor officer in today's Army?" This question stems from an unexpressed but nagging doubt that Armor is truly responsive to our current environment and that members of the branch can remain competitive in a highly competitive profession.

Armor is a state of mind existing in men; not materiel or dogma. The answer to our question should therefore be found in the men who are the Arm of Decision, rather than in the doctrine and equipment which are our working tools.

Armor Branch, Office of Personnel Operations, will examine and answer this question in two articles for ARMOR Magazine, the first appearing in this issue and the second in the July-August issue.

The Chief, Armor Branch, Colonel John R. Barclay, will author a third article for the September-October issue. He will present his observations of Armor officers in action which he made during a ninety day visit to Vietnam as a member of a Department of the Army team studying current Armor and mechanized operations. EDITOR

PART 1

No man who lays claim to bearing the traditions of Cavalry should fail to be stirred by the rumble of tanks or the whine of armored personnel carriers, or fail to long for the smell of diesel fumes after a long absence in an office. This is just as much a part of being an Armor officer today as the thundering charge and the fluttering guidons were to the cavalryman of times past.

However, the international environment and the needs of our country today require officers who have not only a firm grasp of the fundamentals of their branch and devotion to their arm, but, also a capability to perform a wide variety of tasks as each situation may dictate. More than ever before, the officer today must possess two qualities in generous proportions—adaptability and responsiveness. These we may consider synonymous with the one word—*flexibility*.

A cursory glance at history is sufficient to illustrate the varied background, experience, and adaptability of the men who achieve noteworthy success in our profession.

The War Between the States furnishes three well-known examples: Phil Sheridan, who achieved lasting fame as a Cavalry leader, but was a captain of Infantry serving on quartermaster duty when he came to Corinth in 1862; "Stonewall" Jackson, an artilleryman, whose genius expressed itself in the campaign of movement employing his "foot cavalry;" and finally, Nathan Bedford Forrest, unlettered in the art of war, whose use of the raid was the epitome of adaptation to the means at hand and the situation existing in the West. Closer at hand, the modern Armor leaders adapted technological advance in the form of the tank to an air and fire support team responsive to the war of movement in North Africa and Europe. It has been argued that these two qualities—adaptability and responsiveness —were lacking in the commander of the garrison at Dien Bien Phu—a cavalryman.

In times of stress and danger our nation turns to the man of broad qualification and vision who looks beyond the narrower scope of his own branch or service. Cavalry and Armor have furnished their share of such men, for neither talent nor mediocrity is a peculiarity of branch. Our task is to examine our branch to determine if it is now and will continue to be a dynamic, vital, and responsive corps of officers, possessing its share of talent and furnishing the opportunity for its officers to demonstrate their abilities.

WHERE WE STAND TODAY

Armor's assigned strength has risen by about 1,000 officers in the last year to a figure slightly below 7,000. Expressed in more meaningful terms, the available number of officers is 76 percent of the authorized figure. This rise in assigned strength was based upon a corresponding increase in authorized strength reflecting the current requirements for Armor officers. Although authorized and assigned strength have both risen, the overall branch shortage remains approximately the same as it was at the time the expansion of the Active Army began. This partially explains the continuing lack of stability in assignments and the rapidity of movement which is most pronounced in the company grades. Shortages exist in all grades except colonel, but the biggest shortages are in the grades of major, captain, and lieutenant.

The existence of an overall shortage is not unusual, nor by itself should it be greatly significant. The important factor which is a matter of concern and which requires action is that the greater shortages are in those grades from which the future leadership of Armor will come. We must provide a broad base of talent today from which to draw a dynamic leadership tomorrow. In this important area Armor's junior officer retention rate of 21 percent is only slightly above the Army average of 20 percent. Much time and study have been, and are now being, devoted to improving the junior officer retention effort.

PROFESSIONALS ALL

An Armor officer enters service from one of four sources. The greatest number enter from OCS (1653 in FY 67). Then come those from the ROTC, the U. S. Military Academy, and a small number who receive direct commissions. OCS provides the greatest capability for immediate increases, and large numbers are now receiving commissions from this source as a result of the expansion due to Vietnam. Allocations for each branch from the various sources are carefully determined based upon a variety of factors including authorized strength, assigned strength, and projected requirements. Armor receives its fair share, both in quantity and quality, from each of the sources.

The vast majority of officers entering active duty each year enter in a Reserve status. Only graduates of the U. S. Military Academy, distinguished graduates of OCS and Distinguished Military Graduates of ROTC electing a Regular Army commission, enter in a Regular Army commissioned status. The strength of the Regular Army has been established by law and cannot be exceeded. Today the Regular Army alone is insufficient to meet the Army's worldwide commitments. Career Reservists must augment the relatively small Regular Army. Armor is currently composed of 46 percent Regular Army Officers. This compares very favorably with the other branches. This percentage is significant in establishing the magnitude of the contribution made by the Career Reservists, but has no direct relationship to the overall numerical strength of the Regular Army. The Regular Army distribution by grade for Armor is shown below:

GRADE	PERCENTAGE REGULAR ARMY
Colonel	97%
Lt. Colonel	74%
Major	59%
Captain	45%
Lieutenant	23%

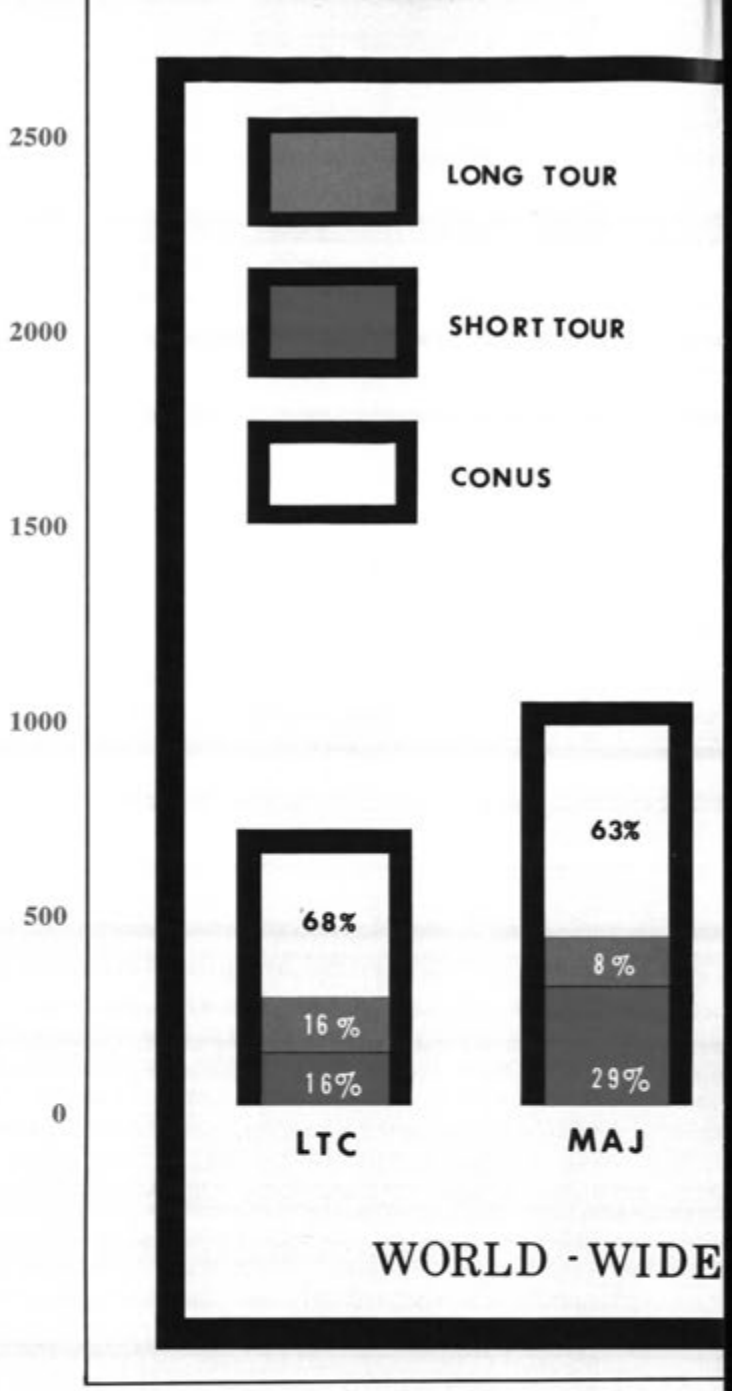
There are Regular Army vacancies in most junior year groups; however, since the numbers are small, selection is on a highly competitive basis. The Regular Army Selection Board examines applications and chooses the officer who has demonstrated both a fine past performance and a strong potential for progression in his future service.

PERFORMANCE MARKS WINNERS

Any mention of competition leads inevitably to the primary document used in competition for promotion, schooling, and selective assignment—the Officer Efficiency Report. We should establish now that there is no relative standing maintained and no rank by percentile among contemporaries. Armor Branch does not maintain statistics which would indicate an average composite score, and, in fact, is specifically prohibited from averaging scores. When a given number of officers are competing for a specific purpose (e.g. schooling or assignment), it is possible by examining carefully each report of every officer and applying a liberal dose of professional judgment to establish an order of merit within that precise group. In general terms these are the mechanics of competition under the current efficiency report system.

Except for selection to attend one of the senior service colleges (Army, Navy and Air War Colleges, National War College, and the Industrial College of the Armed Forces), an officer competes within his branch for schooling and assignment. To determine how Armor officers fare in today's competitive environment it is best to examine the results of that competition which is conducted on an Army-wide basis—promotion and senior service college selection. In competition for promotion to the grades of lieutenant colonel and major, Armor's selection rates have been equal to, or have exceeded, the Army average for each of the past five years. For promotion to the grade of colonel, where competition is extremely keen, Armor's selection rate has generally been equal to, or has slightly exceeded, the Army average. The results of the colonel's selection board which adjourned in October 1966 reveal that Armor officers fared extremely well in selection for promotion from the secondary (outstanding) zone. Seventeen of the eighty-eight officers selected from the secondary zone were Armor officers. Twenty-seven Armor officers have recently been selected for senior service college attendance in 1967. This represents a proportionate share of the very limited spaces for such schooling. In the last selection to brigadier general, 15 percent of those selected were from Armor. This is more than a proportionate share.

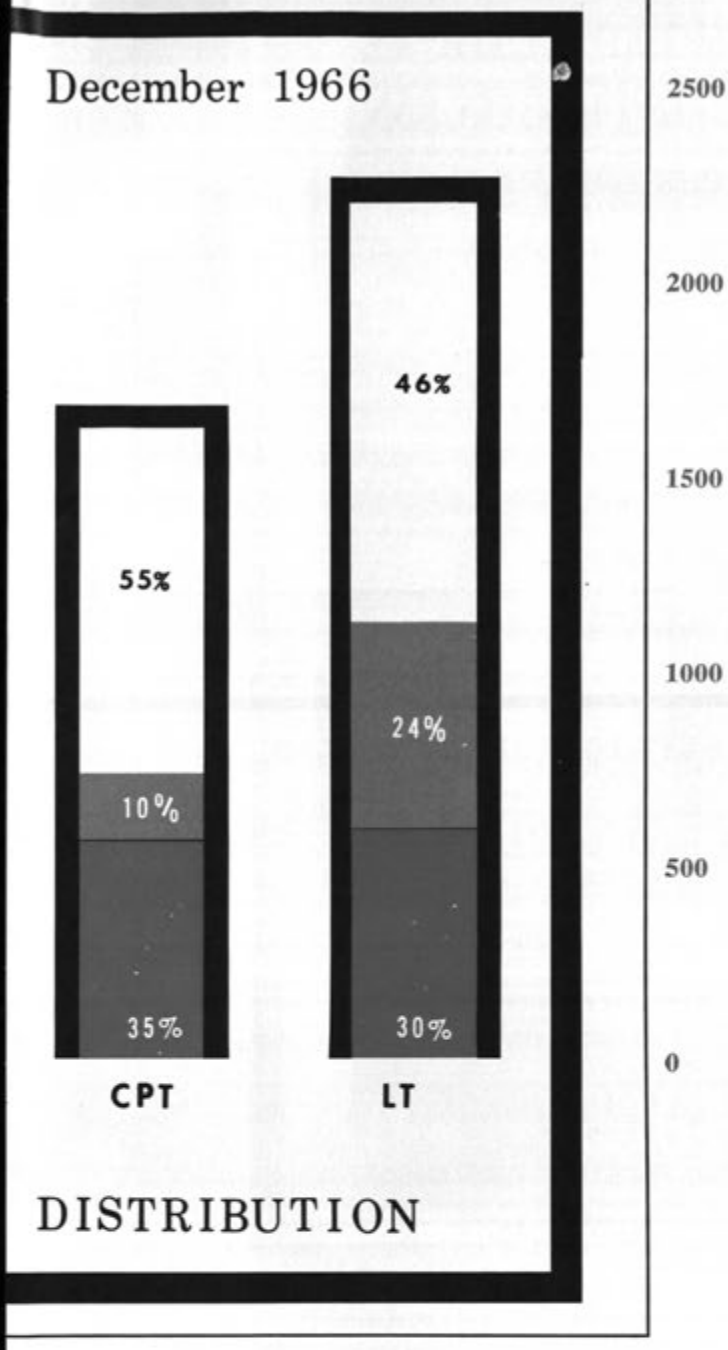
None of the rewards of the Army's competitive system are vested rights. Each officer earns these rewards through his demonstrated manner of performance of whatever duties he may be assigned. This should be remembered when we discuss the nature of assignments currently performed by Armor officers. The nature of the assigned duty is secondary in importance to the manner in which it is performed.



WHERE ARE THE ARMOR OFFICERS?

Today, Armor officers are serving in a wide variety of duty assignments throughout the world. The following chart depicts the world-wide distribution of Armor officers in December 1966. During 1966 there was a major realignment of company grade officers from Europe to the CONUS training base, Vietnam, and units deploying to Vietnam. This realignment posed many individual and family problems, but the response was rapid and professional. It is readily apparent from these charts that Armor officers do have a role in today's Army and that Armor is responsive to the requirements of today's international environment. The distribution of officers reflected in these charts is a direct result of Vietnam.

Assignments are accomplished by the career



branch assigning an officer to a major command, with the local commander determining the specific duty assignment. This permits the flexibility required by changing local conditions and also permits an officer to work his way into other assignments within the command which become vacant through the normal rotation of officers. Many officers are occupying key positions after having demonstrated their abilities in other duties within the command. Most of the battalion command positions in Vietnam have been filled in this way. A career branch may be able to place an officer in the environment he needs for proper career development, but from that point on the officer progresses not by virtue of his branch, but by virtue of his own qualifications and performance.

There are two areas related to assignments that are of concern to many officers. The first is the opportunity that exists in Vietnam for combat experience as an Armor officer, and the other is the current assignment of Army aviators. Bearing upon the former is the larger area of branch material and branch immaterial assignments. Branch immaterial assignment requirements are placed upon the combat arms in proportion to their branch strengths. Since Armor has a strength approximately one-third that of either Infantry or Artillery, branch immaterial assignments are placed in a ratio of 3:3:1. We therefore fill our share of branch immaterial requirements.

Most officers think of a branch material assignment as one in an Armor unit. This is not necessarily true. Some TOE positions are branch material, Armor, but are not in a purely Armor unit. Table of Distribution (TD) positions may also be branch material. However, the greatest number of branch immaterial positions are in TD organizations.

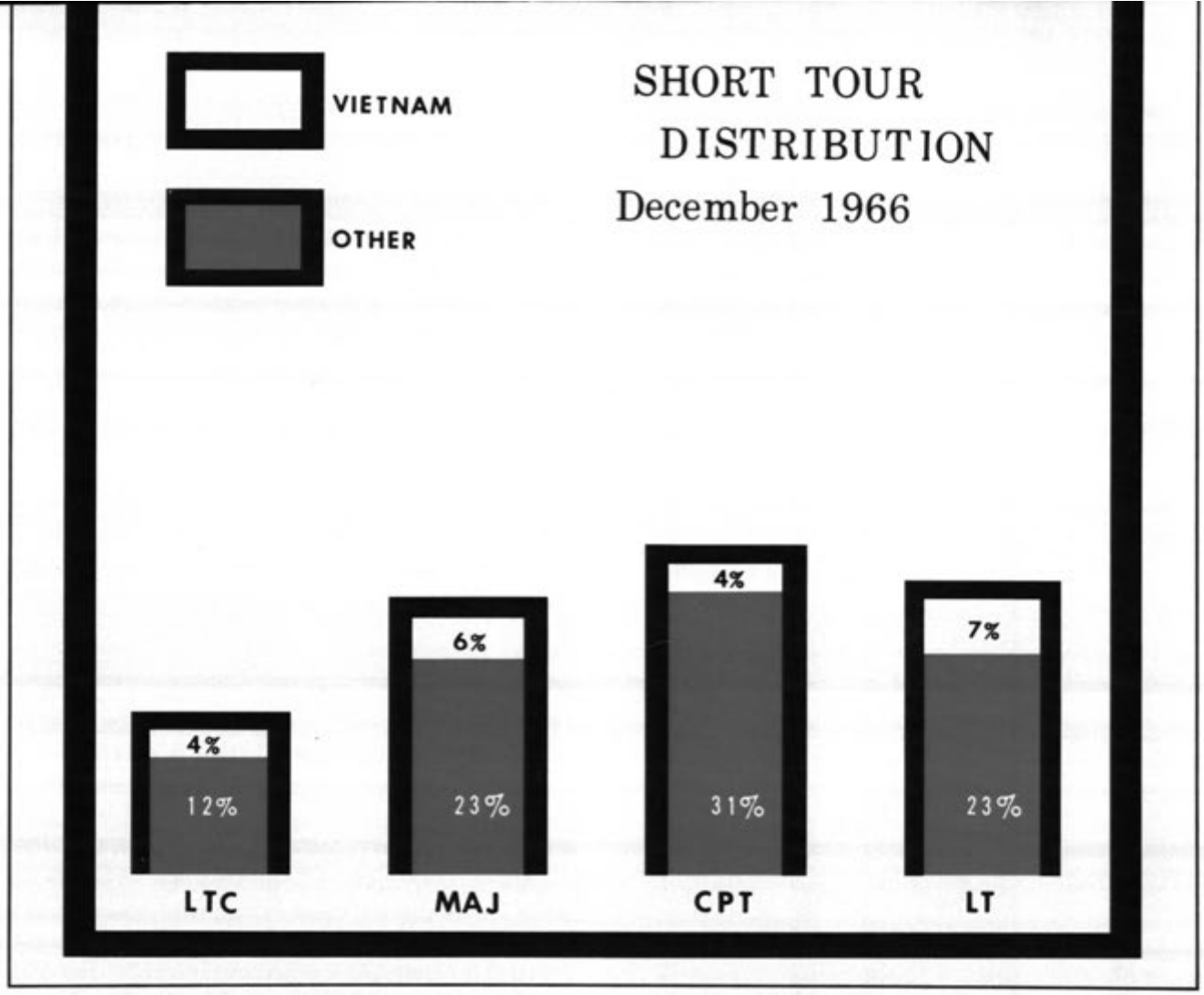
ARMOR OFFICERS IN VIETNAM

Attention has been drawn to branch immaterial positions as a result of the current commitment in Vietnam and the limited opportunity to serve with or command an Armor unit in Vietnam. This opportunity has recently improved and will show a modest future improvement.

The most frequently asked question is, "*Are Armor officers getting the job as PX officer or special services officer while other combat arms officers get the jobs in combat units?*" The answer is a qualified "NO." Our current concern must be the attainment of combat experienced officers, particularly in the present company grades. We are not receiving a disproportionate share of the less desirable jobs and we are attaining combat experienced officers, not just officers who have served in a combat zone. At the moment this experience is being achieved more in the advisory assignments than in American Armor units.

The most important fact is that Armor is making a major and increasing contribution to the current effort and is responsive to the Army's need. Armor officers are serving as Infantry advisors, Special Forces officers, psychological warfare advisors, civil affairs advisors, advisors and staff officers at every level, and in U. S. tank and cavalry units. Our response is, and must continue to be, to do whatever must be done to accomplish the task at hand.

The Armor units in Vietnam vary in size from individual tank companies and armored cavalry troops to the armored cavalry regiment. Every type unit in Vietnam has been required to adapt to its environment, and the Armor units have been no exception. In every instance, Armor has demonstrated its capability to adapt to the environment to accomplish its task as part of the overall effort.



ARMOR AVIATORS

Armor officers are also making a major contribution in the field of Army aviation. The techniques being perfected and the experience being gained in this field will have a lasting effect upon Armor. It is unfortunate that the demands for officers possessing aviation skills have made it necessary to defer certain military and all civilian schooling and have precluded ground assignments. However, every effort is being made to ensure that the individual officer is not penalized by the nature of required aviation assignment actions today. It would be highly desirable from a branch viewpoint to assign only Armor aviators to the air cavalry troops and squadrons and maintain a strong branch identity. This is being done wherever possible, but the Army's needs dictate that skills and qualifications be fully utilized without regard to branch, and Armor aviators must be assigned to branch immaterial positions.

THE OVERALL VIEW

Vietnam represents only a part of Armor's worldwide commitment, and as the preceeding chart revealed, it is a relatively small (28 percent), although highly important, part. It is the cycling between overseas and CONUS tours directly related to Vietnam and the buildup of the CONUS training base that most concerns Armor officers. This cycling is based upon requirements by grade, with the demands for some skills, qualifications, or specialties influencing the tour length or frequency. For nonrated field grade officers, repetitive short tours are a rarity unless the officer volunteers or possesses a critical specialty. Repetitive short tours are not yet the general rule for nonrated company grade officers, although officers returning from a long tour area cannot expect much more than a year in CONUS if they have not served in a short tour area. For the immediate future, some aviators through the grade of major can expect second tours in Vietnam after 12 to 18 months in CONUS or a long tour area. A rated officer in the grade of lieutenant colonel can generally anticipate the same assignment pattern as the nonrated field grade officer. Tour lengths and patterns will vary according to branch, with Armor comparing favorably to all other branches at this time.

By all measures used for comparison, Armor officers are doing well in today's competitive environment, with unparalleled opportunities for a rewarding career in the modern Army. Vietnam has provided an opportunity to demonstrate our responsiveness and adaptability. The fine response is traditional.

'AMBUSH!'

By CAPTAIN GEORGE L. GUNDERMAN

CAPTAIN GEORGE L. GUNDERMAN, Armor, is a 1962 graduate of USMA. He has served with the 3d Armored Division, Germany, as a tank platoon leader, Aide to the ADC/M and Cavalry Troop commander. He graduated from the Infantry Career Course in May 1966 and is currently assigned to Vietnam as S-3 Air, 1st Squadron, 11th Armored Cavalry Regiment.

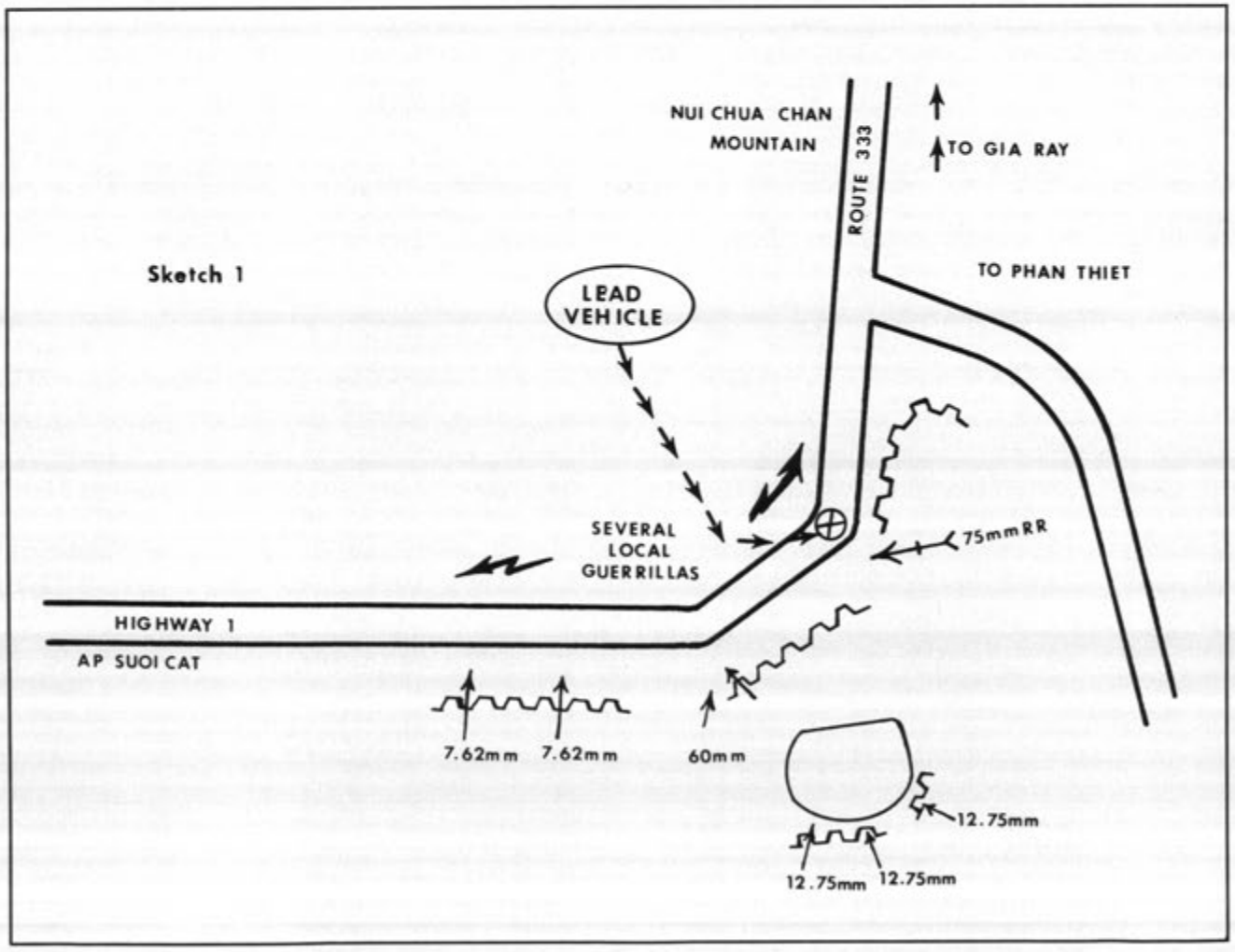
Friday, 2 December had been a quiet day for the First of the Blackhorse as Lieutenant Colonel Martin D. Howell held a command and staff meeting at his CP at 1630 hours. Then, minutes later, as one trooper put it ". . . . all hell broke loose."

The 1st Squadron, 11th Armored Cavalry Regiment had been in the regimental base camp less than a week since participating in "Operation Attleboro" with the US First Infantry Division. Preparations were being made to move out on its next mission about 8 December.

"B" Troop commanded by Captain John Landry on 2 December was securing an engineer rock quarry site at the base of Nui Chua Chan mountain South of Gia Ray, Vietnam. Landry had been conducting roadrunner and resupply columns along National Highway 1 between the regimental base camp and the quarry for the past three or four days. Lieutenant Will Radosevich, Landry's attached tank platoon leader ("B" Troop had been cross-reinforced with the squadron's tank company) had departed the regimental base camp at 1600 with a resupply column for "B" Troop. His column consisted of three ACAV's (armored cavalry assault vehicle), two M48A3 tanks and two supply trucks.

At 1650 hours the Squadron NCS received a call from "B" Troop stating that they believed their convoy had been ambushed. A quick switch to Radosevich's command net verified that he had, indeed, been ambushed. The harsh exclamation "ambush!" echoed around the squadron CP as the remaining troop commanders moved out to their troops and the squadron counter-ambush reaction swung into high gear.

The ambush occurred where Route 1 swings north to Gia Ray (see sketch 1). Landry was located some five kilometers north of the ambush and squadron (-) was 22 kilometers southwest of it. Landry's remaining force was on the way to the scene within five minutes and Bill Peasley's tank company was rolling through the north gate of the regimental base camp within seven minutes after the ambush had been discovered.



Preparations were being made to move out on the next mission when suddenly . . . "all hell broke loose."

Radosevich, in the meantime, had his work cut out for him. His first action was to return fire with all weapons available. Secondly, he moved the supply vehicles through and out of the ambush, then though already wounded by shrapnel, returned to the fight. He kept his vehicles moving through the killing zone, firing 90 millimeter cannister, HE and WP as well as the .50 calibers, M60 machineguns, M79's, and M16's. All this time his elements had been receiving heavy automatic weapons and small arms fire. Additionally the Viet Cong (estimated at a reinforced battalion of at least 600 men) had 75 millimeter recoilless rifles employed along the road. Some 60mm mortars had also been firing.

Simultaneously with these events, "C" Troop under Captain Bob Garrott, 1st Howitzer Battery (105 SP) under Captain Bill Fraase, and "A" Troop under Captain John Bailey had moved on the heels of Peasley's "D" Company. Bailey's Troop had been on perimeter security at the base camp and moved some fifteen minutes after How Battery. This proved significant and merits later mention.

Captain Joe Tobin had been flying cover for the convoy in his UH1B gun ship armed with quad-M60 machineguns and 2.75 inch rockets. As the ambush was triggered he began to rake the VC south and east of the road with machinegun and rocket fire. Captain Dave Lindberg, an Air Force forward air controller flying column cover immediately called for fighters from the Bien Hoa air base.

Colonel Howell, after dispatching orders to his commanders, left for the ambush scene in a UH1B command and control ship. Landry's troop, meanwhile, had arrived in the battle area. His ACAV's moved back and forth through the killing zone, engaging the Viet Cong at ranges which varied from the road side ditch up to 100 meters from the road and further. The Viet Cong, in addition to firing the previously mentioned weapons, also had personnel in the ditches armed only with grenades, trying to throw them into and under the tanks and ACAV's.

The VC also had several automatic weapons emplaced around the periphery of a clearing some 800 meters from the road. These were used against the support aircraft. Empty shell casings left in the positions helped us to identify at least three of them as the 12.7mm heavy machinegun. Their weapons were well emplaced and had considerable overhead cover. It is interesting to note that this clearing would have been the most likely and accessible landing zone in which to land airmobile reinforcements.

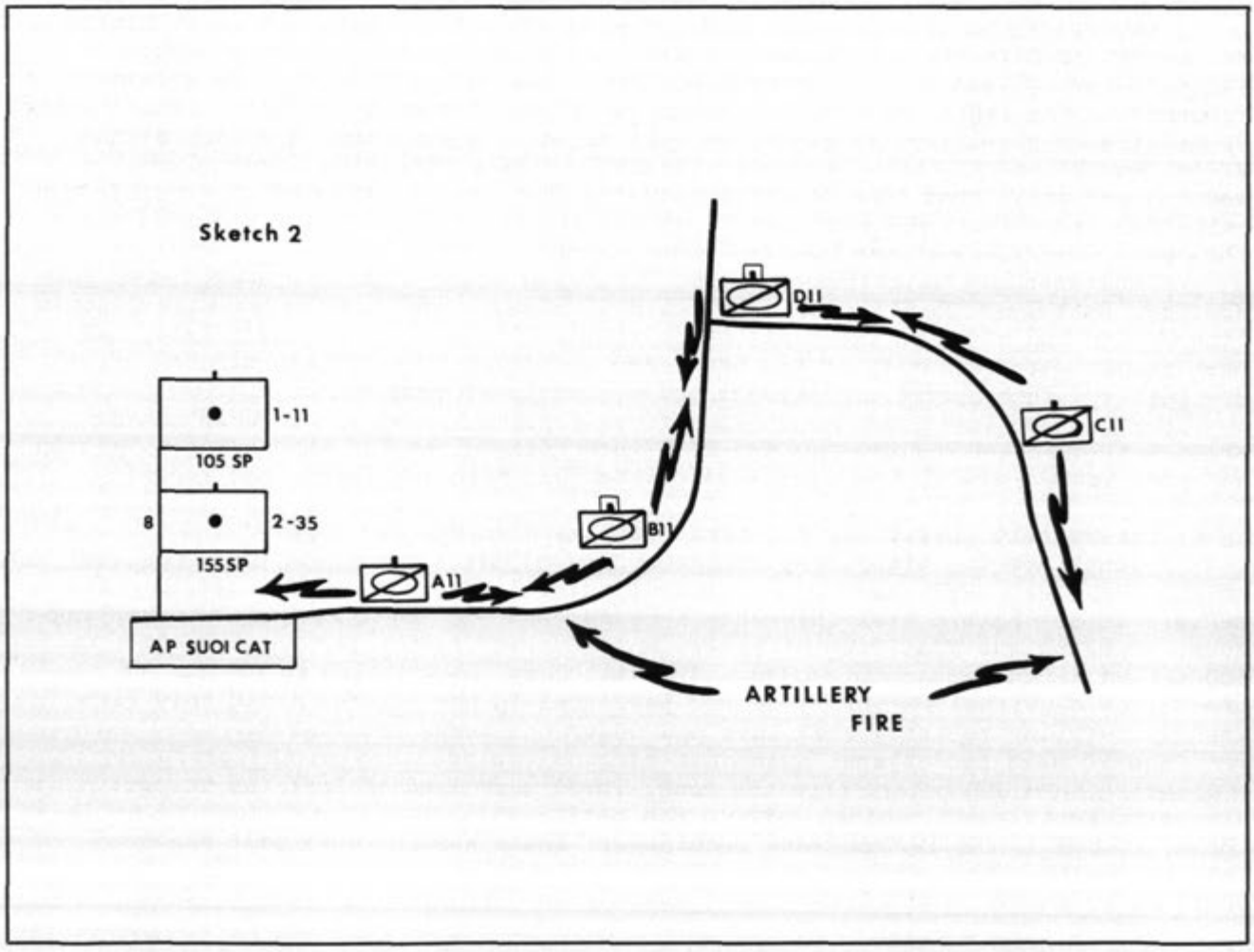
The tempo of the battle and the response of the troops can be exemplified by the following conversation between Platoon Sergeant Johns (Radosevich's platoon sergeant), Captain Landry and Colonel Howell:

Johns to Landry: "I see ARVN troops on both sides of the road."
Landry to Howell: "Are there any friendly ARVN troops in the area?"
Howell to Landry: "Negative, negative!!"
Johns to Landry: "Never mind, they started to employ a 75 and I blasted them."

Peasley's tank company arrived at the ambush scene within 25 minutes. By this time Radosevich's tanks had fired nearly all their 90mm basic load. They moved through the ambush between "B" Troop and the Viet Cong, firing all weapons on the tanks. When asked if he had contact as he moved through, Peasley replied, "We just saw a group of four or five trying to make it back into the jungle. We fired a round of 90mm HE at them and killed three." One of Peasley's tanks had been hit by a large caliber weapon; presumably a 75mm RR. The tank commander's cupola was blown completely off but the tank continued to fight with all remaining weapons. By this time the enemy appeared to be breaking contact. Colonel Howell moved "D" Company to the north flank of "B" Troop.

"C" Troop also moved through the ambush firing to the south and east as they moved. They were moved past the intersection of 1 and 333 in an effort to encircle the VC.

"A" Troop, following "C" by a matter of some 10 minutes arrived at the scene just as the Viet Cong commenced to fire on the road again. It seems as if the VC thought "C" Troop was the last reinforcement to be sent to the scene. That was a serious mistake on their part. Many of them were caught in a devastating crossfire between "A" Troop and "D" Company. This lasted for a period of about 10 minutes. "A" Troop was then moved to a position west of "B" Troop, and "C" Troop was slipped further south in an effort to cut off the VC escape routes (see sketch 2).



Victory . . . a direct result of the vast amount of fire support possessed by the ACAV and the tank.

While the ground action progressed, Captain Lindberg put in three airstrikes, each consisting of two or three jet fighter-bombers, and Captain Tobin from the squadron aviation section continued to place fire on the enemy with his UH1B. They were aided by additional light fire teams from the regimental aviation section. All told, a total of seven air strikes were put in by the Air Force FAC's.

By 1725 Fraase's Howitzer Battery had moved into a firing position near AP SUOI CAT. Colonel Howell then designated Highway 1 a fire coordination line and directed the artillery to fire north and west of it and the air support south and east of it. This proved to be an effective control measure and allowed him to place his supporting fires where they were needed, when they were needed, with a minimum of coordination and confusion. Prior to darkness, "B" Battery, 2d Battalion, 35th Artillery was sent to the scene to reinforce the fires of our Howitzer Battery. In addition "D" Battery, 2d Battalion, 32d Artillery was placed in general support and gave us supporting fires from XUAN LOC.

As it grew dark the artillery fire was moved south of the road in an attempt to seal off the VC escape routes through the jungle to the south. An Air Force C47 was kept above the ambush area throughout the night. Armed with flares and 3 miniguns it helped discourage enemy movement to the south. The squadron's combat vehicles fired into the jungle throughout the night with M79 and 90mm cannister rounds.

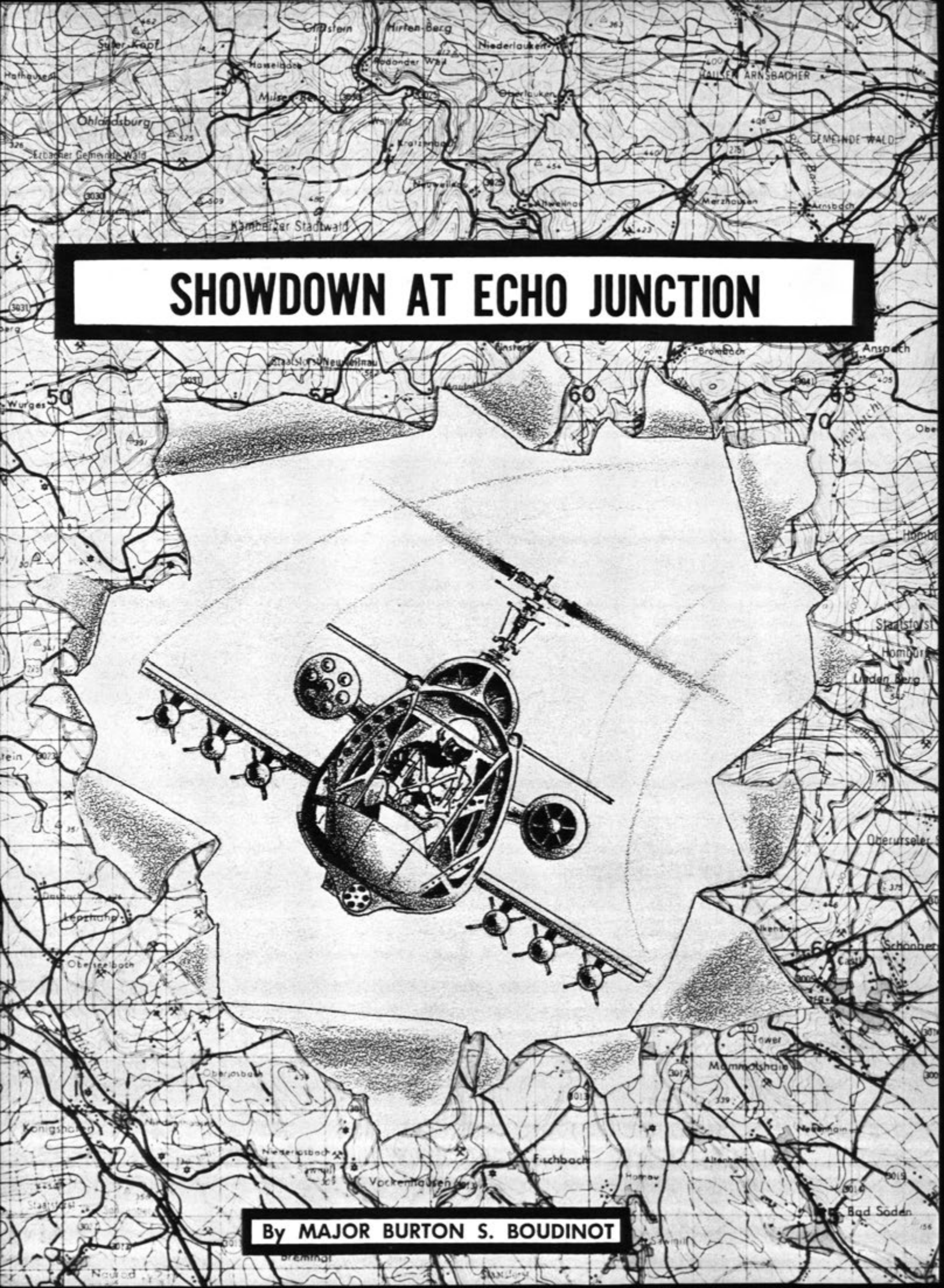
A search of the area the next morning revealed 93 enemy bodies. Our own casualties were very light. Captured Viet Cong materiel included one 75mm recoilless rifle, one 7.62 heavy machinegun, two Type-56 Chinese Communist machineguns, three AK-47 assault machineguns, one B40 RPG-2 rocket launcher, one 60mm mortar, one K-50 machinegun, one carbine and hundreds of rounds of ammunition.

We of the First of the Blackhorse believe that the defeat dealt to the Viet Cong attack force was a direct result of:

1. Rapid reaction and aggressiveness on the part of the ambushed force and the remaining elements of the squadron.
2. Immediate employment of all available fire support.
3. The vast amount of firepower possessed by the ACAV and the tank.
4. Stateside training on counter-ambush drill.

As a result of this encounter we feel that the 1st Squadron, 11th Armored Cavalry Regiment has taken the first step in fulfilling General Westmoreland's goal of ". . . . making the use of ambushes archaic in the Vietnamese conflict."

SHOWDOWN AT ECHO JUNCTION



By MAJOR BURTON S. BOUDINOT

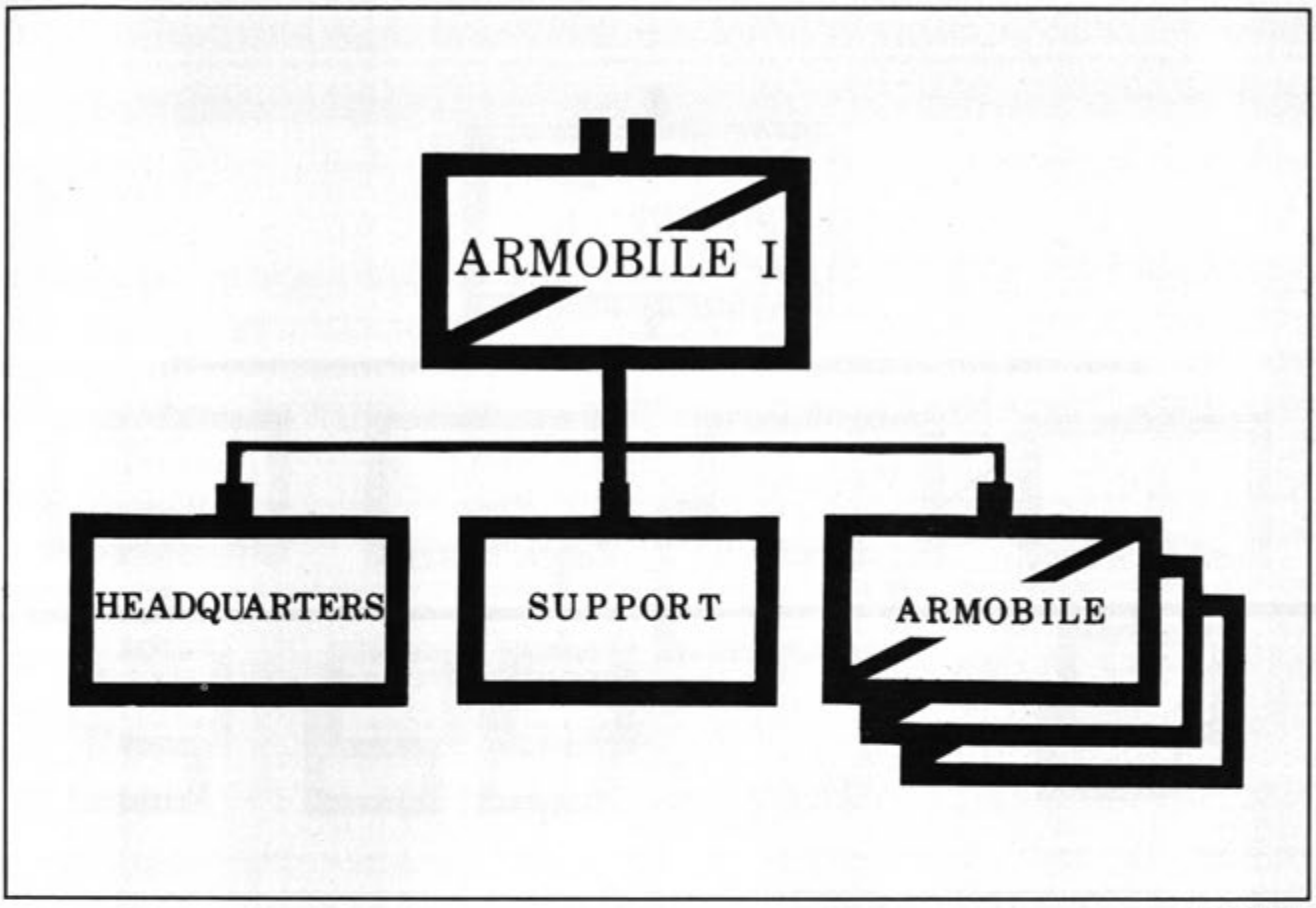


FIGURE 1

SITUATION

Events have suddenly become critical in the central region of Echon, a small country receiving United States economic and technical assistance. Twenty-five hundred kilometers from its capital, Echon City, Lieutenant General Steel, CINCANT, has just arrived at USCANDO Headquarters. He is conferring with the commanding general, Major General Lance and his staff.

General Steel: "John, this thing is getting worse, and I'm getting more and more pressure to get the situation cleared up. The press is giving it increasing emphasis which is going to result in serious diplomatic implications if something isn't done and soon."

General Lance: "We have studied developments as thoroughly as possible. I believe that the U. S. Task Force put into Echon three days ago was not large enough to take care of the situation quickly enough."

General Steel: "Apparently, intelligence was poor at the outset. After the Echon government requested American troops, and Washington approved, we ordered contingency plan Viper 212 executed. Our airborne brigade was sent to Echon. It looks like we need more than that brigade. In any case, we're in this thing now and have a couple of courses of action. Give me a rundown—and we'll decide what subsequent action is required."

General Lance: "There had been no significant insurgent activity against the Echon government or American installations in the country until this past month. About 12 days ago a contingent of approximately 300 U. S. Army logistical troops and 25 United States Operations Mission (USOM) civilians were suddenly confined to their compound by force (*points to map*). This effectively terminated their normal operations and travel. First reports indicated that the restriction had been imposed by a band of armed nationals acting under authority of the National Labor Office. The Echon

MAJOR BURTON S. BOUDINOT, Armor, graduated from Armor OCS in 1953, the Armor Advance Course in 1960, the University of Omaha in 1964, and the Command and General Staff College in 1966. He served seven years with armored cavalry units from Korea to Germany, occupying the positions of platoon leader, executive officer, S3 air, and troop commander. Other assignments were with the Army Aviation School, Army Security Agency, and on an armored division general staff. A previous contributor to ARMOR Magazine, Major Boudinot is currently assigned to the Doctrine Division, USACDC Armor Agency, Fort Knox, Kentucky.

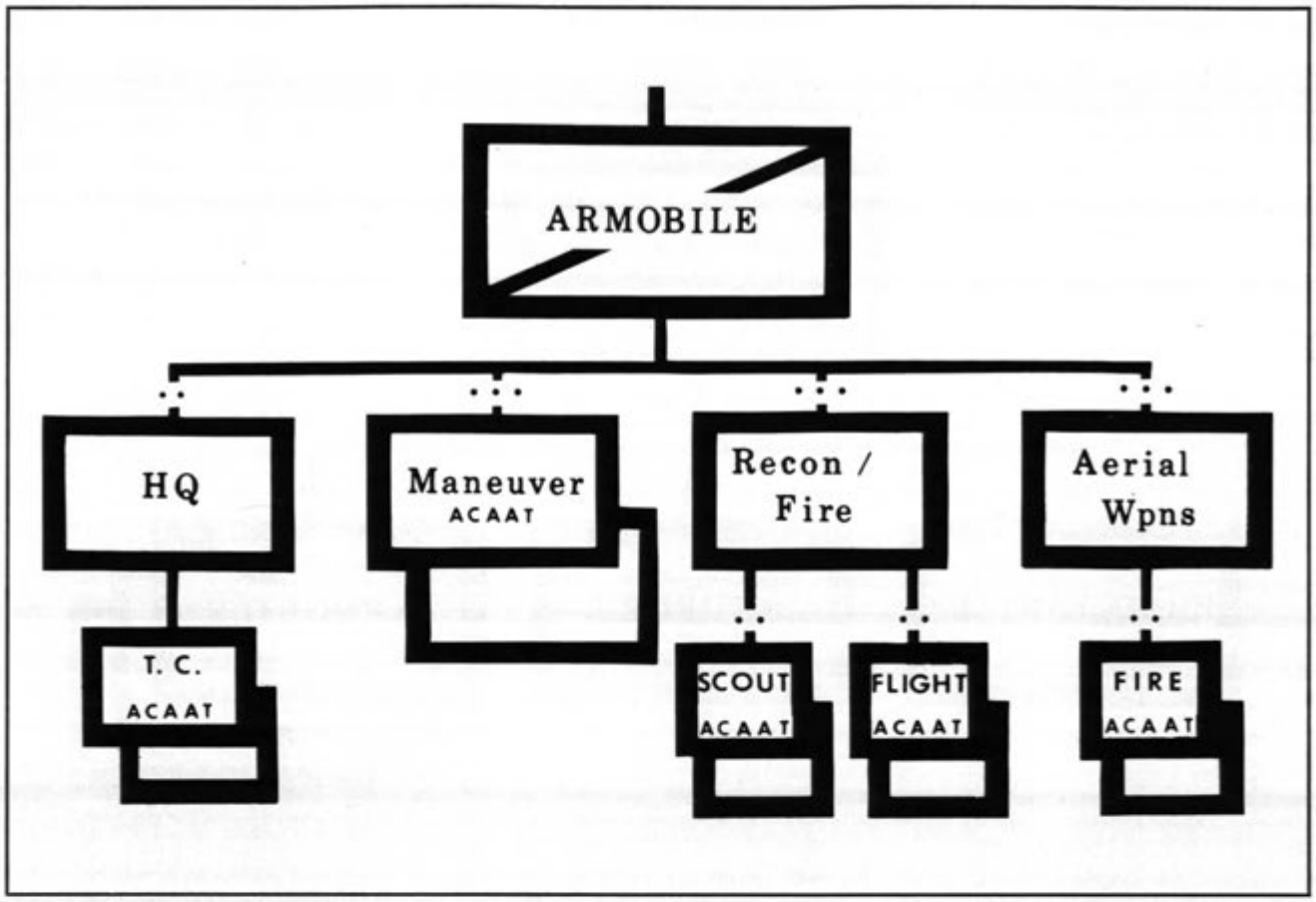


FIGURE 2

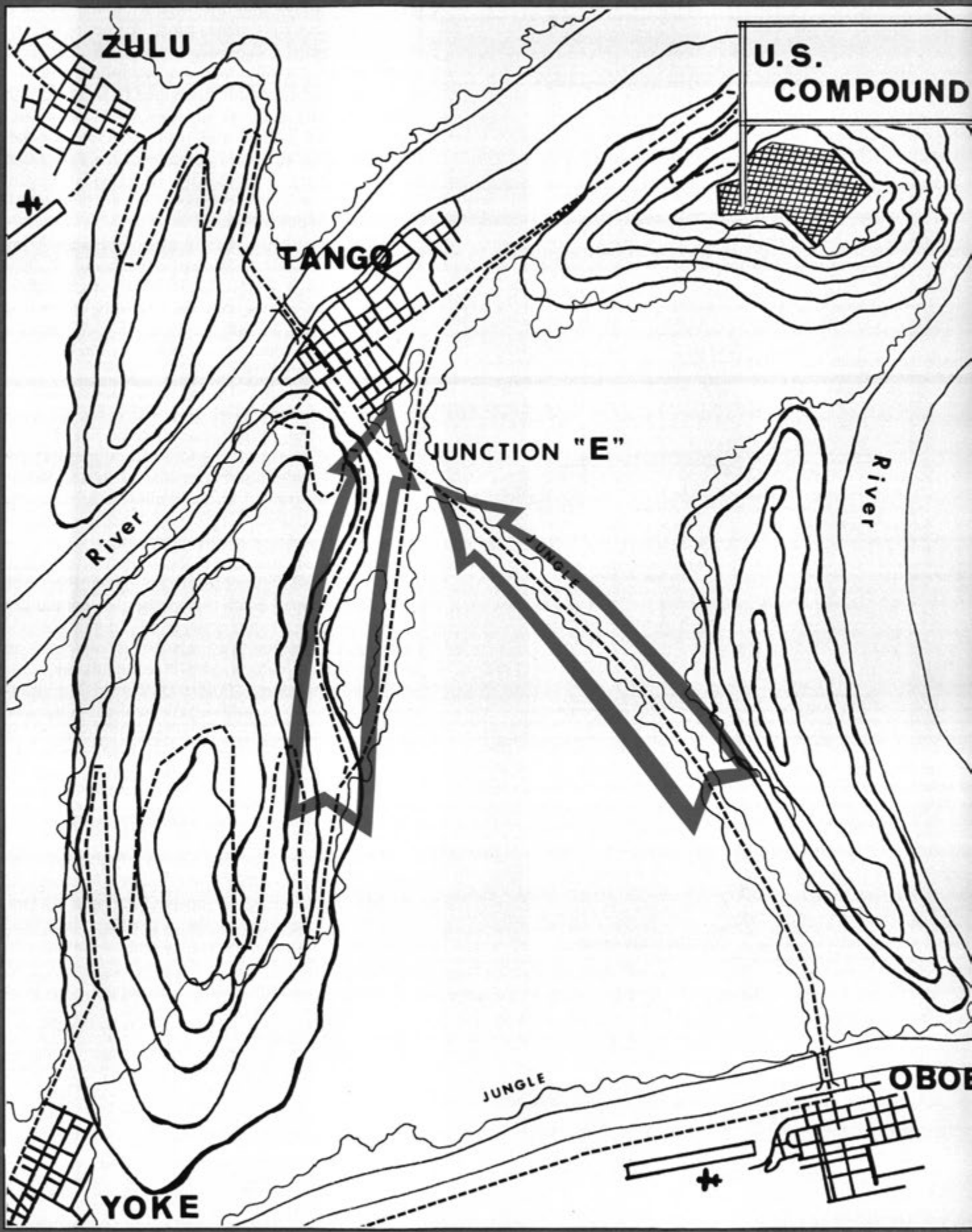
government stated that the Labor Officer disclaimed any knowledge of the movement against the Americans. Thereupon, the government officially denounced the hostile action and sent a battalion-size ranger force to relieve the situation. This was on the fifth day of the blockade.

Unfortunately, the Echon ranger battalion was ambushed by an unidentified force at Echo Junction and badly punished. On the same day, an attempt by American Army personnel at the compound to bluff a mail truck through the band of insurgents caused a fire fight, resulting in the deaths of three American soldiers. Simultaneously with these incidents, small arms fire was directed at personnel within the perimeter of the U. S. compound. Two American civilians were killed.

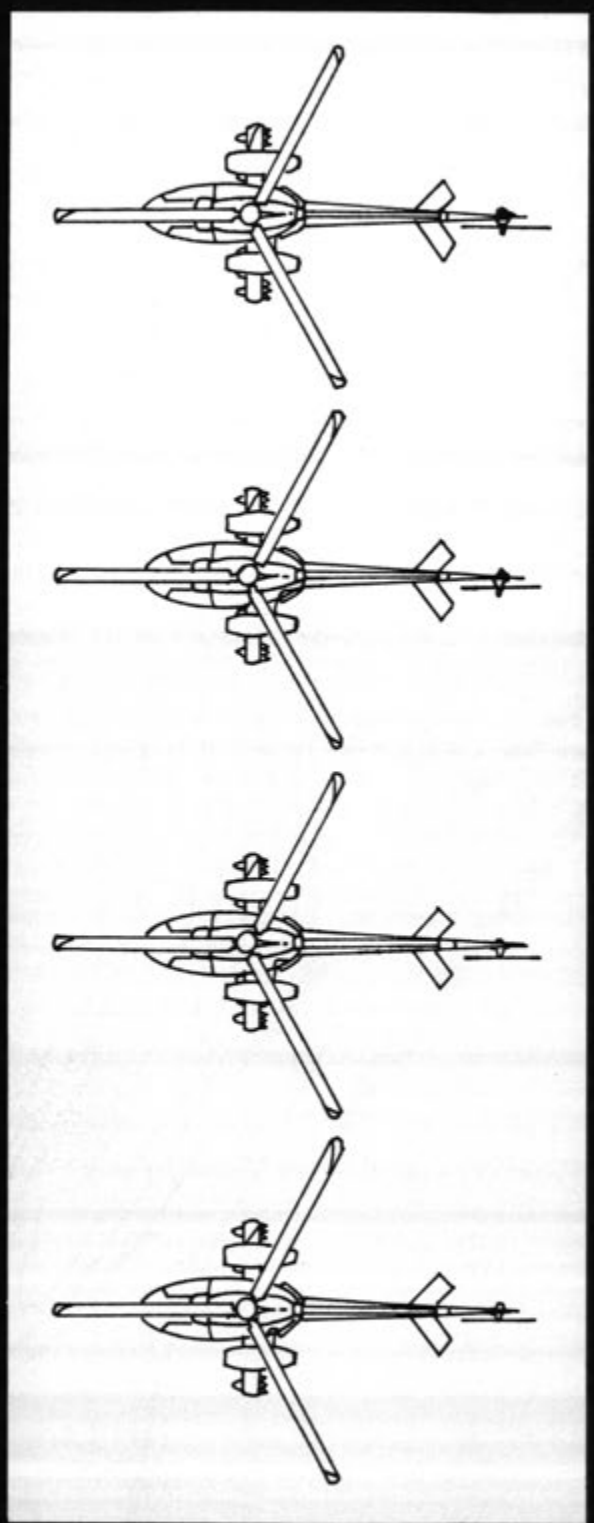
As a result of the American casualties and the mauling of the ranger battalion, the Echon government asked for intervention by the United States. Viper 212 was executed. Elements of Joint Task Force Cobra made a tactical assault here at Zulu (*points to map*) to engage an unknown force. The mission assigned was to assault by parachute; contain the enemy force, then evacuate American personnel by assault airlift aircraft as soon as possible with as little enemy contact as possible.

However, this did not work out as planned. Shortly after an assault unit secured the secondary airstrip at Zulu and the main element of JTF Cobra had begun to arrive by aircraft, all elements came under intense fire from the surrounding high ground. Echon intelligence identified the enemy force as 200 guerrilla personnel from the other side of the Echon border, 100 kilometers north of Zulu. Task Force Cobra quickly found this information to be inaccurate. Cobra S2 estimated that they were up against a force of 500 well-armed and well-organized troops. This was verified a few hours later when an Echon battalion tried to force its way up the central highway and was halted by heavy small arms and mortar fire in the vicinity of Echo Junction. By the ninth day of the blockade forward elements of Task Force Cobra were halted along the north bank of the river at Tango, and the Echon government force was stopped south of Echo Junction. The enemy force is presently interwoven in the Tango complex. They seem to be aware that our troops will not fire into the built-up area for fear of killing Echonian civilians.

General Steel, we now estimate the entire force of armed insurgents in the vicinity of Tango, Echo Junction, and the U. S. compound to be between 800 and 1000 men. Unconfirmed reports lead us to believe that an additional enemy force with some armored vehicles is moving south from the Echon border toward Zulu.


ZULU
U.S.
COMPOUND
TANGO
JUNCTION "E"
River
River
JUNGLE
JUNGLE
OBOE
YOKE

MAP 1



AERIAL WEAPONS SECTION

Task Force Cobra is unable to get into the compound area to evacuate the Americans there due to the terrain and the intense small arms fire. However, as a result of suppressive fire from Air Force attack aircraft, a rifle company, weapons, and ammunition were successfully dropped in together with some food and medical supplies. We are aware, though, that a sudden and overt attempt to penetrate the hastily prepared defenses of the compound by the insurgents undoubtedly would be successful. We must move quickly to contain and then terminate the insurgent action.

About 1,200 kilometers from Echon is an Army strategic cavalry force known as *Armobile 1*. It is a test unit from CONUS. It is now in the final phase of a six-month exercise. Results of the test thus far are considered excellent. I feel that this is the time and place to see if we are on the right track in developing such a unit."

General Steel: "John, as I understand it, *Armobile 1* is a test TOE unit, which has not been finally approved. What does it look like?"

General Lance: "The unit is a unique mixture of armored cavalry and air cavalry. It is a squadron equipped and trained to be deployed as a highly mobile airlifted force. It is envisioned as Armor's answer to a task force to anywhere unit.

As shown on this chart, the squadron is organized with a headquarters troop, a support troop, and three line troops. Each line troop is commanded by a major. The troop consists of a command and headquarters section, two maneuver platoons, an aerial weapons platoon, and a reconnaissance and fire support platoon. (*Points to chart.*) The headquarters section is authorized two captains who are team commanders. The combat platoons of the troop are designed to form six armored cavalry airlift assault teams known as ACAATs. (*Points to chart*) However, they may be scrambled into a number of troop or squadron formations as dictated by the mission and the situation.

The maneuver platoons are each equipped with four armored combat and maneuver vehicles (ACMV)[1] mounting a conventional gun system, two armored carriers for the two rifle squads, and a command and reconnaissance vehicle for the platoon headquarters.

The reconnaissance and fire support platoons each have four sections: two scout and two fire support. Each scout section is equipped with five high speed armored scout vehicles. These are lightly armored and armed; however, they are a component of a unique fire support system that should prove to be a major breakthrough for the small unit in combat. Each scout crew is capable of spotting a target

[1]The M551, better known as AR/AAV, would serve the requirement very effectively, perhaps with a less sophisticated weapons system—author.

electronically. This can be done without disclosing the scout's presence. The kill is then made by a missile from a fire support section or aerial weapons element of the troop. The fire support sections are each equipped with two armored carriers. Each carrier mounts a 107mm mortar and a homing missile launch system.

The aerial weapons platoons each have two flight sections of four armed helicopters each. These aircraft serve in a dual role of fire support and armed aerial reconnaissance. In addition to automatic weapons, each helicopter has the same missile launch capability as the fire support sections. Like the scouts, the pilots are given the means to spot their own targets for missile engagement.

This support weapons system gives a small unit firepower of a sort never before available at troop or team level.

The support troop commander has complete airmobile supply and maintenance teams which support all three line troops independently and at the same time.

The line troop commanders generally get a command helicopter from the aerial support section of the headquarters troop.

This airmobile unit is not heavily armored, but it is certainly well armed for a variety of missions. The organization is tailored for the type situation with which we are now confronted.

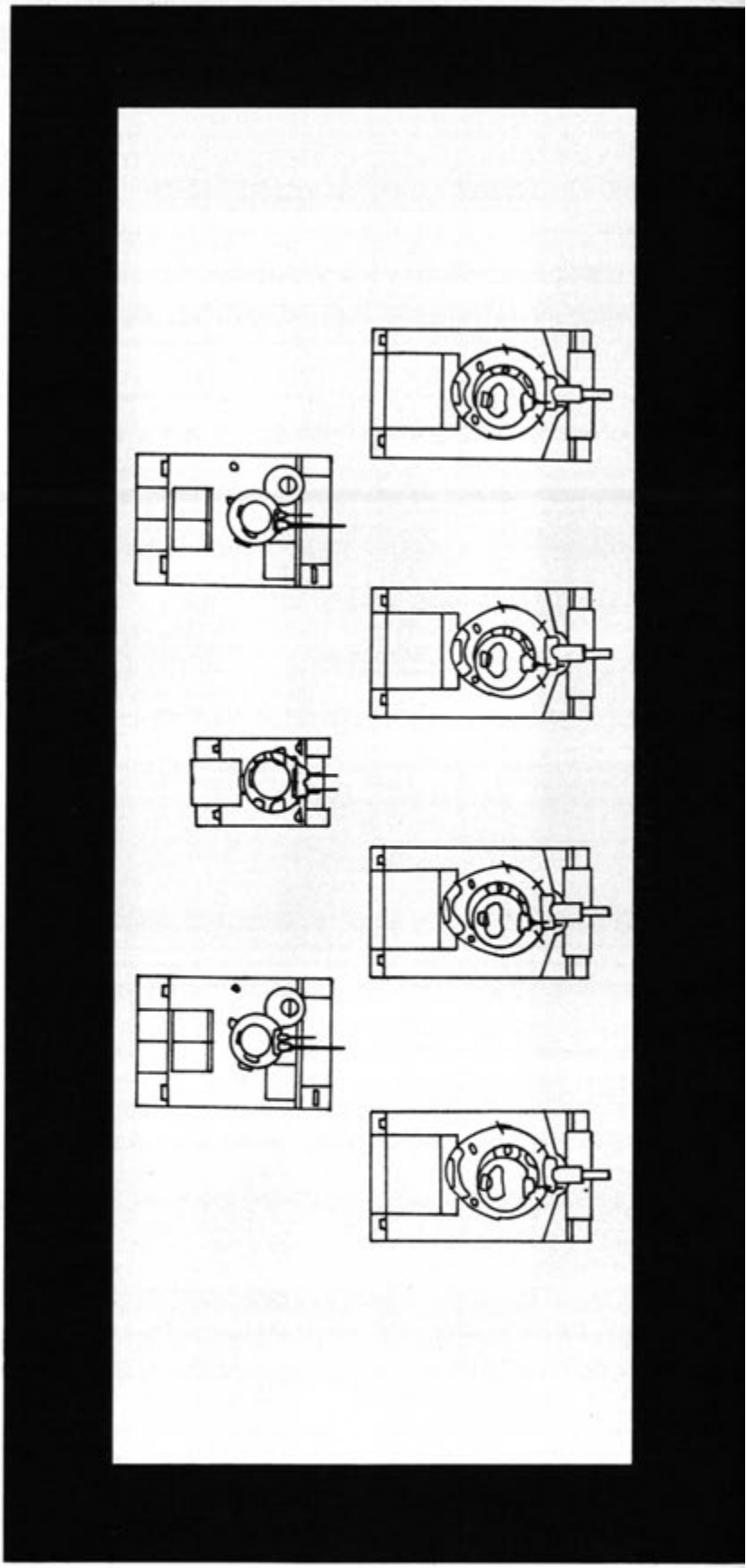
Assault teams from *Armobile 1* can be brought into the strip at Oboe, then deploy through Yoke and Oboe to converge at Echo Junction. By a coordinated action with Task Force Cobra, we should be able to relieve the U. S. compound within a matter of hours after the airlift transports touchdown at Oboe. The armed helicopters of the ACAAT are flyable 12 minutes after "rollout."

There are some 30-odd water crossings on the two stretches of road between Tango, Oboe, and Yoke that the ground vehicles will have to negotiate. Some have small bridges and some have fords. To facilitate the advance the choppers can rake potential ambush areas with fire as they fly ahead of the teams' ground-moving elements. I think we'd best plan to send an aerial weapons section to Zulu to cover the rear of Task Force Cobra in case the reported enemy column pressing in from north of Zulu materializes."

General Steel: "I like the plan. What is the combat readiness posture of *Armobile 1?*"

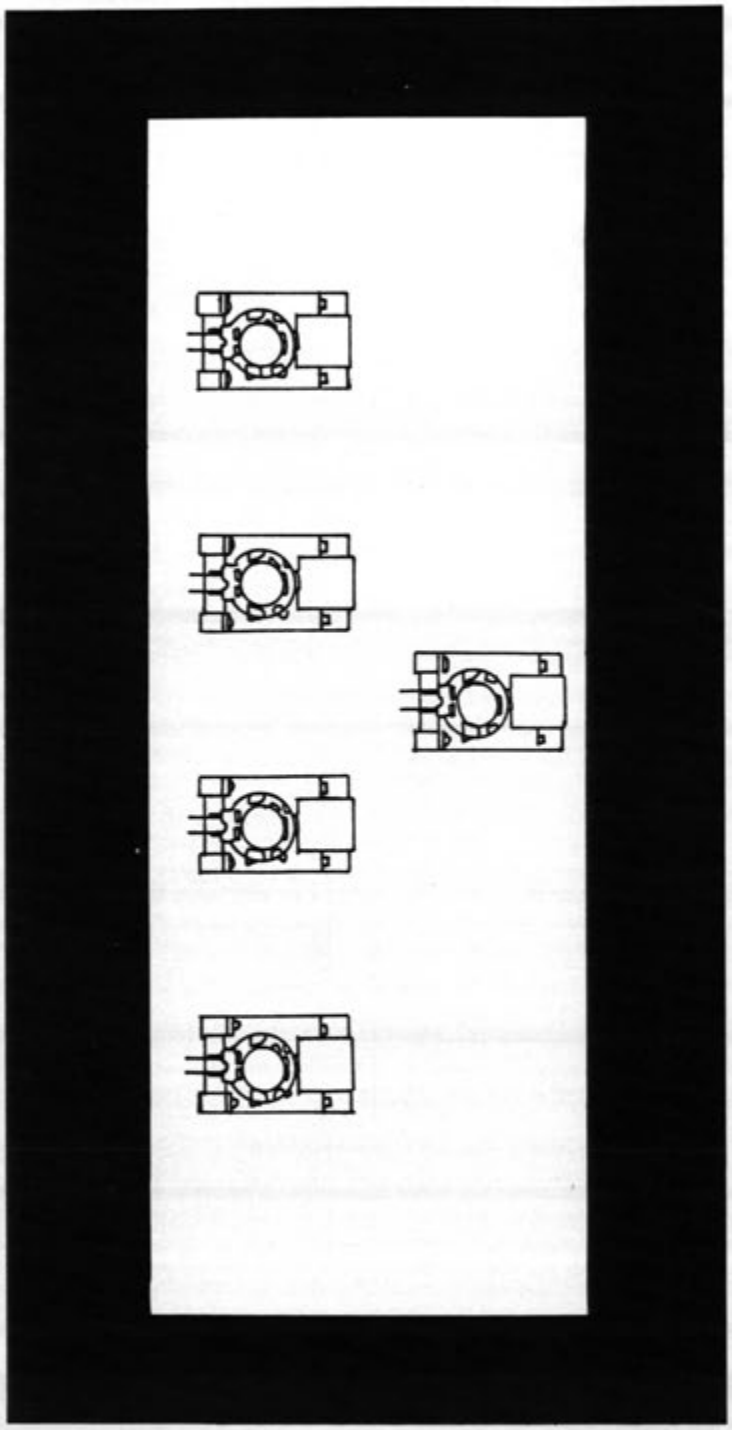
General Lance: "The *Armobile 1* commander, Lieutenant Colonel Red Sabre was alerted yesterday. We gave him the situation and the details of the basic plan which we have just presented to you. Colonel Sabre's return message states:

> ". . . this unit ready for action. Request movement orders be confirmed through CG, Test Operations Command, CONUS. Two

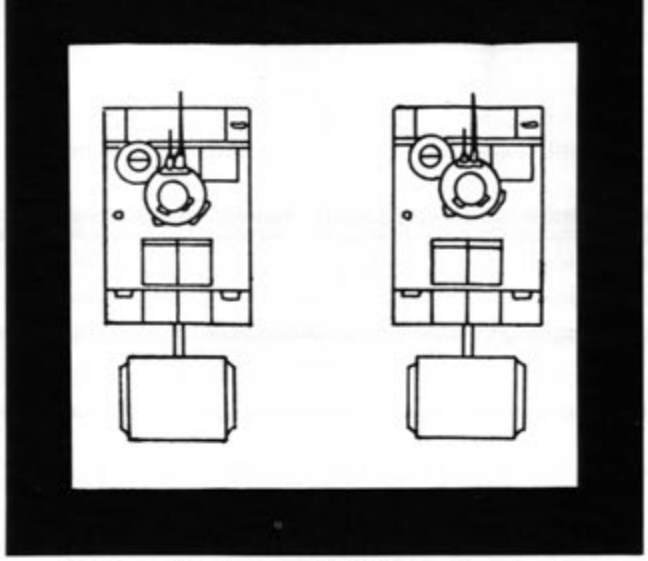


MANEUVER PLATOON

FIRE SUPPORT SECTION



SCOUT SECTION



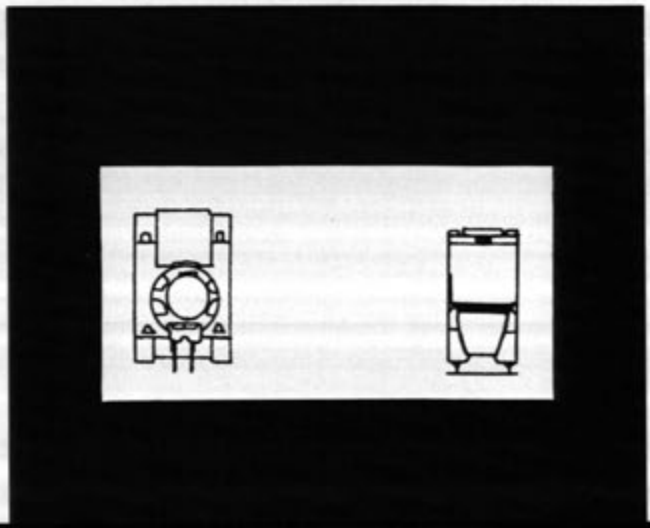
hours notification required here prior to airlift for first two assault teams."

"An interesting aspect of this force is the squadron commander's tight hold on his outfit. All elements he fights, maintains, and supplies are organic. His ground and air platoon leaders are Armor or Infantry officers. A commissioned aviator must have served as a scout or maneuver platoon commander before he is assigned as an aerial weapons platoon leader. The other pilots in the squadron are flight warrant officers."

General Steel: "This situation does look as though it needs armor troops."

(General Steel muses to himself: The *Armobile* concept is long overdue to meet a strategic need. It combines the best of Armor's maneuver techniques, the versatility of armed helicopters, and, the latest fire support weapons system. It looks as if Armor may be getting into the real mobility business. I can remember when the cavalry didn't want to mechanize, and then when the tank was the offensive weapon. The bad years have been those since World War II when some could not envision a more important Armor mission than the Fulda Gap or a more challenging problem than the development of the main battle tank. It appears that somebody has really seen the light.)

General Lance (*to his Staff*): "Gentlemen, coordinate your final plans and issue all necessary alert orders to bring *Armobile 1* into the Echon situation. The objective is to deploy rapidly, engage violently, fight into the compound and out of it, if necessary. Brief me in eight hours. In 36 hours I want a showdown at *Echo Junction!*"



TEAM COMMANDER

A NEW CONCEPT IN LAND-VEHICLE PROPULSION

By CAPTAIN DAVID A. NOAKE

We stand today on the threshold of a new concept in land-vehicle propulsion. The turbine engine, although for six years a principal power plant for aircraft, has not been the choice of the Army for use in today's military vehicles. You may have wondered why the Army has not selected the turbine engine and if the gas turbine is a better power plant for military vehicles.

The purpose of this article is to acquaint you with the automotive gas turbine engine and to evaluate the turbine as a military vehicle power plant.

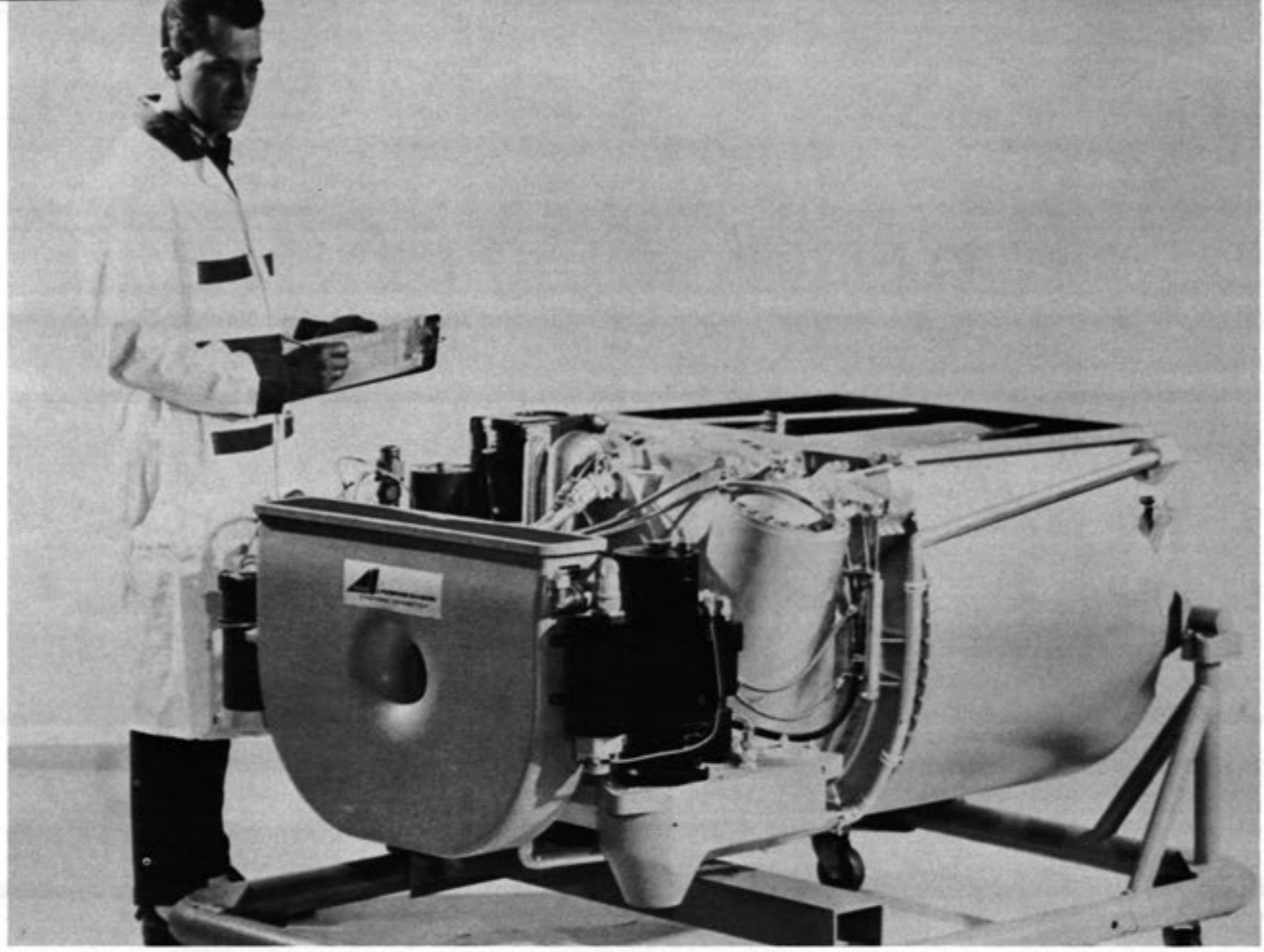
The principle of turbine operation is simple. For its operation the turbine requires air to be delivered under pressure to a simple combustion chamber where the air combines with a suitable fuel and is ignited, causing an increase in the temperature and pressure of the mixture. The gases resulting from the combustion process are directed through nozzles against the blades of a turbine which is connected to a shaft. The gases force the turbine and shaft to rotate and useable power is delivered to the exterior of the engine on this shaft. A compressor which is connected to the driven shaft draws air into the engine providing a self-sustaining unit once started.

CAPTAIN DAVID A. NOAKE, Armor, was commissioned in 1962 from USMA and graduated from the Armor Officer Basic Course and Airborne School prior to joining the 2d Squadron, 14th Armored Cavalry Regiment, Germany. He served as a platoon leader, troop executive officer and the Squadron Maintenance Officer before returning to CONUS in 1965 to attend the Armor Officer Career Course. Captain Noake is currently on duty with the 701st Maintenance Battalion, US Army, Vietnam.

An electric starting motor and an ignitor start the engine. The starter is connected to the shaft mounting the compressor and turbine wheel. Turning of this shaft by the starter causes the compressor to deliver air to the combustion chamber. There it combines with the fuel and is initially ignited by the sparkplug. Once the gases from the combustion chamber reach the turbine the compressor is driven by the turbine and the starter is disengaged.

Because of the mechanical connection of the load with the turbine and compressor, the simple turbine produces a positive or driving torque which decreases when the speed of the load decreases. For aircraft and electrical power requirements this feature is not a problem, because this equipment operates at an almost constant output shaft speed. A turbine unit of this kind is inferior in positive torque behavior to a conventional piston engine and is considered impractical for automotive use.

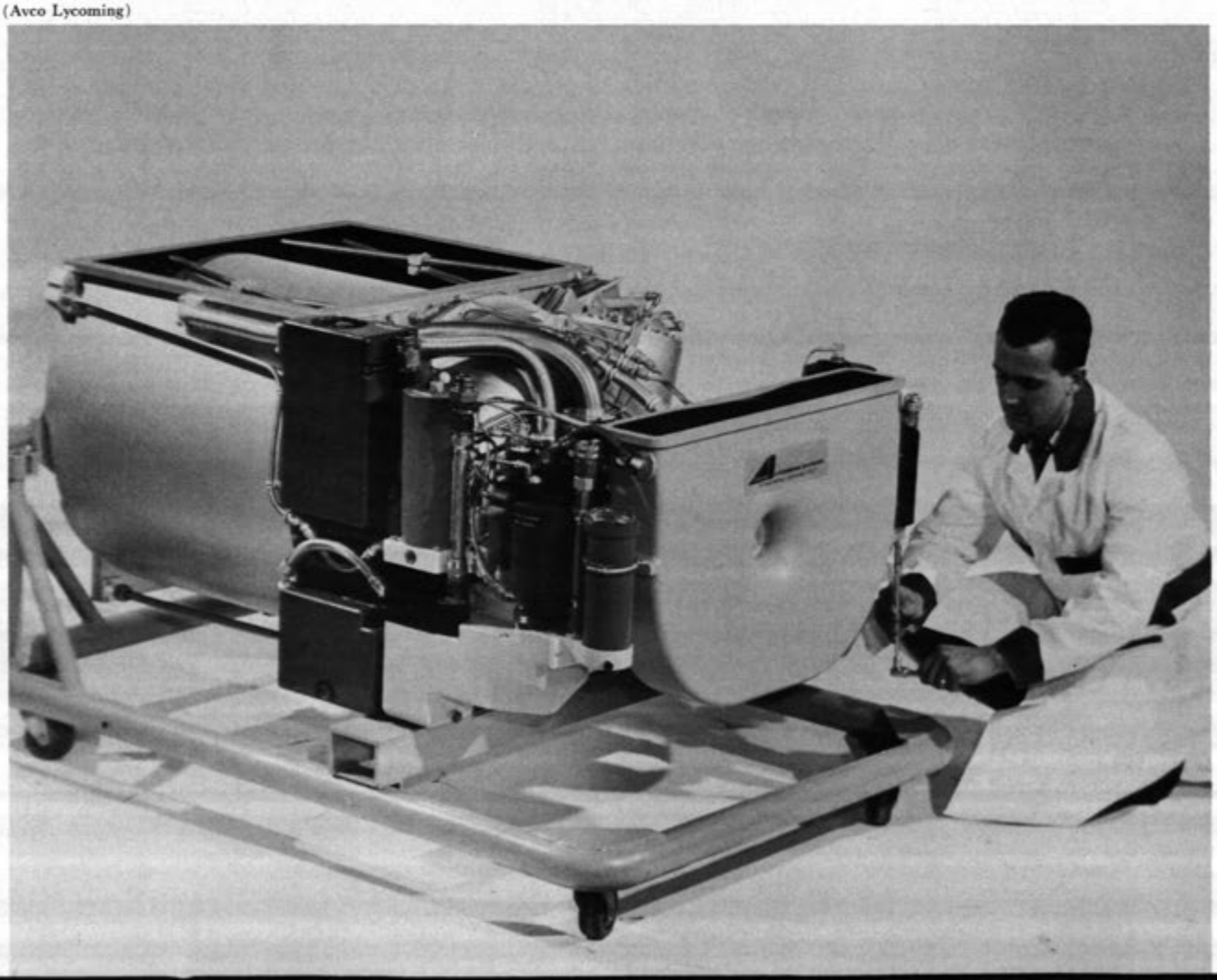
The requirements for automotive vehicles to operate at varying speeds under changing loads necessitates changing the simple turbine design to meet these requirements. Splitting the turbine section into a compressor-driving section and power providing section will significantly improve the positive torque behavior of the turbine engine. This design eliminates the mechanical connection between the turbine providing power for the compressor and the output shaft. Power for driving the vehicle is provided by a second turbine which is connected to the output shaft. In this configuration, the only link between the two turbine sections is the exhaust gas passing from the compressor turbine through a second set of nozzles on to the power providing turbine.



(Avco Lycoming)

Two views of the new AGT 1500 gas turbine engine developed by Avco Lycoming under contract with the U. S. Army Tank Automotive Command. The entire unit measures only 60 inches long by 40 inches wide including the regenerator which is shown at the right on the top picture.

(Avco Lycoming)



Splitting the turbine into two sections increases the engine's positive torque output throughout a wide range of vehicle speeds. However, this design introduces two characteristics which are undesirable in an automotive application. Under most conditions a separate power providing turbine will not run at a speed leading to maximum turbine efficiency. As this efficiency directly affects fuel consumption, the cruising range of the using vehicle is inferior to the same vehicle with a piston engine. The second unfavorable characteristic is the absence of a vehicle braking effort provided by the engine.

The problem of high fuel consumption can be corrected by using a heat exchanger for this captures heat from the gases exhausted by the power turbine and transfers the heat to the air being delivered to the combustion chamber by the compressor. Therefore, less fuel is required to heat the gaseous mixture in the combustion chamber and the specific fuel consumption is reduced. Engine braking can be provided by a gear and overspeed clutch assembly between turbine sections which operates upon deceleration to produce the desired negative torque.

Operating a turbine in an automotive vehicle is similar to operating a piston engine. The vehicle's accelerator is connected to the fuel system and regulates the amount of fuel delivered to the combustion chamber. This controls the power output and speed of the engine. Turbine engines rotate at a much higher speed than conventional power plants but their output is reduced to useable shaft speeds by reduction gearing. An operating characteristic which differs from piston engines is an acceleration lag experienced upon depressing the accelerator. This is caused by the lack of a mechanical link between turbine stages. Although an undesirable characteristic, this problem has been solved by the use of variable nozzles.

There are many factors which indicate that the gas turbine will be adopted for use in military vehicles. Development programs testing the application of the gas turbine to military vehicles are presently in progress. Information from progress reports will be used in making the following comparison.

The gas turbine is a comparatively simple engine having one-fifth as many moving parts as a piston engine and a minimum number of engine accessories. The primary components of the gas turbine rotate freely. This eliminates the need for the large oil reservoir and complex lubrication systems required by the piston engine to separate and cool moving parts in contact. Fewer moving parts reduce wear caused by friction and, hence, decrease the probability of engine failure. The self-cooling characteristic of the turbine eliminates the need for radiators, cooling fans and related plumbing. Fuel and electrical systems of the turbine engine are less complex than those of piston engines. This reduces the chance of accessory failure which is the major cause of unscheduled maintenance on piston engines.

Simplicity of design enhances the reliability and durability of the turbine engine. The commander will benefit from greater reliability by an increase in equipment availability and a decrease in the frequency of scheduled maintenance services. Additionally, all maintenance will be performed easier and faster because of fewer accessories further contributing to the equipment availability. Stockage of accessory repair parts which presently represent 50% of organizational prescribed loads will be significantly decreased. Requirements for antifreeze will be eliminated and stockage of engine oil will be reduced.

Size and weight are also important characteristics in military engines. The gas turbine has a definite advantage over the piston engine in this area of design. The automotive turbine is capable of producing 57 horsepower per-cubic-foot of engine volume with a specific weight of 0.915 pounds per-gross-horsepower. In comparison, standard diesel engines exhibit a marked contrast to the turbine with a specific volume of 10 gross horsepower per-cubic-foot and a specific weight of 5 pounds per-gross-horsepower.[1]

The advantages of reduced size and weight are conveyed to the user as a smaller, lighter vehicle, or as an increase in ammunition load, cargo storage space, or crew space. Additionally, the lower specific weight of the gas turbine allows engines of higher power ratings to be installed in the space occupied by a less powerful piston engine.

The next characteristic to be compared is fuel consumption. Armor commanders have realized the substantial increase in cruising range of the medium tank and other vehicles made possible by use of a diesel instead of a gasoline engine. Most gas turbines cannot presently compete with the diesel engine which has a specific fuel consumption of 0.38 pounds of fuel per-horsepower per-hour at nearly all load conditions.[2] (*Ed. note: The new AGT 1500 Turbine Engine, currently under development by ATAC and AVCO Lycoming Division, is said to have a specific fuel consumption of only 0.38 lbs/bhp-hour/100% Power; 0.37 lbs/bhp-hour/80% Power; and 0.39 lbs/bhp-hour/40% Power.*) Although the fuel consumption of the gas turbine compares favorably with the diesel engine at full load conditions, the turbine experiences a rapid increase in fuel consumption when operating at loads requiring less than 40% of its rated output. The user will experience this disadvantage as an increase in fuel requirements

when operating extensively on level, surfaced roads and in assembly areas. The turbine is relatively insensitive to the type of fuel it can consume and can operate on fuels ranging from gasoline to low grade diesel fuels. With consideration given to combustion chamber design, the turbine will operate on most any fuel that will flow through a pipe.[3]

The final design characteristic to be considered in comparing gas turbine and piston engines is cost. These are many factors contributing to the price that the user pays for an engine. Research and development costs, the manufacturer's investment in production tooling, the cost of materials used in the engine, ease of manufacturing, and quantity produced are the principal factors determining the marketing cost. The piston engine design has the advantage of 65 years of development experience and an automotive industry that is tooled for its mass production. In comparison, research and development costs for the automotive gas turbine are higher because of the turbine's relative infancy in the field of engine design. The cost of metals durable enough to withstand the high operating temperatures of the gas turbine has been considerably reduced. New casting techniques have further decreased production costs and increased ease of production so that today the gas turbine is estimated to be competitive in price with the piston engine when produced in similar quantities.[4]

The most important requirement to be met before any engine is acceptable for use in a military application is that the engine be capable of sustained operation in a military environment.

The simplicity of the turbine engine enables the turbine to withstand operations over rough terrain, air-drop operations and blast effects because the turbine has fewer components subject to failure. The reliability of the turbine exceeds that of the piston engine when exposed to these conditions.

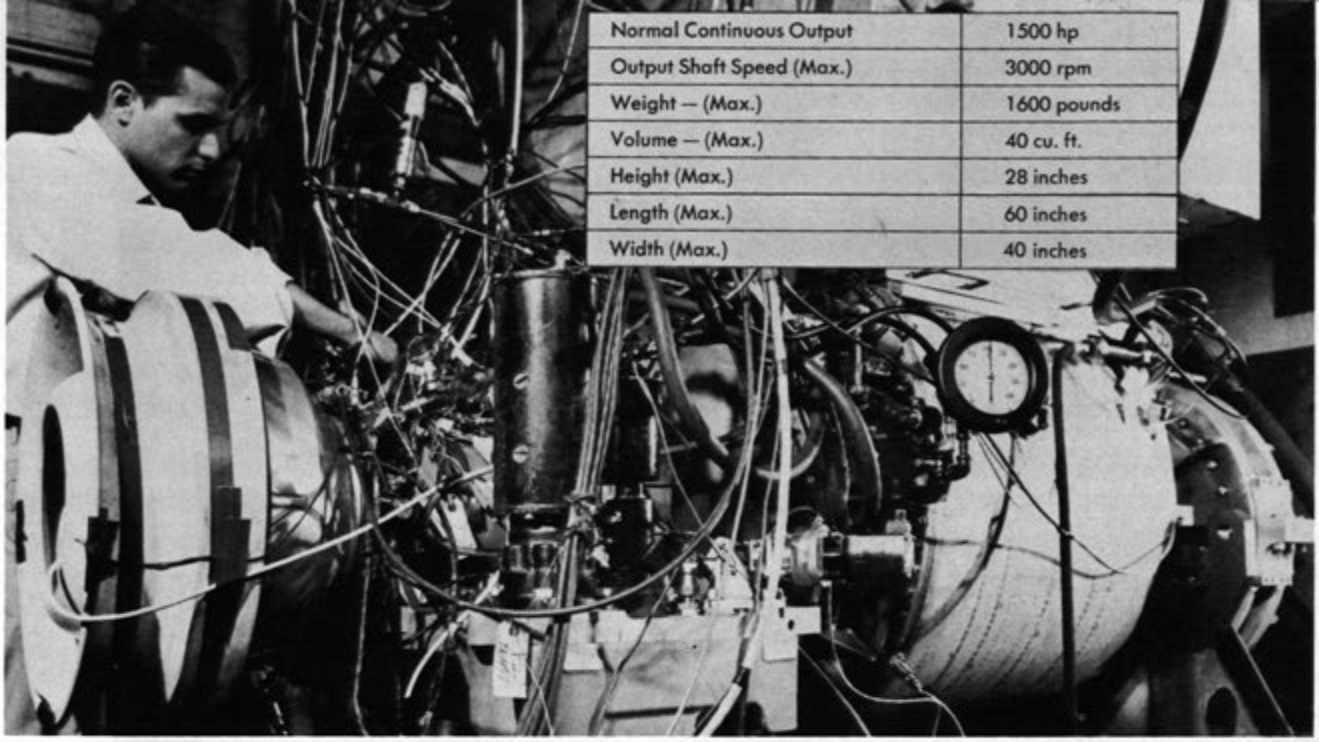
A significant advantage of the gas turbine is its suitability for powering vehicles operating under conditions of low speed and high load. These conditions are encountered when operating in mountainous terrain or in areas of poor trafficability. The reason for this advantage is the favorable torque characteristic of the turbine engine. The torque produced by a gas turbine engine continuously increases as the tracks or wheels of the driven vehicle approach the stall point. Torque produced by piston engines decreases rapidly below 50% rated engine speed.

The torque characteristic of the turbine engine enables the elimination of the torque converter and the reduction in the number of gear ratios which piston engines require to maintain maximum torque output. Reduction in the number of components in the transmission reduces the parasitic losses of the power package by 16%.[5] This factor increases the horsepower available at the sprockets or wheels. Therefore, a 630 horsepower gas turbine is equivalent to a 750 horsepower piston engine when installed in a vehicle.

Extreme temperature ranges have considerably more effect on the power produced by gas turbines than on the power output of the piston engine. Turbine engine power increases as the temperature decreases. A turbine rated at 600 horsepower consuming air at 100°F will produce 800 horsepower at −65°F.[6] This characteristic is both an advantage and a disadvantage. Because trafficability is generally poor during cold, wet seasons, added power is an advantage. The driven components, however, must be designed to be reliable under varying power applications. The gas turbine has the additional advantage of easier starting in cold weather. Because of the free rotating parts and a much smaller oil sump, the turbine is insensitive to the cold weather starting conditions which affect piston engines. The turbine, unlike the piston engine, does not have to overcome the high torsional resistance caused by static friction and the high viscosity of the oil. Engine components reach operating temperature quickly enabling full loads to be applied as soon as the fuel is burning steadily. This cannot be expected of piston engines without suffering the disadvantages of rapid wear and stalling.

Turbines can be designed to operate while submerged in water, a condition essential to military vehicles involved in fording operations. Presently, however, fording capability of the piston engine must be considered superior. To give a turbine powered vehicle a fording capability, the turbine must be enclosed in a water-proof container thus sacrificing to some extent the advantage of compactness and ease of maintenance. The turbine is also subject to severe damage if water gains access to turbine components which are operating at extremely high temperatures.

The last characteristic of a military environment is operation in extremely dusty areas. Presently, the gas turbine cannot give the same reliable service obtained from the piston engine operating in these conditions. The turbine consumes far more air in its operation than the piston engine. The air entering the turbine must be filtered to a high degree so that the gases directed on the turbine blades are not contaminated with small dust particles. Gases containing dust particles have a sand blast effect on the turbine blades resulting in erosion of these components. It also causes a considerable reduction in engine life. The problem of how to effectively and efficiently filter the large quantities of air required by the turbine is one of the most difficult problems facing engineers designing the turbine for use by the military.



Normal Continuous Output	1500 hp
Output Shaft Speed (Max.)	3000 rpm
Weight — (Max.)	1600 pounds
Volume — (Max.)	40 cu. ft.
Height (Max.)	28 inches
Length (Max.)	60 inches
Width (Max.)	40 inches

Avco Lycoming

The first complete AGT 1500 gas turbine engine is checked out prior to its initial test run in January 1967.

Evaluation of the design characteristics of the gas turbine and piston engines indicates that the turbine design will better meet the design requirements of the military vehicle power plant.

The gas turbine is superior to the piston engine in the following:

Reliability and durability when operating in an environment without high dust content
Ease of maintenance
Simplicity of design
Cold weather starting
Specific weight and specific volume
Positive torque characteristics
Multifuel capability
Oil consumption

The gas turbine is comparable with the piston engine in the following:

Fuel consumption at full and half loads
Cost per engine package (engine plus transmission) when produced in similar numbers

The piston engine is superior in the following:

Reliability and durability when operating in extremely dusty conditions
Fuel economy at less than half load
Ability to ford without excessive preparation or protection

The advantages of the turbine are many. However, we must also remember that the most important requirement to be met by a military engine is sustained operation in combat. The turbine engine presently is not capable of sustained operations in extremely dusty areas. Until the turbine is capable of meeting this requirement it cannot be considered an adequate military power plant.

Considering previous problems faced and solved by turbine development engineers, it is reasonable to assume that the air filtration solution is imminent. It is the author's opinion that Armor will have turbine engines powering its vehicles by the 1970-1975 time frame.

FOOTNOTES

[1]Staff Study on the Application of the Gas Turbine to the Armored Reconnaissance/Airborne Assault Vehicle, in possession of USACDCARMA, Fort Knox, Ky.
[2]*Ibid.*
[3]*Ibid.*
[4]600 SHP Multipurpose Gas Turbine Engine Solar Aircraft Company in possession of USACDCARMA, Fort Knox, Ky.
[5]Staff Study, *op. cit.*
[6]Report of Visit of Mr. Fernberger, General Electric Representative to USACDCARMA, Fort Knox, Ky., 27 March 1964.

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Long Range Reconnaissance

Marines and the Mekong

Night operations during "Paul Revere IV"

Aerial Resupply of A222

THE FORMS OF MOBILITY

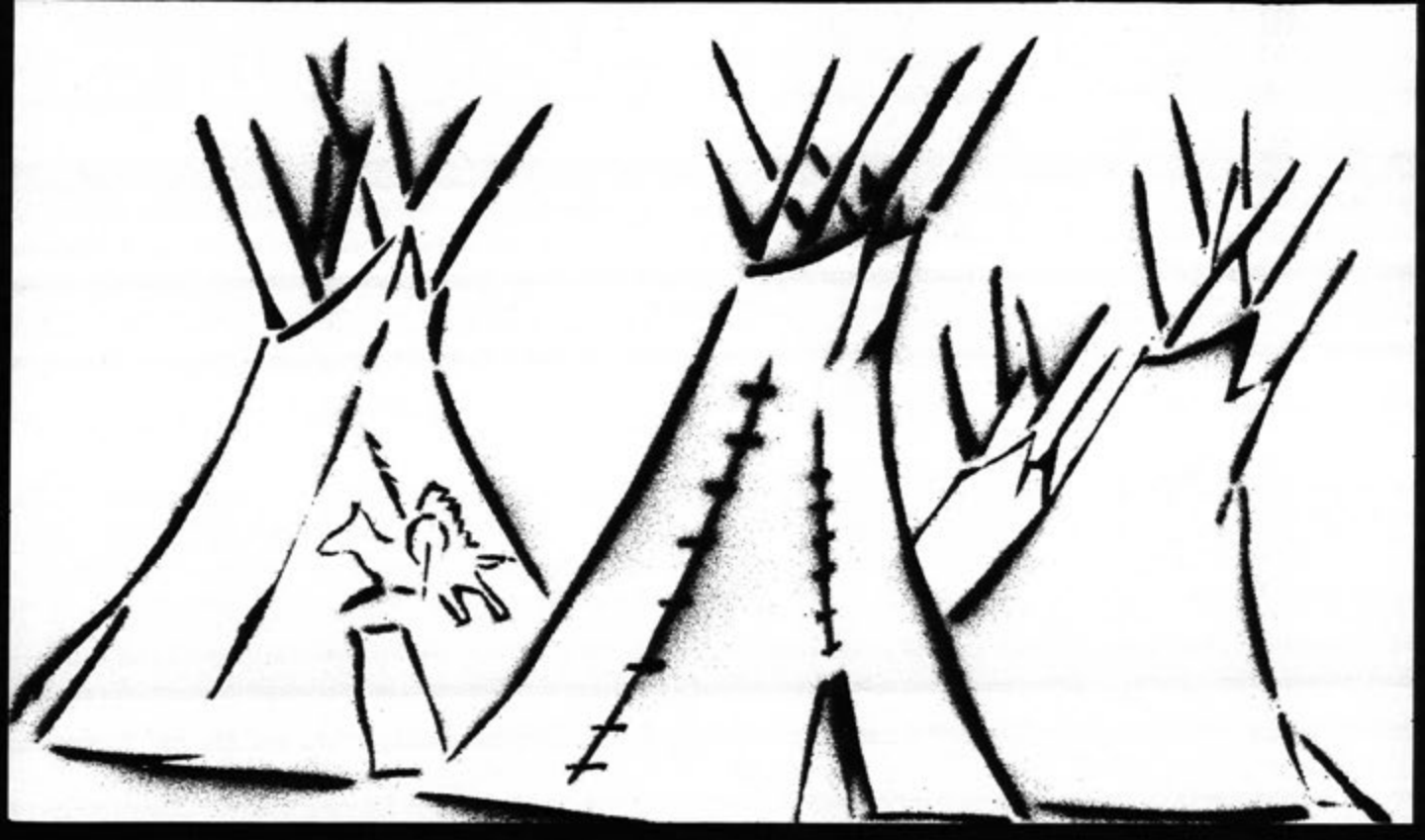
VIETNAM 1967

"Weather Maker" . . . delivers a rain of lead

Teamwork . . . by the men of New Zealand

"Cedar Falls" . . . a blocking force on the move

A brief moment of peace



NEZ PERCE ANABASIS

By CAPTAIN WILLIAM M. TILTON

June of 1877, found several western-based units of the United States Army assigned the routine mission of insuring that a reluctant tribe of Nez Perce Indians made it to their new home on the reservation at Lapwai, Idaho. No trouble was expected for these Indians boasted that they had never shed the blood of a white man.

But a legend of daring and courage was soon to be born in a bloody conflict that lasted for one hundred and ten days and led the troops of the United States Army on a sixteen hundred mile chase across some of the roughest terrain in North America.

The cause of the war had its roots in the white man's drive for land. However, discussion of these details is not the purpose of this article. Suffice it to say, that these Nez Perce were from the Wallow Valley in Oregon, often called "the land of winding water." It is not strange that they were reluctant to leave this beautiful land to follow the life of a semi-captive on the reservation.

Let us now turn our attention to the forces which were engaged in this epic struggle. The account of the number of warriors involved varies with the source of information. Army accounts credit the Nez Perce with over three hundred and ninety fighting men. Indian accounts form an average of about one hundred and ninety-one. The smaller figure appears more accurate when the records of each band are considered.

The Nez Perce ranks included:

Joseph: *Head Chief and War Chief.*

Looking Glass: *Chief Lieutenant and master tactician.*

Whitebird: *Chief of the Whitebird Nez Perce, but still considered a lieutenant to Chief Joseph. He was an old man at this time.*

Tuhulhilsote: *Medicine Man and lieutenant under Chief Joseph.*

Ollakut: *Chief Joseph's brother and leader of the younger men of the tribe.*

There is one more important fact. The Nez Perce had six hundred women, children, and non-combatants plus nine hundred to one thousand horses.

Smithsonian American Ethnology Collection

"The soldiers found themselves facing the Nez Perce on the high bluffs south of the Clearwater River with the Indians in position between Howard's men and the river." From a later picture by Major Lee Moorhouse.

Military units involved were elements of the 1st Cavalry, 2d Cavalry, 7th Cavalry, 5th Infantry, 7th Infantry, 21st Infantry, and the 4th Artillery. These were all employed at some time during the chase. There were also numerous civilian volunteers and friendly Indians to increase the numbers of the Army.

The map (*figure 1*) shows the routes followed by the Nez Perce as well as those of the major military commanders. It also indicates the approximate location of the major battles. This article will follow the Nez Perce anabasis, and give the highlights of the major battles.

CAPTAIN WILLIAM M. TILTON, Armor, was commissioned in 1961 from the University of Idaho. Following graduation from the Armor Officer Basic Course, the Airborne School and the Ranger School, he was assigned to the 2d Battalion, 68th Armor, Germany. In June 1964, he was assigned to the 8th Infantry Division Headquarters as Aide-de-Camp to Brigadier General Julian J. Ewell. Captain Tilton was graduated from the Armor Officer Career Course in June 1966, and is currently assigned to the 1st Cavalry Division (Airmobile), Vietnam.

General O. O. Howard was in charge of seeing the Nez Perce onto the reservation. Upon learning of the Indian's rebellion, he immediately sent Captain Perry with "F" and "H" Troops of the 1st Cavalry, with orders to bring them in. The Indian location was placed at the Salmon River in Whitebird Canyon.

Thirty civilians joined the troopers on the march to the Salmon, bringing the Army strength up to one hundred and thirty men. Ironically, the civilians held the Nez Perce fighting ability in complete contempt. This spirit soon spread to the troops and before long the mission took on the air of a Sunday picnic.

Chief Joseph was aware of the cavalry's movement almost as soon as they left Lapwai. He also knew the troopers were riding on "green" horses and counted on this fact to assist his plans. Instead of running, he decided to stay and fight.

The battle was joined on the morning of June 17th. The troops were forced to descend twenty five hundred feet through four miles of rough and open terrain to reach the village on the Salmon. The Nez Perce ambush waited in this terrain.

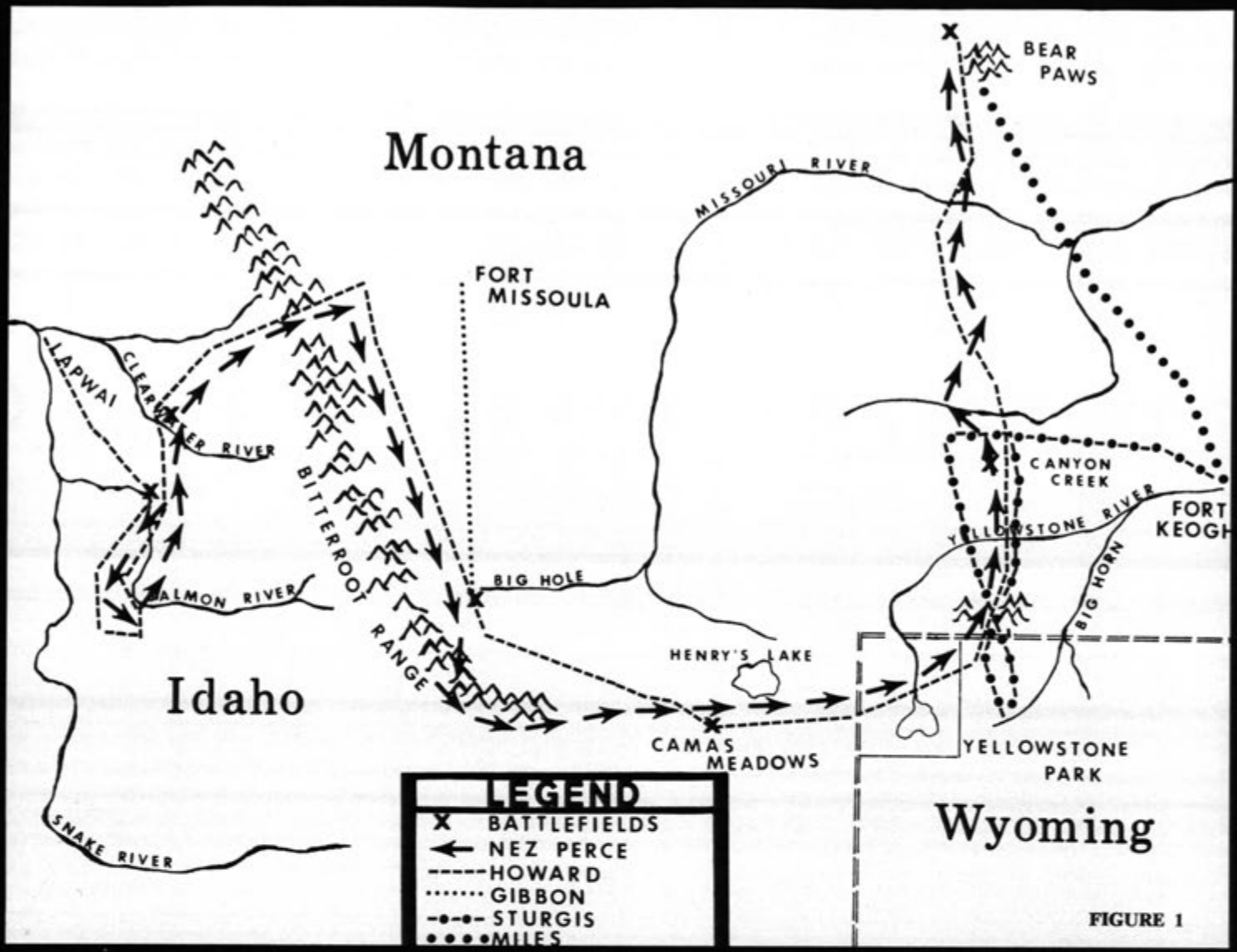


FIGURE 1

The battle was short and violent. In a classic double envelopment, Joseph used part of his force to halt the head of the column while sending Whitebird and his warriors around the left flank and Ollakut and his forces to the right. The steep slopes prevented rapid withdrawal by the cavalry.

The new horses bolted at the first volley, throwing the troopers into complete confusion. They were caught in a murderous crossfire, leaving as the only route of escape, a fight back up the mountain. Eighteen men, under a Lieutenant Theller, formed a rear guard to aid the escape. Driven into a culde-sac, they were slain to the last man, but their action enabled the rest of the command to reach safety. The survivors immediately withdrew to Grangeville.

When order was restored, military losses were counted at thirty-four troopers killed. The Indians had only two wounded and the picnic had turned into a disaster. An important fact, that was to remain true throughout the campaign, came to light in this battle. There was no scalping or mutilation of bodies by the Indians. Chief Joseph hoped that this fact would leave the door open for better treatment of his own people if they were captured.

After the battle at Whitebird, General Howard joined the chase himself, taking along elements of the 1st Cavalry, 21st Infantry, and 4th Artillery.

The Nez Perce crossed the Salmon to the western bank at Whitebird. Howard followed by commandeering all available boats. The Indians then recrossed some fifteen miles upstream, but this time they stopped to burn all boats in the area. They moved on and went into camp on the Clearwater River near Kamiah (figure 1).

When General Howard arrived at the second crossing, he was unable to swim the river because of his heavy equipment. He finally caught up to Chief Joseph at Kamiah on the 11th of July after retracing his route and recrossing at Whitebird.

The soldiers found themselves facing the Nez Perce on the high bluffs south of the Clearwater River. The Indians were in position between Howard's five hundred and eighty men and the river.

Joseph attempted to flank Howard's forces by mounted attacks, but these were repelled. The Army troops were, however, forced into a large semi-circle which stretched nearly two miles across at its widest points.

General Howard soon realized that this was not to be Indian fighting of the usual kind, for much to his surprise, the Indians facing him had thrown up stone breastworks. In addition, they constructed an advance line and a main line at critical points and from these positions it was possible for them to fire with safety or fall back if necessary.

Another factor that was to have a great effect throughout the campaign soon became painfully evident. The Nez Perce were greatly superior in their marksmanship to the soldiers they faced. An instance is cited in which "an officer, suffering from a wound, lifted his arm to relieve the pain and received a second bullet in his wrist."[1]

The accuracy of the troops was a very different matter. Colonel Bailey, who was then still a lieutenant, wrote:

> "A number of us saw a poor old horse, probably wounded, standing for some hours out in my front, and I suppose several hundreds of shots were fired at him without apparent effect. That was one of the lessons I had about our shooting when we had in the Army, three shots per man, per month, for target practice."[2]

The ensuing battle lasted all night. As the Nez Perce controlled the only spring in the area, great discomfort was caused to both horses and troopers. The next morning, with the aid of the howitzer and Gatling guns, the soldiers were finally able to regain the spring and relieve their thirst.

The second day brought an end to the fighting when the Indian line gave way under the heavy artillery fire. The Nez Perce withdrew across the Clearwater River.

Once again, the Army took stock of its losses . . . thirteen killed and twenty-two wounded. Reliable Indian records reveal their losses as being four killed and six wounded. Considering only the casualties, it appears that General Howard won the field, but lost the fight. He later stated:

> "I do not think that I had to exercise more thorough generalship during the Civil War than I did in the march to the battlefield and the ensuing battle with Joseph and his Indians on the banks of the Clearwater."[3]

The Nez Perce now decided to head for "buffalo country," and from there to reach the safety of Canada. Their route lay across the Lolo trail which crossed the Continental Divide in Montana. An idea of what faced the Indians can be gained from a statement by General Sherman concerning this area. . . ."this (*the Lolo trail*) is universally admitted by all who have travelled it—from Lewis and Clark to Captain Winters—as one of the worst trails for man and beast on this continent."[4] Considering the time and circumstances there is little doubt that the task of moving six hundred women and children and one thousand horses across the trail would have challenged the greatest logistician.

"The Nez Perce were greatly superior in their marksmanship to the soldiers they faced."

Smithsonian American Ethnology Collection

CHIEF JOSEPH

He bravely lead his people across . . . "one of the worst trails known to man and beast on this continent."

The march itself was uneventful except for an instance involving Captain Rawn from Fort Missoula, who with forty regulars and one hundred civilians had been given the mission of blocking the trail at its eastern end. When the Nez Perce encountered this obstacle, Joseph sent Looking Glass forward to parlay with the soldiers while totally undetected, he moved the band around the blockage by a route not known to the soldiers. Defeated without a shot, the troopers later nicknamed this place, "Fort Fizzle."

But Chief Joseph had not considered General Howard's advantage of having the telegraph at his disposal. The same message which had alerted Captain Rawn also reached Colonel John Gibbon at Fort Shaw on the Sun River. Colonel Gibbon headed south on the 27th of July with elements of the 2d Cavalry and the 7th Infantry.

Meanwhile, the Nez Perce moved down the Bitterroot Valley and went into camp in the Big Hole Basin, thinking that the war was over for even the whites in the area proved friendly. Joseph and his people stopped to trade with them in one town.

It was here that Chief Joseph made his first mistake. Concentrating his attention solely on the movement of General Howard, he felt that once free of Idaho that the Nez Perce troubles were over. As a result he made the costly error of not putting out scouts.

Attacking with one hundred and sixty-three officers and men and thirty civilian volunteers, Colonel Gibbon's command struck the Nez Perce camp before dawn on the 9th of August. Taken totally by surprise, men, women, and children died in the first volley. Despite the chaos, the bulk of the warriors managed to gain the brush at the edge of the Big Hole River while several other warriors eluded the attackers and were able to secure the horses before they could be run off.

Twenty minutes after the first shot, Colonel Gibbon controlled the camp. Surveying the scene, he ordered the tepees burned, but because of a heavy dew that had settled during the night, they wouldn't ignite.

It now became apparent that the soldiers did not have a tenable position. Looking around they found that they were in the open camp area, while the Indians were in the shelter of the brush at the edge of the river. The Nez Perce rallied and started to pour a deadly rain of fire at the exposed troops. Under the leadership of Joseph, Looking Glass, Whitebird, and Ollakut, the Indians mounted a strong counterattack, driving the soldiers out of the village and onto a small ridge on the other side of the river.

Gibbon was now in serious trouble. He had little water, a poor tactical position and to make matters still worse, the Indians had intercepted and destroyed his howitzer. His casualties continued to mount, but unexpected help was on the way in the form of General Howard's command.

As soon as Chief Joseph received word that Howard was approaching, he ordered his warriors to break contact and form for the continued move east. Gibbon was saved, but once again the Army had suffered heavy casualties. Thirty soldiers were dead and forty wounded. Nez Perce losses were eighty-three dead, of which thirty were warriors.

A hard lesson had been learned and the Nez Perce now moved with scouts deployed in all directions. Once the Indians left Big Hole, it was double duty for the scouts. They not only had to watch for soldiers, but had to find the way as well.

By Camas Meadows, General Howard managed to close to within one day's march of the retreating Indians. Joseph's answer was to attempt to put the soldiers afoot by running off their horses. On the night of 19th August, selected Nez Perce warriors slipped into the soldier's camp. They were disappointed to find most of the horses picketed, but managed to stampede two hundred Army mules. These were picked up outside camp by appointed warriors and led off toward the Indian camp.

At the height of the confusion, a cavalry "column of fours" approached the camp at a walk. This was thought to be Lieutenant Bacon, who had been sent ahead to Tacher Pass . . . that is, until a sentry's challenge was answered by the Nez Perce war cry. The Indians dashed into camp, but because of the darkness and confusion, little damage was done.

Three aroused troops of cavalry gave chase, but Joseph matched them move for move, inflicting three dead and six wounded on the pursuing troopers. The Nez Perce escaped virtually untouched with the two hundred Army mules and fifty horses belonging to the civilian volunteers.

A very frustrated General Howard was forced to remain at Henry's Lake and refit his command. The horses of the cavalry were jaded and the men of the 21st Infantry had literally walked their boots off. Luckily they were able to resupply from the nearby town of Virginia City.

The telegraph once again came into play. Colonel Samuel Sturgis was sent from Fort Keogh with three hundred sixty men of the 7th Cavalry, with the mission of blocking the Indians from the north, thus trapping the Nez Perce between his command and General Howard's.

Joseph was moving through Yellowstone Park at this time. When his rear guard burned the only bridge across the Yellowstone River, General Howard was delayed still another day while it was rebuilt.

It should be mentioned that after the battle of

Big Hole, the Nez Perce realized that everyone was against them. This made it necessary for them to stop anyone they met from giving information to the soldiers. For this reason, two parties of tourists in the Park were fired on, and a storekeeper killed.

Colonel Sturgis had gone into position at the pass through Heart Mountain just northeast of the Park. Although he had the Indians effectively blocked, he still didn't know where they were. Every attempt at communication with Howard had been cut off by the far-flung net of Nez Perce scouts.

Realizing that he was blocked, Joseph sent a decoy party southeast toward the Shoshone River where they let the Army scouts get close enough to assume that this was the main Indian force. Sturgis took the bait and moved to intercept. Joseph in turn, swiftly led his people through the pass, directly over the position just vacated by Sturgis. As the elusive Nez Perce moved north, Colonel Sturgis discovered wagon tracks while making a wide swing to locate the Indians. The night of 11 September found his command closing on the tail of General Howard's command. They had been given the slip again.

Sturgis' troops were still in relatively good shape and took up the chase on the 12th of September. They rode sixty miles, reaching the Yellowstone River the next day, but by this time the troopers were exhausted. A disconsolate Sturgis was on the point of calling off the chase when one of his scouts reported that the Nez Perce were not far ahead. The troops quickly remounted and finally closed on the Indians just as the last of the band was moving into the gorge of Canyon Creek.

Joseph deployed his rear guard who stopped the advance of the soldiers with accurate fire. The troopers were forced to dismount, thus eliminating whatever chance they had to cut off the fleeing column. The soldiers were not able to force their way into the canyon as every attempt to flank the column met with devastating fire from the Nez Perce flankers. Darkness fell with the Indians still moving north.

Five more troopers were added to the list of Army dead, but this time they had more success than before against the Nez Perce sharpshooters. The Nez Perce had suffered sixteen killed as they were forced to fight from horseback, thereby exposing themselves to the return fire of the soldiers.

Although the Nez Perce fighting strength was well below two hundred at this point they had successfully fought off nearly twice their number and made their escape. General Howard, meanwhile, sent a letter to Colonel Nelson A. Miles at Fort Keogh, explaining that the Indians had left their pursuers behind and requesting Miles to intercept them. Miles left immediately with elements of the 2d Cavalry, 7th Cavalry, and 5th Infantry.

The Nez Perce continued north, crossing the Musselshell River, and finally the Missouri, moving to the Bear Paw Mountains where they made their last camp on the U. S. side of the border with Canada. Although the border was now only thirty miles away, the Indians were badly in need of rest. It was here that Joseph made the mistake that was to cost his people their freedom.

With Howard's force six days behind, Joseph felt that he and his people could not be caught. He knew nothing of Colonel Miles' force moving to intercept him. A great deal of controversy centers around the events of this time. There are those who say that the Nez Perce believed that they were over the border. Others dispute this claim and even Joseph's words are extremely vague on this point. In any case, he once again failed to put his scouts out. The warriors went buffalo hunting.

The 30th of September found him trapped by Colonel Miles. Joseph now had only one hundred and twenty-five effective warriors against Miles' total force of three hundred and eighty-three soldiers and Cheyennes.

The battle opened with Captain Hale leading his battalion of the 7th Cavalry in a mounted charge against the village. It was normally the classic cavalry charge that had broken other Indian battle lines like paper. The charge reached to within one hundred yards of the village as the warriors opened fire. The attack broke, leaving fifty-three of the one hundred men of "A" troop dead. "K" Troop lost sixty percent. Every officer in the battalion with the exception of a Lieutenant Erikson was killed. The Army gained some degree of success when the 2d Cavalry was able to run off the majority of the Nez Perce horses, finally putting the Indians on foot. With means of escape further denied, the Nez Perce chose to fight it out.

The rest of the day saw every attack mounted by the soldiers beaten back with heavy casualties. By late afternoon Colonel Miles relinquished the idea of taking the village and decided to lay it siege.

During the night the Indians worked to improve their positions, giving further evidence that Joseph and his Nez Perce were not ordinary Indians. Examination of these positions after the battle revealed that they consisted of successive lines of trenches with interconnecting galleries and tunnels. Some of the positions even had cooking facilities while critical points had advance trenches and separate rifle pits. All-in-all, the extent of these fortifications was truly amazing.

The rest of the fighting produced few casualties on either side. The battle lasted until the 5th of October, but the war was over. Joseph realized that any hope of escape would require leaving the women, children, and wounded which he would not do. He surrendered.

Smithsonian American Ethnology Collection

This striking picture of Yellow Bull seems to capture the feeling of Joseph's words of surrender . . . "Hear me, my chiefs. From where the sun now stands, Joseph will fight no more forever."

Joseph proved to be as magnificent in surrender as he had been in battle. His surrender speech to Colonel Miles was recorded by Lieutenant C. E. S. Wood, General Howard's Aide-de-Camp. Joseph said:

> "Tell General Howard I know his heart. What he told me before—I have it in my heart. I am tired of fighting. Too-hul-hil-sit is dead. Looking Glass is dead. He-Who-Led-the-Young-Men-In-Battle is dead. The Chiefs are all dead. It is the young men who say 'yes' or 'no.' My little daughter has run away upon the prairies. I do not know where to find her—perhaps I shall find her too among the dead. It is cold and we have no fire, no blankets. Our little children are crying for food, but we have none to give. Hear me, my chiefs. From where the sun now stands, Joseph will fight no more forever."[5]

Three thousand five hundred and eight regulars, volunteers and scouts had been called to service against the Nez Perce. Joseph's warriors had met two thousand two hundred and thirty-five of them in actual combat. Of the eighteen engagements, they had lost only two, and in so doing had taught some outstanding U. S. Army commanders a lesson in tactics. A further outcome of this campaign was a review and revision of the Army marksmanship program.

FOOTNOTES

[1]Chester A. Fee, *Chief Joseph* (New York, 1936), p. 158.
[2]L. V. McWhorter, *Hear Me My Chiefs* (Caldwell, Idaho, 1952), p. 308.
[3]Fee, *op. cit.*, p. 163.
[4]David C. Cooke, *Fighting Indians of the West* (New York, 1954), p. 191.
[5]Fee, *op. cit.*, p. 262.

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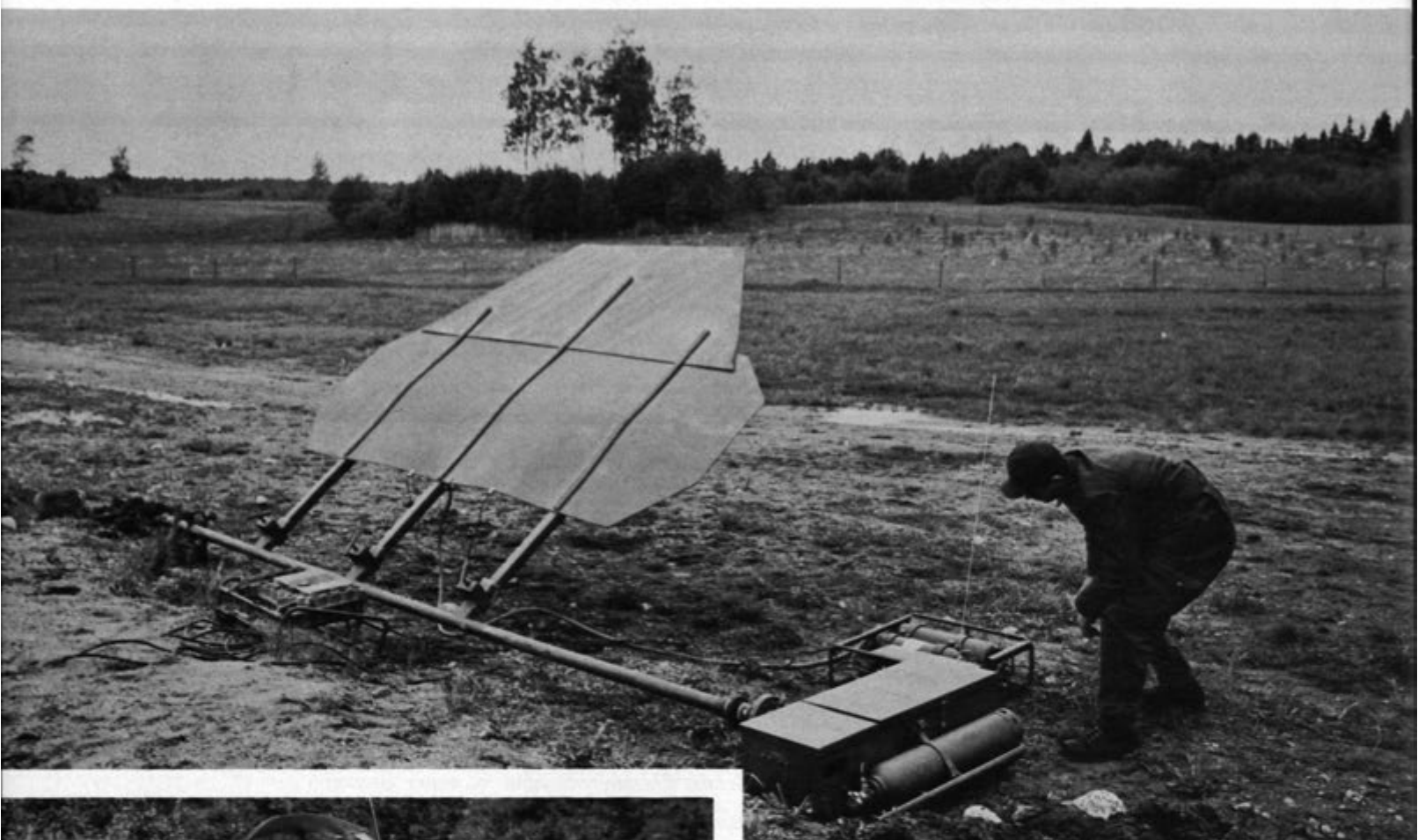
On Target In Sweden



[Left] The training leader [Above] Remote controlled targets

A new land warfare training system, said to have no counterpart in the world today, has been designed for the Swedish Army to provide greater realism in combat training. The remarkable system includes flashing scorers, smoke scorers, pop-up targets, machinegun simulators, artillery simulators, and special remote-control units. All of these features are available without any sacrifice in safety or an increase in ammunition costs. In fact, the new system reputedly provides greater safety and reduced ammunition costs.

The system, developed by SAAB of Sweden, is controlled by a *training leader* employing a 36-channel radio transmitter. By pressing buttons located on the mobile transmitter, the training leader can exercise operational control over the remote-controlled targets and equipment which portray the enemy forces in action. Indicating or scoring devices give an immediate picture of the efficiency of the friendly troops against the simulated enemy.

Greater realism in combat training means greater proficiency if combat comes.

The system's flashing scorer indicates a strike on target by a signal lamp while the smoke scorer registers a hit by emitting a puff of smoke. The pop-up targets, which fall when hit, are operated by compressed air and can also be raised or lowered by the remote control unit. The pop-up targets can be coupled together in groupings of up to ten. The tank target is of similar design.

The remote-controlled machinegun simulator reproduces the sound of automatic weapons by means of a sound-horn operated by compressed air. Artillery simulation is achieved by electrically fired pyrotechnic shells.

The remote-control unit consists of the 36-channel radio transmitter and a number of receivers attached to the targets and simulators. Each receiver has three channels and can respond to three different instructions such as, "Raise," "Lower," or "Fire." The system usually consists of one control group and 12 target and simulator groups.

"Over-the-top" meant an appointment with death to millions of men. Could it have been avoided?

COULD THE TANK HAVE BEEN THE DECISIVE FACTOR IN WORLD WAR I?

By CAPTAIN WALTER S. DILLARD

Could the tank have been the decisive weapon on the western front in World War I? The answer depends upon an analysis of the situation prevailing on that front, a description of battlefield conditions, and the tactics and techniques used in employing tanks.

After the outbreak of hostilities in the summer of 1914, the opposing armies made a series of attempts to outflank each other, resulting in the "Race to the Sea." By the middle of November, 1914, the opposing lines stretched from Switzerland, north to Dunkirk. They were fast becoming the vast system of trenches they would remain for four long and bloody years.

A look at this battlefield during the latter part of 1916 will point out many of the problems faced by the tank when it arrived on the scene. Generally, the no-man's land between the lines was a barren area, interlaced by abandoned trenches, torn and pocked by shell holes, and entangled throughout by seemingly endless lines of barbed wire.

When it rained, as was often the case in some areas, the giant maze of shell holes and trenches turned into a morass of mud and water which could hardly support the weight of a single man, much less the great weight of fighting vehicles.

By 1916, a *sitzkrieg* had begun. Both sides had retired into and behind their long lines of deep and complex trench systems. Machine guns were employed with extensive barbed wire obstacle nets to cut down the massive frontal assaults made by wave after wave of attacking infantrymen. Considering the situation, there was no other type of attack and maneuver possible. Envelopments and flanking movements were out of the question. There was no room for maneuver—the trench extended far beyond the horizon in either direction.

Any kind of surprise was impossible with the tactics employed by both the Allies and the Central Powers. All attacks were heralded by intense artillery bombardments sometimes lasting several days. This was done in the hope of destroying enemy defenses. But the defender soon learned to pull back the main part of his troops, leaving only small detachments of machine gunners in the trenches. He massed his forces out of range of opposing artillery and then quickly moved into the trenches, either disrupting the attack entirely or holding it to very limited and pyrrhic gains. In effect the artillery frequently served more as an aid to the enemy than to the attacker. Early warning of certain attack was more valuable to him than were the few obstacles and machine gun emplacements that were destroyed.

The tank, however, put two principles of war—*surprise and maneuver*—back on the World War I battlefield.

CAPTAIN WALTER S. DILLARD, Armor, was commissioned in 1961 from USMA. A graduate of the Armor Officer Basic Course and the Airborne and Ranger Schools, his first assignment was with the 3d Armored Division, Germany. In 1965, he returned to CONUS serving with the G-3 Operations Division, Headquarters, US Army Armor Center, prior to attendance at the Armor Officer Career Course. Captain Dillard is currently on duty with the 2d Infantry Regiment, 1st Infantry Division, Vietnam.

Even at this rather primitive stage of development, tanks were able to crack the seemingly impregnable German trench and machine gun system of defense. In essence, the tank with its armor-plated sides was the Allied answer to the German machine gun. This new weapons system transferred the initiative emphatically to the offensive and gave an overwhelming advantage in morale and firepower to the attacker.

Treads also gave the tank mobility to exploit the advantage gained by initial penetrations. Maneuver against the flanks and rear of ruptured enemy defenses was now possible. Unfortunately, mechanical failures coupled with the inability of higher commanders to understand tank capabilities, prevented this mobility from being strategically decisive. These were two problems which were to hound tanks and tankers throughout the war.

The tanks were initially employed with the standard tactic of long intensive artillery bombardment prior to the attack. The surprise potential of the tank was realized in initial actions only because it was, in itself, an unknown weapon. A year of trial and error passed before tanks were employed with *surprise* in the modern sense. This surprise was not to come until commanders learned the futility of long artillery preparations in support of tank attacks. Very short preparation usually lasting less than half an hour were to be the order of the day in the successful employment of artillery and tanks. Now that the tank had come to the battlefield it was not so essential to stun enemy defenses by bombardment.

The frontal assault was still necessary because of the hundreds of miles of continuous trench systems. Once the initial deep penetration was made, however, there were unimagined prospects of envelopments and turning movements. In addition to its capacity for mechanical failure, the World War I tank was limited in range and speed when compared to modern main battle tanks. Cruising ranges varied from twelve miles in 1916 (British Mark I) to forty miles in 1918 (British Mark V Star and Whippet Medium A). The Germans had twenty tanks in 1918, which could range up to fifty miles, but these played no significant part in the war. Tank armament varied from six machine guns in the female type of British Mark series to two six-pounder naval guns in addition to four machine guns in the male type of Mark series. Armor ranged from 0.2 inches on the British Mark I to .95 inches on the French Schneider. Top speed varied from 3.7 mph in the Mark 1 to 8.3 mph in the Whippet Medium A.[1]

Perhaps the simplest way to determine the possible effect and potential decisiveness of the tank would be to analyze several World War I tank battles.

"The tank was limited by terrain and obstacles. A battlefield mauled by artillery shells was nearly impassable, particularly when the weather was foul."

At Somme, only thirty-two out of forty-nine tanks reached the line of departure and only nine of these reached their objectives.

The tank was baptized under fire at the first battle of the Somme, 15 September 1916. Only the Allies knew of the tank's existence. The German High Command was taken completely by surprise as were the rank and file of the German Army.

A long intensive artillery barrage was used but lanes were left unscathed for the passage of the tanks. There were forty-nine tanks available for the offensive. These were split into four groups and assigned to four of the infantry corps taking part in the attack. Only thirty-two of these tanks reached the line of departure as mechanical failure claimed the absent seventeen. Of the thirty-two only nine tanks reached their objectives.

The individual exploits of several of these tanks are worthy of note and show how well the tank answered the riddle posed by the German machine gunners.

Flers, one of the small towns in the path of the first Somme operation, contained large numbers of machine gun nests. Flers fell to a lone tank without a single Allied casualty.

Another tank took under enfilade fire a German machine gun entrenchment which was massacring nearby British infantry elements hung up on barbed wire. When the infantry freed itself, the tank moved along the trench and made possible the capture of three hundred German soldiers.

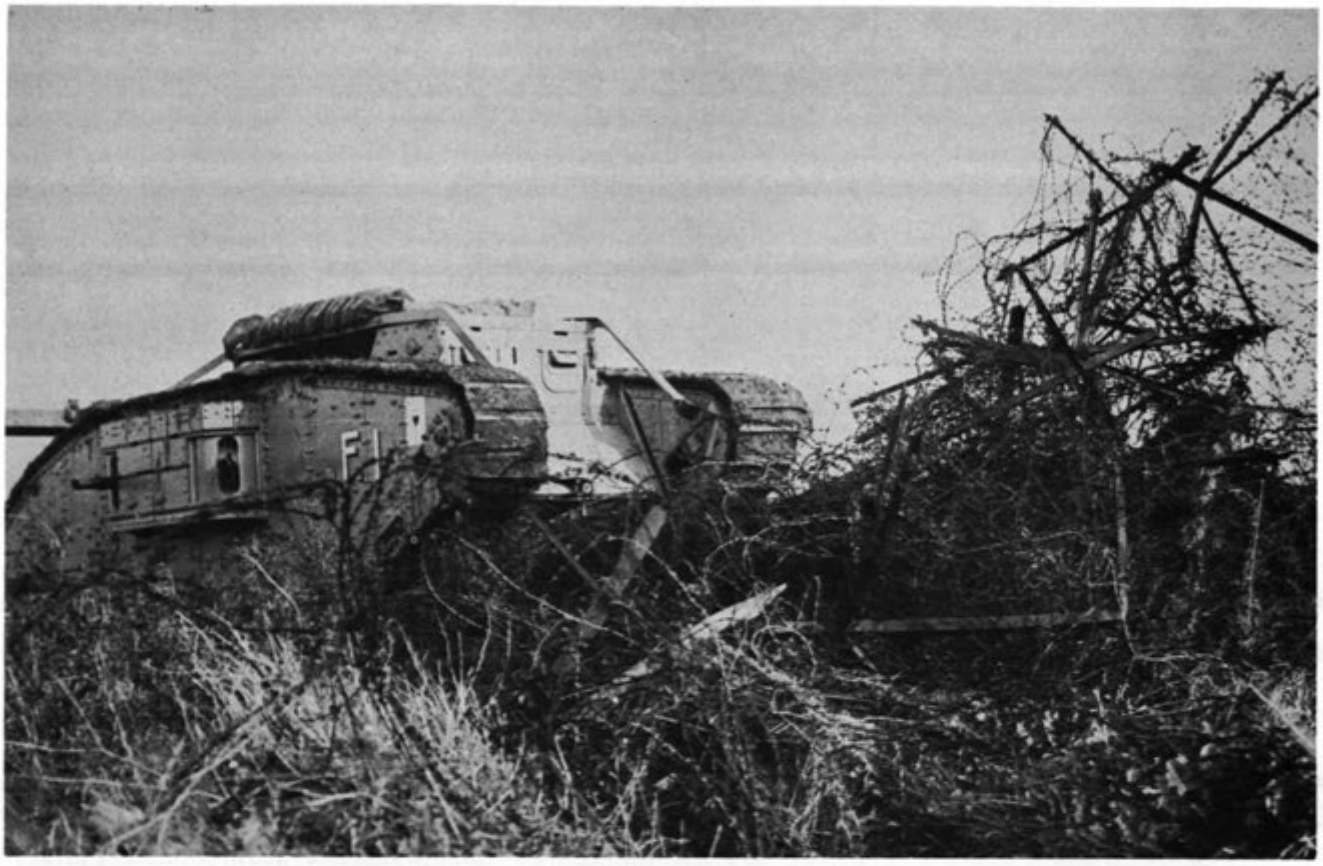
In this battle the mobility of the tank was hampered because it could move only in the lanes left untouched by artillery fire. The bombardment had rendered terrain to their right and left impassable. The tanks at the Somme did not have the lateral mobility needed to move readily to any point of action on the battlefield.

Moreover, the lanes served only to trap the infantry units which could not move through barbed wire flattened by the tanks. Had the tanks been employed as a unit in mass, this would not have been so great a problem. Tanks and infantry used together in mass would not have become isolated targets for German riflemen and machine gunners, and the shock action of the tank would have been more complete.

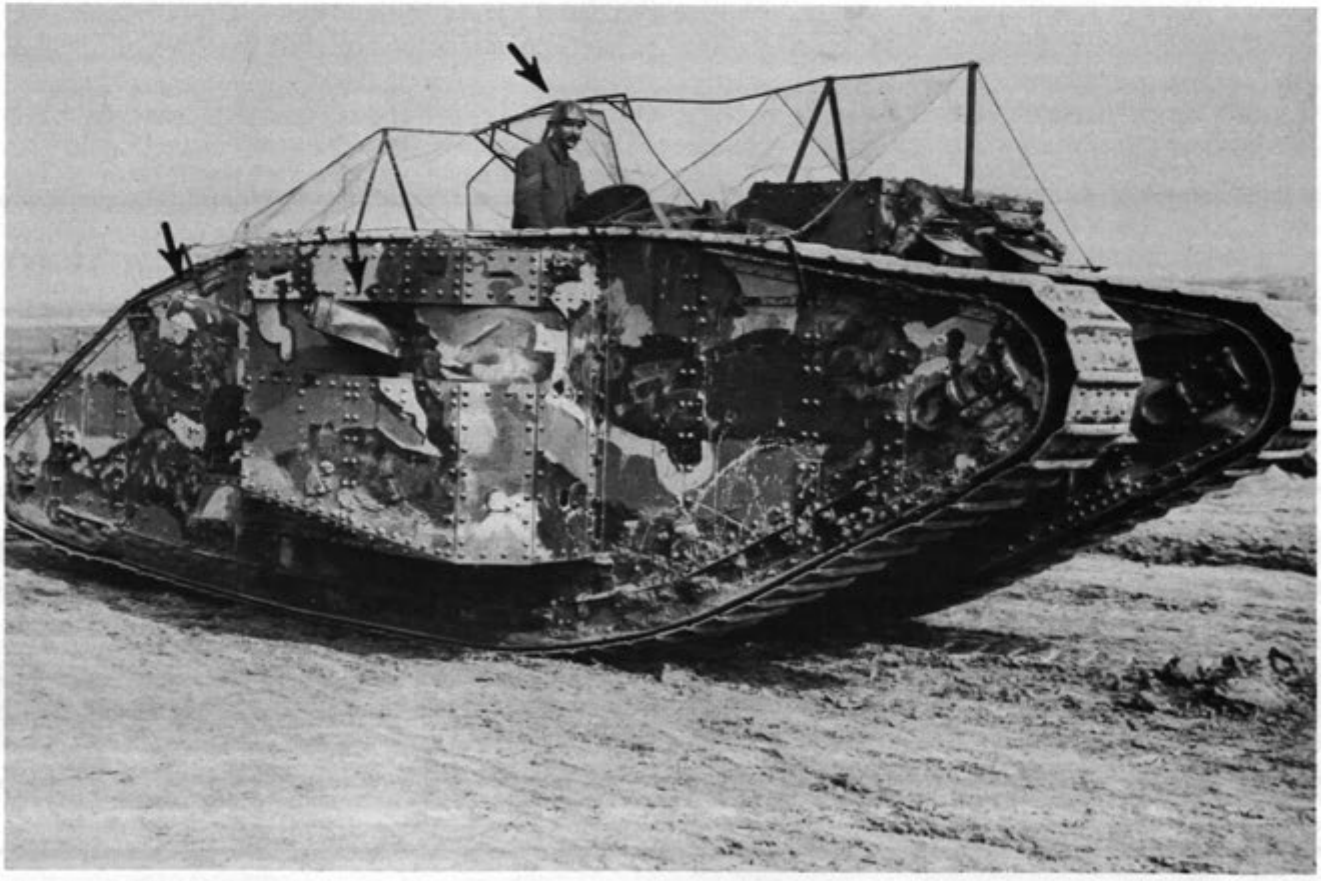
In general, the first battle of the Somme was not very successful, although the action of individual tanks gave promise of great potential to be exploited when commanders had realized the proper methods of tank employment.

Most failures of the tank resulted from mechanical breakdown. This remained a great problem for tanks in these early days.

> "Even when new tanks arrived, and numbers increased, as at the third battle of Ypres, or Passchendaele, in July 1917, inept employment and swampy conditions prevented the newly created Tank Corps from achieving any significant results."[2]



"A barren area, interlaced by abandoned trenches, torn and pocked by shell holes, and entangled throughout by seemingly endless lines of barbed wire." [Below] An early edition of the famous British Mark series. Note the arrows pointing to the well camouflaged machine guns and the unusual helmet worn by the tank commander.



In the third battle of Ypres, from August to October, the artillery had destroyed the dikes protecting the low land that had been reclaimed from sea and swamp. No firm ground was left, a situation complicated by the fact that the continuing bombardment created a morass of water and bottomless mud. Although 216 tanks were used, they could penetrate no farther than the first line of trenches. The terrain was impassable from there on, and many tanks fell prey to German artillery and air attack. Consequently many infantrymen lost faith in the fighting vehicles from inability to understand the real reasons for failure.

Ypres once again demonstrated the failure of higher commanders to realize that prolonged artillery attack would seriously curtail tank mobility and shock action. The potential of the tank began to be doubted.

> "It was only on November 20, 1917, at Cambrai, that tanks were able to establish their value beyond any doubt, and win recognition." [3]

The battle of Cambrai proved what results were potentially possible by mass employment of the tank in its proper combined arms role.

The artillery commander at Cambrai suggested that a surprise assault be made without the preliminary bombardment. There would be no prior registration of artillery fires to warn the Germans. Perhaps true surprise was within reach.

At Cambrai, the Allies faced the Hindenburg Line, which consisted of forward outpost lines, a main trench system, and a reserve trench system. Each system contained two trenches guarded by vast barbed wire aprons. Because of the inaccuracy of the unregistered surprise artillery fire, tanks were to provide cover for the advancing infantry who usually hugged the normally accurate rolling bombardment in the attack.

The tanks and infantry attacked simultaneously with the detonation of the first artillery rounds. The Cambrai battleground was unmarred by long shelling.

The artillery lifted its fires just as the tanks and infantry arrived at the shattered German outpost line. The wave of infantry and tanks swept the dazed German defenders from their positions and sped toward the main trench system of the Hindenburg Line.

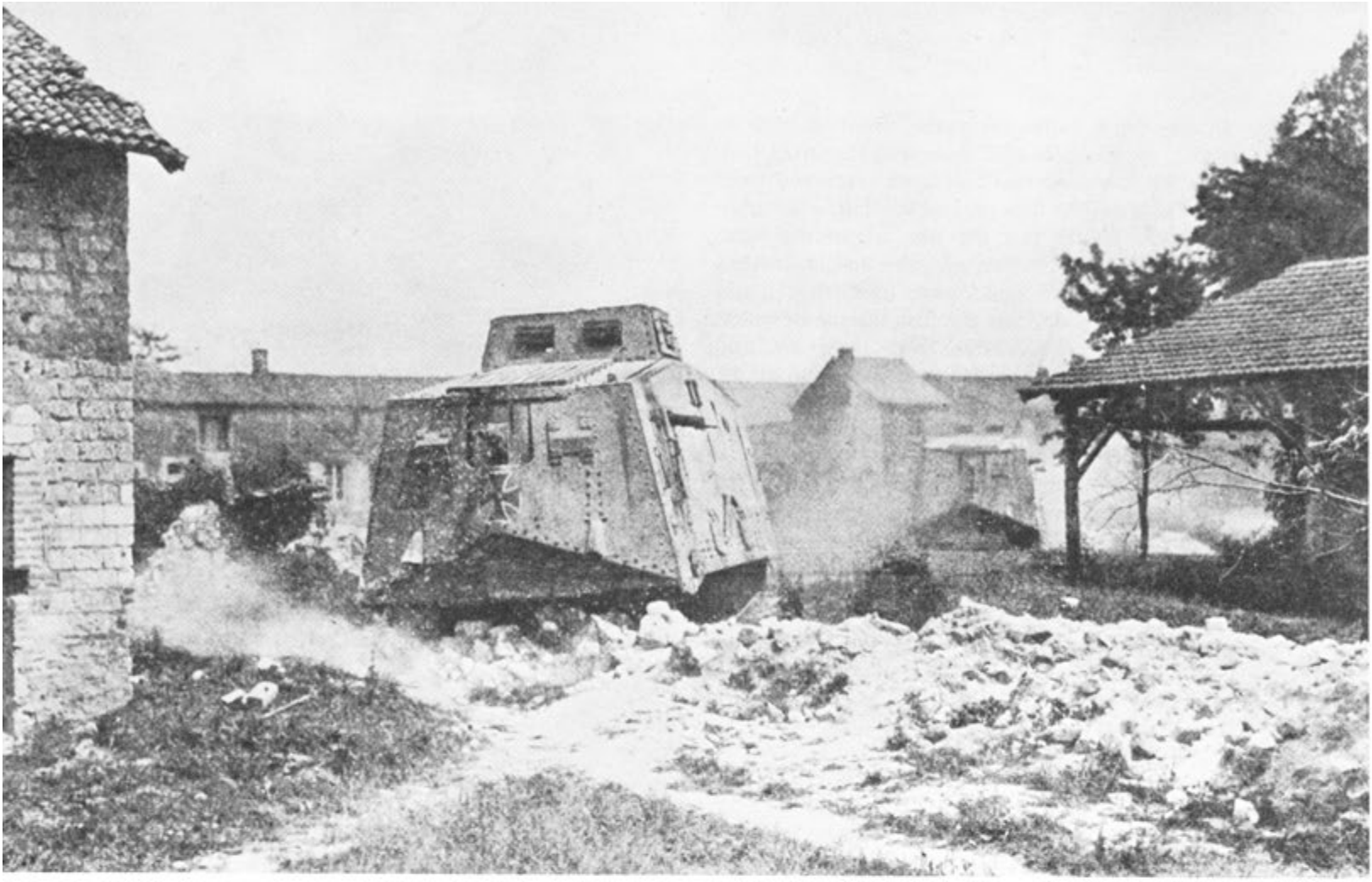
The Germans considered the main trenches too wide for a tank to cross unaided, so each tank . . .

> ". . . had to carry a *fascine,* a great bundle of cable-bound brush weighing more than a ton apiece. These were fastened to the front of the tank and unloaded forward so they would fall into the enemy trench and fill a great portion of the gap." [4]

By that evening the entire Hindenburg Line had been overrun. The penetration in some places was

Despite the many shortcomings of their vehicles,

a kinship soon developed between tanker and tank.



Early look-alikes were the German A7V [Above] and the French Schneider pictured below in operation near Chavigny during the summer of 1918. Although the Germans were slow to develop their armored forces the Allies were never able to take full advantage of the early lead which they enjoyed.

eight miles deep and averaged a depth of 10,000 yards on a seven-mile front. This battle was a success, despite the fact that it did not go quite as planned.

Given a chance at Cambrai, the tanks demonstrated what they could do. Considering the trench warfare of the earlier years of the conflict, it may be reasonably said that the Hindenburg Line would never have been taken by the usual method of artillery and infantry. Tanks, the new element on the battlefield, must have been the decisive force. These armored fighting vehicles answered the challenge of the machine gun defense more than adequately. Tank armor nullified the effect of machine gun fire, and its protected firepower destroyed enemy troops.

The combined arms team used by the British at Cambrai proved its offensive capabilities. There for the first time combat arms were employed properly in support of each other. The absence of long artillery barrages permitted the enemy to be surprised and prevented the terrain from becoming an obstacle to the tanks. The short barrage that was fired was just enough to shock and blind the German troops manning the trenches.

Unfortunately, success at Cambrai was only tactical and not strategic. In addition to the range limitations of the tank, mechanical difficulties, and the plans of GHQ, this limitation of success was due in large part to the inability of the infantry to keep up with the tanks, and a lack of tank reserves. The deficit in reserves resulted from the demand of infantry commanders for all possible tank direct support. This caused, in many places, too great a dispersion of tanks to permit the exploitation of the offensive. The horse cavalry given this mission proved too vulnerable. So again, even in this successful tank battle, the employment of the tank was not ideal.

It is pertinent to note that gains of six or more miles in a single day were tremendous in a war where a gain of several hundred yards was considered a great victory. By noon at Cambrai . . .

> " . . . the tanks had . . . penetrated to a depth of more than four miles, as deep as the Passchendaele offensive had gone by the fourth month." [5]

On 8 August 1918, the battle of Amiens was fought.

> "The attack resembled the battle of Cambrai in tactics and proved a great success. A penetration was effected on the first day to a depth of 7½ miles." [6]

There was one major exception to this resemblance: tank reserves were employed at Amiens. Only one battalion, however, was held in general reserve. Of the 450 total fighting tanks present, many were held in mechanical reserve to act as replacements for individual tanks lost by ditching, anti-tank fire, or mechanical failure.

German prisoners carry their wounded to the rear as allied tanks rumble toward the front. Bright spots in early employment were frequently the result of actions by individual tanks.

By the end of the battle an advance of over twelve miles had been made; 22,000 prisoners and 400 field guns were captured, and great losses among the Allied infantry had been prevented.

> "But south of the Somme a gap more than eleven miles wide had been made in the German front, and a great opportunity for exploitation had arisen. Unfortunately it was not seized." [7]

The general reserve was not large enough, and the cavalry was hung up by a few remaining machine guns. Once again a failure to properly employ tanks reduced their potential for decisive action. A watchful German General Staff observed this, determined the correct procedures, and evolved tactics which were to be decisive in another German invasion a generation later.

In summary, certain considerations are of interest:

1. *The Allies were unable to use tanks to exploit success, for never was a sufficient general tank reserve employed.*

2. *Artillery used in conjunction with tanks was most successful when only a brief unregistered bombardment was used.*

3. *The tank was limited by terrain and obstacles. A battlefield mauled by artillery shells was nearly impassable, particularly when the weather was foul. The tanks could use fascines in crossing trench systems, and barbed wire did not stop them.*

4. *In the most successful battles, tanks and infantry moved forward simultaneously. When the infantry lagged behind, there was little success gained as the tanks advanced alone.*

5. *The tank had nothing to fear from the ma-*

"The tank could have been the decisive factor on the western front."

chine gun and was a more than effective weapon against it.

In conclusion, then, it may be safely said that the tank could have been the decisive weapon on the western front of World War I. It is fairly obvious that this would have been true had it been employed properly in conjunction with artillery and infantry, which was never ideally done.

First, had a large tank general reserve been available to exploit the breakthrough at Cambrai, the German reserves which later counterattacked would have been overrun. At Amiens a turning movement could have been made through the eleven-mile gap which appeared temporarily.

Secondly, when artillery no longer gave the Germans early warning and stopped making the battlefield impassable to the tanks, the great successes possible through surprise and maneuver were realized.

Thirdly, upon terrain suitable for mechanized warfare, the tank was not hindered by trenches or barbed wire. *Fascines* were used to cross the former and tanks smashed their way through the latter, flattening it for the passage of the accompanying infantry. The tank reduced the effectiveness of the machine gun so that the infantryman could close with the enemy.

Finally, many gains were limited by the endurance of the infantry. Several times the foot troops became too fatigued to keep up with the swifter moving tanks. It was then useless for the tanks to continue, for gains could only be consolidated and held by the infantry. Had some form of usable transportation been available, this would not have been the case.

The tank brought surprise and maneuver back to the battlefield. By exploiting these principles of war the tanks might have done more than shatter the concept of trench warfare. They could have led victorious Allied armies through the homeland of the Kaiser.

FOOTNOTES

[1]Data extracted from Ralph E. Jones, *et al.*, The *Fighting Tanks Since 1916* (New York: The Telegraph Press, 1916), pp. 5-55.

[2]Richard M. Ogorkiewicz, *Armor, A History of Mechanized Warfare* (New York; Frederick A. Praeger, Publishers, 1959), p. 144.

[3]Ogorkiewicz, *Ibid.*, p. 144.

[4]Arch Whitehouse, *Tank*, (Garden City: Doubleday and Company, Inc. 1960) p. 87.

[5]B. H. Liddell-Hart, *The Tanks, I*, (New York: Frederick A. Praeger, Publishers, 1959), p. 128.

[6]Gifford Le Q. Martel, *In the Wake of the Tank* (London: Sifton Praed and Co., Inc., 1931), p. 32.

[7]Liddell-Hart, *op. cit.*, p. 181.

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NIGHT EYES

By LIEUTENANT COLONEL
WILLIAM G. ILLSTON

SITUATION: You are a tank platoon leader. You have an AN/PPS-4 Radar team with your platoon. You have just moved under cover of complete darkness to a forward position on the FEBA. You have no range cards prepared because it is too dark to see. After an hour in position, the radar operator detects a profitable target.

QUESTION: How do you bring effective tank fire on the target without the use of illumination (either infra-red or white light)?

Figures 1-4 show one way the PPS-4 can be used to lay tanks quickly and effectively in complete darkness or heavy fog.

FIGURE 1

1. Radar operator sets up and orients azimuth dial. In this illustration, the azimuth dial is oriented with "0" on the side toward the enemy.

2. On a sheet of paper, radar operator draws a base line and marks a point mid-way on this line to represent the location of his radar.

3. Radar is directed at friendly tank to determine range and azimuth to the tank. The *range* may be read from the PPS-4 if the tank is over 80 meters away or it may be measured or stepped-off. The *azimuth* is read from the azimuth dial of the radar set.

4. Using a protractor, the radar operator draws a line from a point representing his position on the

LIEUTENANT COLONEL WILLIAM G. ILLSTON, Inspector General (Armor), was commissioned on graduation from the Armored Officer Candidate School with the second class in January 1942. He was a member of the 14th Tank Battalion, 9th Armored Division, during the capture of the Remagen Bridge. Other assignments include service on the Army General Staff, with the faculty of The Armor School and in Vietnam. He is a graduate of the Command and General Staff College and the University of Maryland. Recently, he commanded the 1st Battalion, 32d Armor, 3d Armored Division in Germany where he developed the ideas for this article. LTC Illston is now on duty in the Office of the Inspector General, Department of the Army.

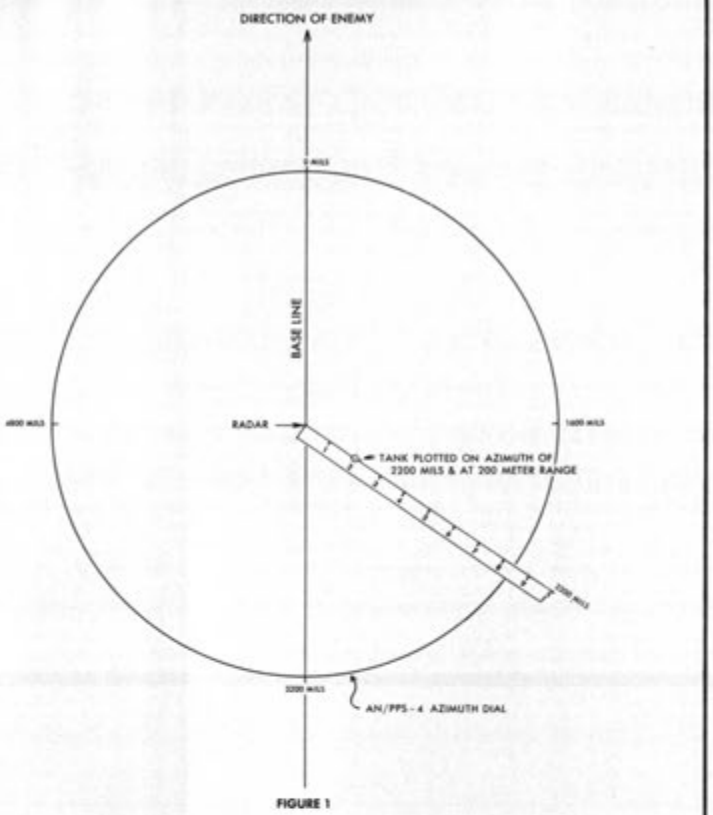

FIGURE 1

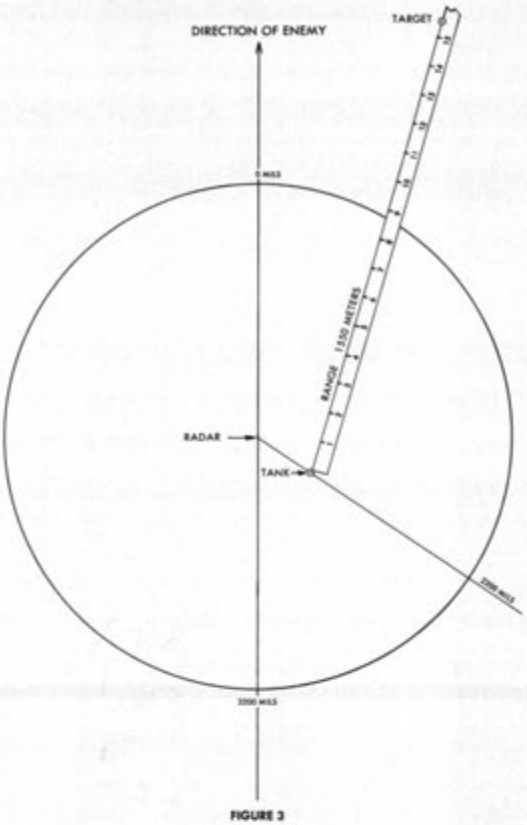

FIGURE 3

sheet of paper along the azimuth indicated on the radar azimuth dial to the tank, which in this example is 2200 mils. Using a ruler or a similar scale, the operator plots a dot on the 2200 mil line to represent the location of the tank. In this case 200 meters.

5. At the same time, the tank gunner lays his sights on the PPS-4 and zeros his tank azimuth indicator. On a very dark night it may be necessary to hold a flashlight over the PPS-4 for the gunner to sight on.

6. After these few steps the gunner traverses his tank gun to the general direction of the enemy. The radar now starts searching for targets.

FIGURE 2

1. When the radar operator locates a target it is plotted on the same sheet of paper which now shows the locations of the radar and the friendly tank.

2. The target is plotted the same way the friendly tank was, that is, the azimuth (read from the radar azimuth dial) is plotted using a protractor and the distance (as shown on the radar range indicator) plotted to the same scale as the friendly tank was. In this example the target is at an azimuth of 400 mils and at a range of 1500 meters.

FIGURE 3

1. The radar operator draws a line connecting the target and the friendly tank. By measuring this line with his scale, the radar operator can determine the range from the friendly tank to the target. In this example he determines the range to be 1550 meters.

FIGURE 4

1. The radar operator now places the pivot point of a protractor over the friendly tank's plotted location with the base line of the protractor running through the plotted position of the radar and the plotted position of the tank.

2. The azimuth from the tank to the target is read from the protractor. In this example, 1925 mils. It is important to note that on the radar azimuth dial the scale is graduated clockwise from 0 mils to 6400 mils. However, the scale on the tank azimuth indicator is graduated from 3200 mils to 0 mils traversing clockwise and from 0 mils to 3200 mils traversing counter-clockwise. Therefore, and this is important, in determining the azimuth from the tank to the target the protractor must be placed with the pivot point over the plotted position of the tank so that the scale reads 3200-0 from left to right.

3. The radar operator now knows what the target is (from listening), what the tank to target azimuth is (from his protractor), and what the range from the friendly tank to target is (using a ruler or scale).

4. Assuming the target was determined to be a group of halted light vehicles the radar operator could now inform the tank commander:

Target description: "Several light vehicles"
Azimuth: "Right 1925" Range: "Range 1550"

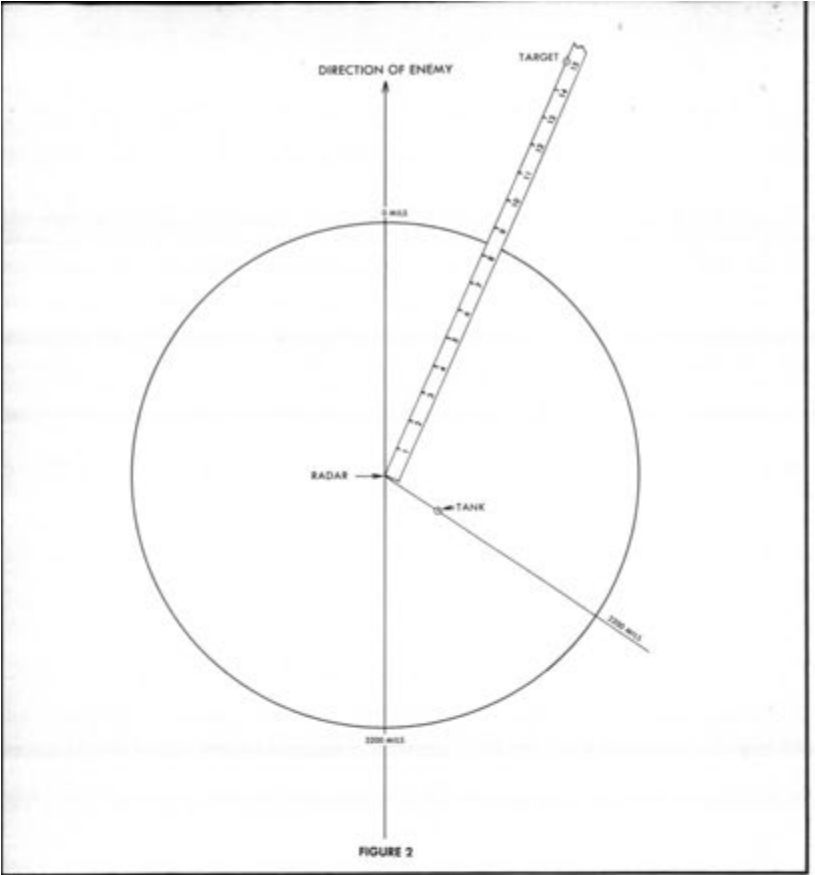

FIGURE 2

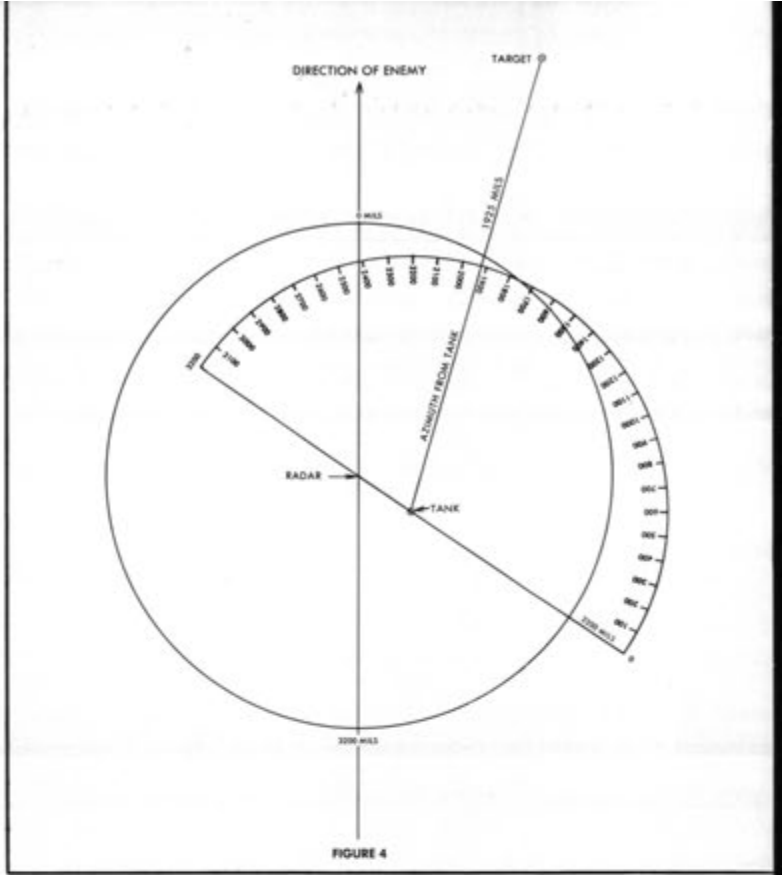

FIGURE 4

5. The gunner then traverses to a reading of 1925 on his azimuth indicator. Using a HEP firing table he determines that for a range of 1550 meters he must elevate 22 mils. Employing indirect fire methods, he uses his gunner's quadrant to obtain the proper elevation and is ready to fire. By firing first at the determined elevation and then 1 mil over and 1 mil short he should get a target hit without any illumination, however, he could use either Infra-Red or white light to enable other friendly tanks to also spot and fire on the same target. Using illumination after the gun was laid and just before firing would have the advantage of permitting the gunner to lay more accurately by using his direct fire sights and range finder. However, illumination would give his position away to the enemy.

This example assumes that the radar, friendly tank, and target are all at the same elevation. This will not always be the case. Usually it should be possible to position the radar and friendly tank at the same elevation but the target may be at a higher or lower elevation. When the target is lower or higher than the firing tank, the difference in elevation could easily be compensated for as follows: assume that the enemy is at 1200 meters range. The HEP firing table indicates that 20 mils elevation is required to reach this range. If the target is 4 mils lower than the firing tank this would be noted by the radar operator (reading from his elevation scale) and the firing tank gunner would be told. The gunner would then elevate 16 mils (not 20) to get the proper range.

This method of laying tank guns in complete darkness is not expected to always get pin-point hits. It will give the gunner enough information to get good area coverage with high explosive rounds which would be highly effective against personnel and unarmored vehicles. However, if after the gunner has laid on his target using indirect fire methods and then, just before firing, he used illumination to make a precise direct fire lay, he should get a first round hit.

With a well-trained radar crew it is more effective to have the radar crewman use the firing table to determine the required elevation. He could then crank in any changes required because of differences in elevation between the positions of the firing tank and the target. Thus, in the example given, if the target was 4 mils lower than the firing tank, the radar would give this command:

> Target description: "Several light vehicles"
> Azimuth: "Right 1925"
> Range: "16 mils"

There are several possible variations to the procedure described. Instead of laying one tank by the radar set, several tanks could be laid, if time permitted. With practice it should be possible to even use this system to prepare firing charts by recording azimuths and ranges to several possible target areas such as road junctions, villages, etc.

The battalion which can effectively employ its radar will have a decided edge on the enemy in any night situation. Locating a target by radar is only half of the exercise—the other half is being able to hit it after it is located.

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A reference handbook on organization and equipment of the division engineer battalion and corps engineer units, together with data on bridges, demolitions, mines, field fortifications, and camouflage for use in the field.

PREVENTIVE MAINTENANCE $ .10

These preventive maintenance indicator cards are prepared by the Senior Officers' Preventive Maintenance Department to aid commanders in conducting maintenance inspections.

COMMUNICATION FOR ARMOR $ .46

This booklet presents in concise form, the information needed to plan and establish communications with the signal equipment now being issued to Armor units.

SOP 25th ARMORED DIVISION $ .35

A model set of instructions having the force of orders which cover those features of operations that lend themselves to standardized, preannounced procedures.

THE BATTLE AT ST. VITH (Belgium Dec 44) $ .30

The 3d printing of the narrative of a key phase of one of the great battles of World War II. A historic example of Armor in dynamic defense. Forewords prepared by General Bruce C. Clark, US Army (Ret) and Lieutenant General Troy H. Middleton, US Army (Ret).

BATTALION STANDING OPERATING PROCEDURES $ .20

This special text supports the "SOP 25th ARMORED DIVISION." It is a very useful guide for those whose duties include preparing unit SOP's.

BE YOUR OWN INSPECTOR

A series of condensed pamphlets giving detailed maintenance indicators on military equipment. These useful articles were originally published in PS MAGAZINE. Titles Are:

M79 Grenade Launcher	$ .05
XM16 Rifle	$ .05
¼ Ton Truck M151	$ .10
¾ Ton Truck	$ .10
M14 Rifle	$ .05
.50 Caliber Machine Gun	$ .05
M73 Machine Gun	$ .05
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M60 Tank	$ .10
M113 Personnel Carrier	$ .15

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Instructional Material may be purchased from the Armor School Bookstore by members of the United States Armed Forces.

Orders must include the name and address of the military unit to which the purchaser is assigned or attached, and a statement that the material will not be re-sold or otherwise released to individuals not assigned to the military establishment or to agencies not an integral part of the military establishment.

Mail orders must be accompanied by full remittance, including a postage charge of 25¢ for orders under $5.00 or 5% of the total cost for orders over $5.00. Materials will be mailed to the purchaser through his unit. Military organizations are authorized 30 days credit.

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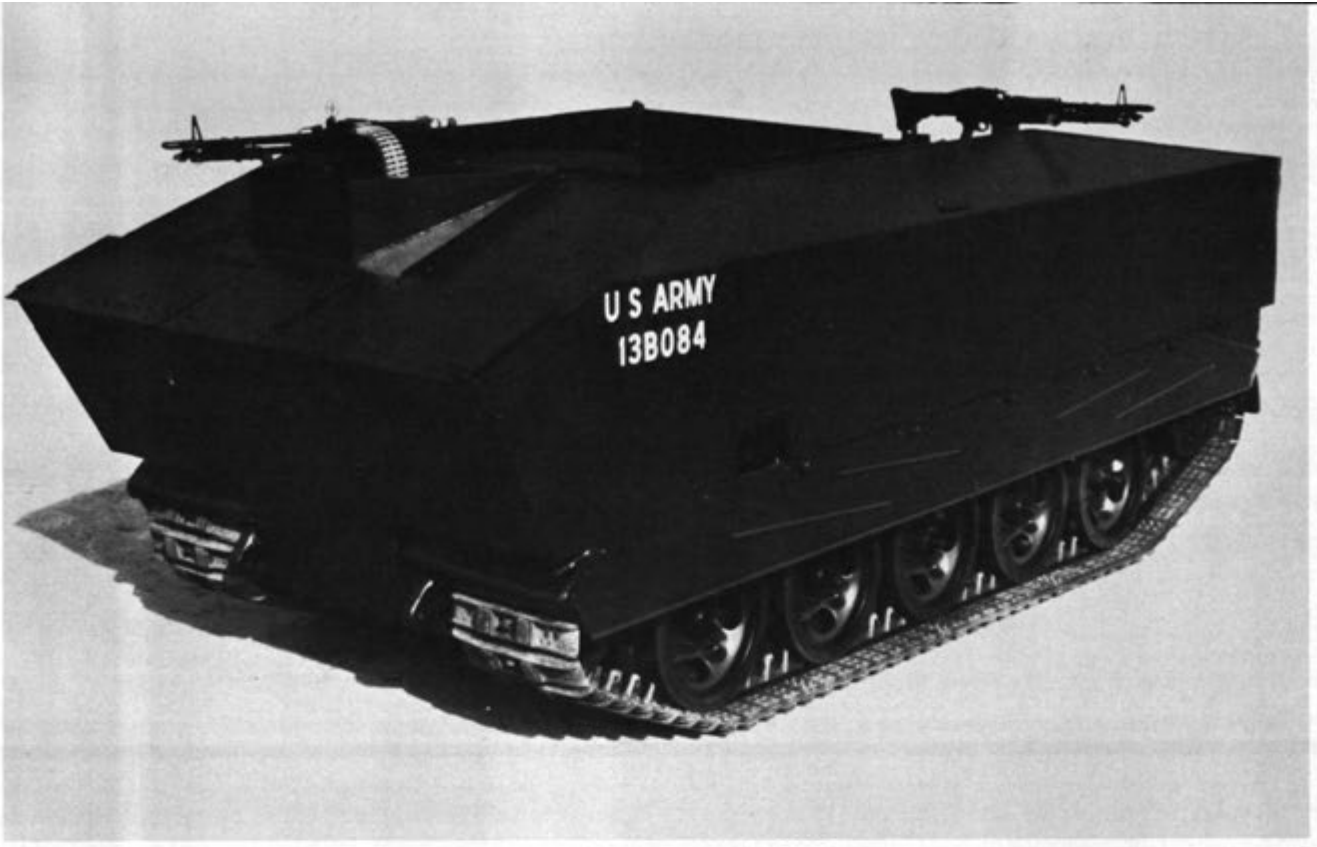
NEWS NOTES

ARMOR GRADUATES
UNITED STATES MILITARY ACADEMY CLASS OF 1967

Bottom Row (L to R): J. Mackerer, J. Dubois, T. Atkinson, G. Fowler, W. McDowell, R. Curtis, D. Cole; Second Row: M. Lancaster, J. Caneuet, R. Hagen, D. Starr, R. Arango, R. Harris, D. Rowley, R. Condos, S. May, J. Marshall; Third Row: J. Weller, J. Root, J. Smith, B. Rodriguez, M. Kush, J. Hardin, M. Heyne, H. Tucker, J. Gale, J. Vance; Fourth Row: B. Griffith, G. Robinson, F. R. White, C. Stave, J. Alich, K. Kraus, B. Angeli, M. Meigs; Fifth Row: D. Ellis, D. McAdoo, R. Moon, T. Murphy, P. Kern, T. Jackson, E. Bryla, J. Windeler; Sixth Row: J. Douglas, A. Komblevitz, J. Tankovitch, J. Crowley, T. Lanyi, J. Caldwell, T. Parr, T. Cullen, J. Jorgensen; Seventh Row: D. Dwiggins, L. Preston, H. Lau, E. Refsland, S. Sears, H. Hoskins, P. Fracker; Eighth Row: W. Monroe, R. Grube, M. Tiemann, G. Downs, E. Marion, T. Emerson, P. Hogue, T. Thompson; Ninth Row: G. Carlson, K. Alford, B. Misurek, J. Garay, L. McMillan, T. White, C. Vissers, D. Powers; Tenth Row: M. Bailey, H. Trainor, H. Timm, E. Walker, B. Gonser, J. Stark.



NEW ASSAULT VEHICLE

The Army's newest assault vehicle, designated the XM-733, is now in limited production. Designed to replace current armored personnel carriers for certain types of operations, the XM-733 is amphibious and helicopter transportable. Its 283 cubic inch, V8 engine develops 180 horsepower which permits ground speeds up to 37 mph and a water speed of about 3 knots. This vehicle weighs only 10,500 pounds combat loaded to include its two 7.62mm machine guns and is only 68 inches high. Pacific Car and Foundry has been awarded a contract to manufacture 93 of this latest development in ground mobility.

100% MEMBERSHIP REPORTED BY TWO GUARD UNITS

For the fifth consecutive year the officers of the 1st Battalion (Mechanized), 114th Infantry, New Jersey National Guard have maintained a record of 100 percent Armor Association Membership.

They are joined by the officers of the Headquarters and Headquarters Company, 2d Brigade, 30th Armored Division, Tennessee National Guard, who have once again responded with 100 percent membership in the Association.

Recent orders coming in from the 2d Battalion (Mechanized), 108th Infantry, New York National Guard and the 3d Battalion (Mechanized), 144th Infantry, Texas National Guard indicate that both must be at or close to 100 percent officer membership in the Association. Such outstanding support deserves full recognition.

Units are asked to notify the Secretary when they attain 100 percent membership of officers, senior NCO's (E-8 and E-9) and unit funds or any combination of these categories. The number of years these outstanding records have been maintained should be stated. The honor system will prevail in order to assist our already overloaded circulation staff.

78TH ANNUAL MEETING

The 78th Annual Meeting of the U. S. Armor Association is scheduled to be held at Patton Hall, Fort Myer, Virginia, on Thursday evening, 25 May 1967. Further details, reservation forms and proxy statements have been mailed to all members.

VIETNAM COMBAT CHRONICLES

The Infantry School plans to publish a book each chapter of which will present an individual or group combat experience. The manuscript of the article "Ambush" in this ARMOR was seen by one of the project officers who stated that it was the sort of thing wanted. ARMOR will grant reprint rights for such articles to appear in the proposed book. Authors are asked to submit their articles to ARMOR for first publication and then possible inclusion in what should be a fine book on ground combat in Vietnam.

1ST SQUADRON, 14TH CAVALRY TROPHY ROOM

The 1st Squadron, 14th Armored Cavalry is remodeling its trophy room. Photographs of past commanders have been lost. Those having such photographs, with name and period of command, and other items of historical interest are asked to send them to LTC Richard E. O'Brien, Commanding Officer, 1st Squadron, 14th Armored Cavalry, APO New York 09146.

ARMORED CAVALRY TRAINER

According to Headquarters, U. S. Continental Army Command, four Armored Cavalry Trainers (*See "ACT I, Can Reality Be Duplicated?", ARMOR March-April 1967*) have been installed or are in progress. These are at Fort Knox, Akron, Ohio (for the Ohio National Guard), Camp McCoy, Wisconsin, and Fort Leonard Wood, Missouri.

FIRST GRADUATE OF THE ARMOR SENIOR NCO EXTENSION COURSE

Although the Armor School's new Armor Senior Noncommissioned Officer Extension Course comprises 181 hours of study units and is only a few months old, it has already graduated its first student.

Sergeant First Class Paul S. Currant, an instructor in the First U. S. Army NCO Academy at Fort Knox, received his diploma recently from Colonel Walter Greenwood, Jr., Armor School Director of Instruction and Deputy Assistant Commandant.

After being transferred from the Infantry, SFC Currant completed the Armor NCO Extension Course in 1965. That year his MOS test scores rose sharply. Just after it was introduced, he enrolled in the new Armor Senior NCO Extension Course available to any Armor NCO in grades E-8 or E-9 or any Armor E-7 who is a graduate of an accredited NCO Academy or the Armor NCO Extension Course.

Having successfully completed the Armor Senior NCO Extension Course, SFC Curran is now eligible to enroll in the Senior NCO Course offered by the Command and General Staff College.

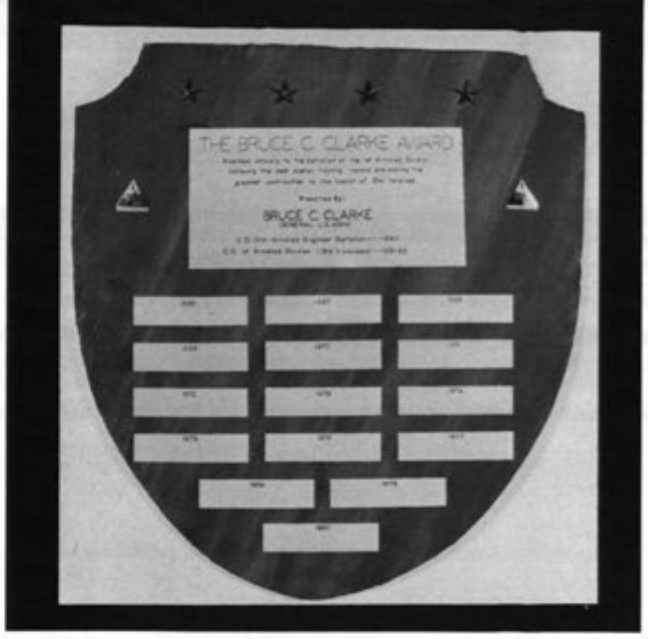
Full information on the Armor NCO and Senior NCO classes may be had by writing the Extension Course Branch, Nonresident Instruction Division, Instructional Services Department, U. S. Army Armor School, Fort Knox, Kentucky 40121.

UNIVERSITY SEEKS MILITARY PAPERS

The Michigan State University Library is building a collection of diaries, correspondence and related personal papers of commanders from battalion up who served during World War II, the Korean War, or Vietnam. Donor's restrictions will be respected. Consistent with these, the collections are to be available to scholars, historians, and others with a serious interest in the military. Marvin R. Cain of the University at East Lansing, Michigan 48823, is the curator.

ARMOR SCHOOL LIBRARY NEEDS HELP

The Armor School Library needs a copy of the June 1926 "Cavalry Journal" to complete its files. It will be appreciated if anyone having such a copy would send it to The Librarian, USAARMS, Fort Knox, Kentucky 40121.



GENERAL CLARKE ESTABLISHES AWARD

General Bruce C. Clarke and the 1st Armored Division have had a long association. To commemorate his service as a pioneer member and former commander of "Old Ironsides," General Clarke has established an annual award to recognize the outstanding battalion in the division.

The award will be given annually, on a rotational basis, to the battalion achieving the best overall training record and making the greatest contribution to the "Old Ironsides" mission.

The Division Commander, Major General George Ruhlen, has accepted the award on behalf of all former and present members of the "Old Ironsides" Division.

NEW TRIPLE THREAT VEHICLE

Lockheed's TerraStar amphibious vehicle is shown following successful mud, water, and hard surface operation tests. Developed by Lockheed Aircraft Service Company, TerraStar's outstanding feature is its capability to perform well in all three of these principal environments. An advanced locomotion concept permits TerraStar to move easily through mud and swampland, paddle through water, and operate as a conventional wheeled vehicle on roads and other hard surfaces. Commercial applications include oil and mineral exploration, remote site construction, rescue and salvage operations, mapping and survey work, and fire-fighting operations.

Now—a museum piece Then: training for the invasion of North Africa

PATTON MUSEUM GAINS STORIED HALF-TRACK

"Cornfed" a World War II M2 half-track, which made a successful conversion to civilian life, was a recent gift to the Patton Museum from Armor OCS Class 6-67.

When the candidates of that class were looking for a class gift, one member, Candidate (now 2 LT) Donald Reese, thought of the half-track his father used back home in Aurora, Colorado. He used it like a tank recovery vehicle in the winter when it snowed.

Said the candidate, "It never stalled, and could pull out almost anything."

Mr. Walter Reese, 2 LT Reese's father, bought the half-track at the Army Ordnance Depot in Texarkana, Texas, after World War II. "We don't know its history before that," he said, "but its nickname was 'Cornfed,' it has an Armor insignia on its left fender, and its serial number is 4013026."

The half-track was shipped from Colorado for formal presentation. Colonel E. M. Majors, Patton Museum Society President and Mr. George Schneider, Curator, accepted the gift on behalf of the museum.

If anyone remembers the military history of "Cornfed" they are asked to write Mr. Schneider at Fort Knox.

AD—WHAT IS IT?

Various authoritative sources define the abbreviation AD in a number of combinations of capital and small letters as standing for advertisement, advantage, Anno Domini, after date, before the day, autograph document, active duty, Army depot and even awfully dead. The 1st (Old Ironsides) and 2d (Hell on Wheels) Armored Divisions at Fort Hood are campaigning for use of the authorized military abbreviation "armd div" and the early extinction of unauthorized substitutes.

UNIT ASSOCIATION 1967 REUNIONS

A partial list of Unit Association annual get togethers was published in the March-April ARMOR. Since then, news of the following has been received:

10th Armored Division Association, 1-4 September, Sheraton Hotel, Louisville, Kentucky. Contact Jack Garrity, 1010 Sunset Drive, Somerdale, N. J. 08083.

14th Armored Division Association, 28-30 July, Sheraton Hotel, Louisville, Kentucky. Contact Donald E. Allen, P. O. Box 52, Easton, Pa. 18042.

← NEW WEAPONS RECEIVED BY OLD IRONSIDES UNIT

The 1st Squadron, 1st Cavalry (1st Regiment of Dragoons) is one of the first CONUS units to receive the modified version of the M113A1 Armored Personnel Carrier that is now in use in Vietnam.

The modified vehicle has an armor plated turret surrounding the vehicle commander and the 50-caliber machine gun mount. There are also two armor shield protected M-60, 7.62 millimeter machine guns mounted on the sides. Before modification, the M113's lack of protection forced the 50-caliber machine gunner to expose his head and shoulders while firing. There were no provisions for the mounting of other weapons. Although the added armor is heavy enough to stop small arms fire and fragmentation bursts, the extra armor plating has no discernible effect on the vehicle's speed or maneuverability.

HOW WOULD YOU DO IT?

AN EDITORIAL PRESENTATION

AUTHOR: I. M. ROTIDE **ARTIST: ROBERT MARTIN**

SITUATION: You are the Editor of ROMRA—The Magazine of Lively Conflict. You are firmly seated in your swivel chair. It is C+2 (C = cocktail hour). Sixty-four stark white blank paste-up pages stare at you evilly. You make a hasty estimate:

MISSION: To give your millions of readers (estimated number extrapolated from a somewhat smaller actual circulation figure) a fact-filled, highly-attractive, error-free, first-class magazine fully comparable to PLAYJOY, The National Geophysic, EXISTENCE and the old ROMRA (before you were Editor). Each article, illustration and page must please all without exception.

FACTS:

a. Articles on hand and set in galley will fill 30 pages if lots of artistic white space and some photos you shot during the war with a box Greenie are used.

b. Three or four pages can usually be filled with Letters to the Editor if one is not overly sensitive to those beginning "Cancel my subscription" or "Enclosed please find *"McGuffey's Basic Grammar and Speller."* You look in the yellow wastebasket reserved for reader's letters. You find that none have arrived since 1962. Typical is one from a then second lieutenant, now a Maj(P), who would doubtless prefer that his remarks on the need for reform remain unpublished at least until his predicted promotion has become a reality.

c. Prof. Quintus Futura Weltanschaung has offered a challenging article on the prospects for paraplastic earplugs in multisituational environments. This would completely fill the next three issues. Although this proposed contribution would certainly set new standards in scholarly excellence, you note that his fee far exceeds your annual budget for producing the magazine. Since he has never been in the Orient, he refuses to bargain.

d. "The Bongo Board" Department can usually be counted on to exemplify the spirit of lively conflict and, most important, fill several pages. You examine the material on hand. It is outstanding. Titles include "A Cupola for the Kitchen Truck," "Will the Redskins Really Win at Little Big Horn?" from a Major ..... (it looks like Reno—hard to tell since the manuscript is single-spaced in turquoise pencil on a paper towel), "Captain—The Best Rank in the Army" by Lieutenant Colonel Smith, "Captain—Unnecessary Rank?" by Captain Smith, and, a stimulating, provocative and unsigned item entitled "Let's Improve Camouflage by Leaving Our Tanks Dirty."

ALTERNATIVES:

a. Place your personal affairs in order and use that decorative little Japanese knife sent you by an admiring reader for its intended purpose.

b. Print everything on hand and let the devil take the hindmost.

c. Pinch yourself and hope that you will awake to find that it was only a bad dream.

d. **ATTACK!!**

(1) Get people with interesting ideas to write them up and send them in for publication. Assure them that the magazine staff will polish up any rough spots which may have crept in due to the press of time.

(2) Convince your readers that, although print itself can be a thing of beauty, good clear photographs and hand-drawn sketches often make the point better and add interest to any publication.

SOLUTION: *You decide that the readers are sharp people who have figured this out for themselves and will help to make their professional journal the best there is.*

ARMOR Is Not The Magazine For Everyone!!

Those with no interest in what is going on in mobile warfare or what the future may bring would only waste their time reading ARMOR. The best presentations of new developments, new operational techniques, and even the lessons of history, would not help them one bit. They should resist any temptation to pay hard-earned money just for nice pictures and good writing.

ARMOR is for the military professional, the research and development executive, the scholar and others who aspire to a well-rounded knowledge of the military art.

Those serving in the American Armed Forces, and those honorably discharged or retired, as well as cadets and midshipmen, are eligible for membership in the U.S. Armor Association. Their reasonable dues give them six issues of ARMOR each year together with the other privileges of membership.

All others with a genuine interest in mobile warfare are invited to subscribe to ARMOR.

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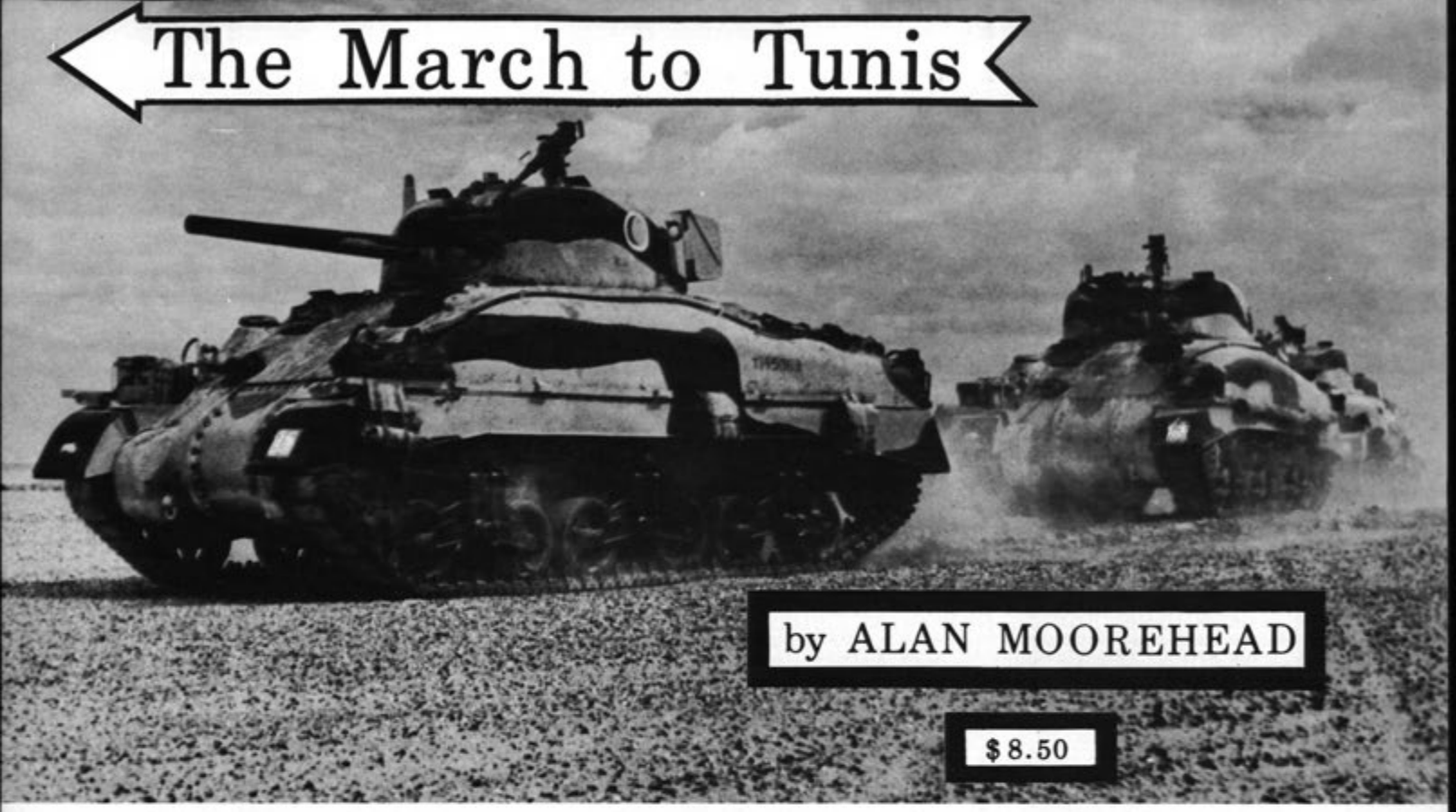
Subscriptions—Domestic $12.00 for two years: $6.50 for one year.
Foreign $15.00 for two years; $8.00 for one year.



Newly Published: A single volume containing a complete collection of Alan Moorehead's penetrating narratives on the Desert War. This trilogy provides a comprehensive chronical of the North African War from 1940-1943 . . . from the heroic "Rats of Tobruk" . . . to the bloody Battle of Kasserine Pass. Of particular interest and enlightenment is the author's own description of the intrigue and shifting complex of relationships which dominated the diplomatic side of the war. **Highlighted by 32 pages of dramatic and rarely published photographs and further supplemented by detailed maps of the action as it occurred, this volume must be considered a valuable addition to the bookshelf of the Armor historian.**

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OTHERS: ☐ **THE EVOLUTION OF ARMOR—$3.00** ☐ **BINDER—$2.75**

☐ **THE OFFICERS GUIDE 1967/68—32d Rev Ed (27 Mar 67)—$6.95**

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FROM THE BOOKSHELF

THE YELLOWLEGS
THE STORY OF THE U.S. CAVALRY **$6.50**

By Richard Wormser

"The Yellowlegs" tells the complete story of the U.S. 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.

The Cavalry, brave, dashing and hard-working, profoundly changed the course of American history; they helped to win this country's freedom, opened up the West, and made it safe for settlement. *The Library Journal* has found Wormser's battle scenes "masterpieces of informal exposition, clear and easily followed," while his story develops through "lively, artfully drawn working portraits" of such leaders as Stephen Watts Kearney, Philip St. George Cooke, Jeb Stuart, Custer, Sheridan, and George Crook.

MILITARY

TANK COMMANDER'S GUIDE **3.95**
TANK COMPANY COMMANDER'S GUIDE **1.25**
OFFICER'S GUIDE (32d ed 1967/68) **6.95**
COMPANY ADMINISTRATION & THE PERSONNEL SERVICE DIVISION by COL Virtue **7.50**
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WHAT EVERY ARMY WIFE SHOULD KNOW
by Betty Kinzer and Marion Leach **4.95**

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A comprehensive book on training the horse and its rider

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THE TWO VIETNAMS by Bernard Fall **7.95**
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DATELINE: VIETNAM by Jim Lucas **4.95**
READ VIETNAMESE by Nguyen-Dinh-Hoa **3.75**
SPEAK VIETNAMESE by Nguyen-Dinh-Hoa **5.00**
VIETNAMESE-ENGLISH DICTIONARY **6.50**
by Nguyen-Dinh-Hoa

Heavy Jap gun is aimed toward Corregidor

CORREGIDOR—THE SAGA OF A FORTRESS
by James H. Belote and William M. Belote **$6.95**

Corregidor is a hallowed name in American history, a symbol of courage and sacrifice—of victory in defeat. This book is the first full story of the loss of Corregidor in 1942 and its recapture in February, 1945. After the fall of Bataan in April, 1942, Japanese heavy artillery hidden on the peninsula began a massive bombardment of the island fortress only two miles away. The defenders endured this pounding for almost a month, and on the night of May 5 the inevitable amphibious assault came. The Rock's garrison fought the enemy to a standstill—often hand-to-hand in an unsuccessful but heroic effort to hold out against hopeless odds. Our paratroopers made a daring drop and proceeded to blast the enemy out of caves, tunnels, stopping banzai charges, and capturing 21 Japanese out of 5,000.

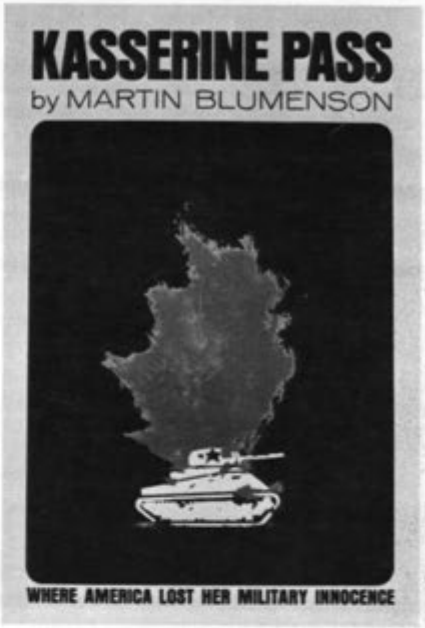
KASSERINE PASS **$5.95**

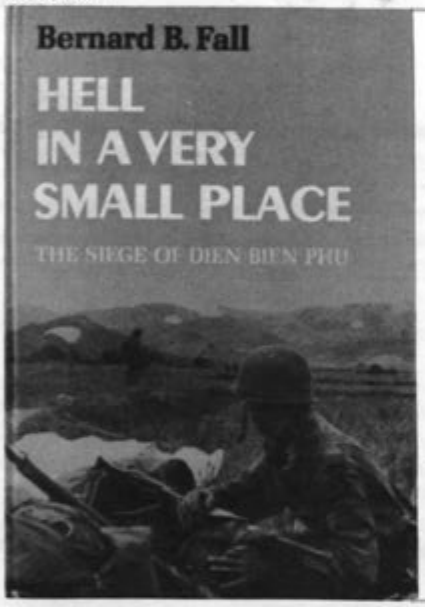
By Martin Blumenson

For a few weeks in 1943, a nondescript village near a mountain pass in North Africa held the attention of the entire world. There, at Kasserine, developed the climactic battle for Tunisia and a turning point in World War II.

An Allied army composed of British, French, and Americans received an angry thrust delivered by an Italo-German army. At stake were not only the lives of men, but the answers to vital questions. **Would the Allies lose the war in Africa or would they generate a momentum that would carry them into Europe? Did the French, who had suffered defeat in 1940, deserve a second chance to fight? Could the inexperienced Americans stand up to the Germans?**

The outcome of the conflict at Kasserine settled these issues and revealed far more. Disclosing the tyranny of logistics, the importance of equipment, the influence of terrain, Kasserine brought together for the first time the commanders who would fight the war to the finish. It gave Eisenhower his opportunity to prove his generalship, Kesselring his chance to hold together a disintegrating partnership . . . at Kasserine, one rose and the other tumbled.





HELL IN A VERY SMALL PLACE **$8.95**

By Bernard B. Fall

Thirteen years ago the Viet-Minh, who are now the holders of power in Communist North Viet-Nam, laid siege to the fortress of Dien Bien Phu. They came away as the only guerrilla force to have defeated a major power on the battlefield. That victory persuaded them later that similar tactics could win out even against the United States. It also proves on the basis of present air operations in Viet-Nam that massive airpower indeed could have prolonged the life of the fortress until perhaps the conclusion of the ongoing Geneva Conference. Without that promised air support—the book produces evidence that John Foster Dulles offered the French atomic bombs—the fortress fell on the very day the cease-fire conference opened. The effect for the West was devastating.

Unique and definitive in its documentation, this is the only book based upon direct access to France's still-secret military files on the battle.

The French Defense Minister alone was able to give Dr. Fall access to those files, after French authorities were convinced of the importance of a fair "outside" appraisal of events at Dien Bien Phu.

Illustrated with 32 pages of photographs and 30 maps.

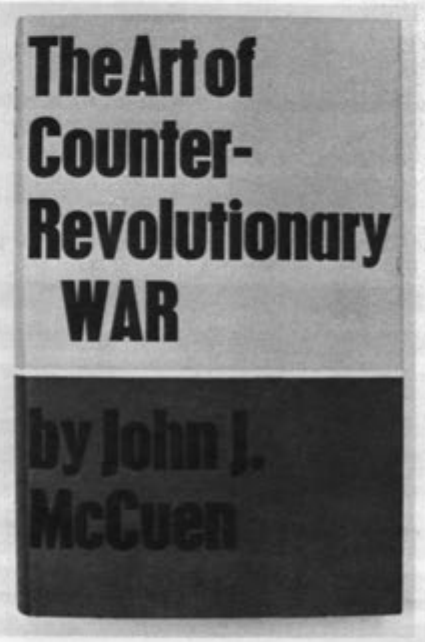
THE ART OF COUNTER-REVOLUTIONARY WARFARE **$8.50**

By John J. McCuen

Except for the American Civil War, no subject in recent times has received more published treatment than the forceful overthrow of governments through *"protracted revolutionary warfare"* . . . the doctrine evolving out of the communist interest in a country-by-country plan for world takeover which always stops short of total war.

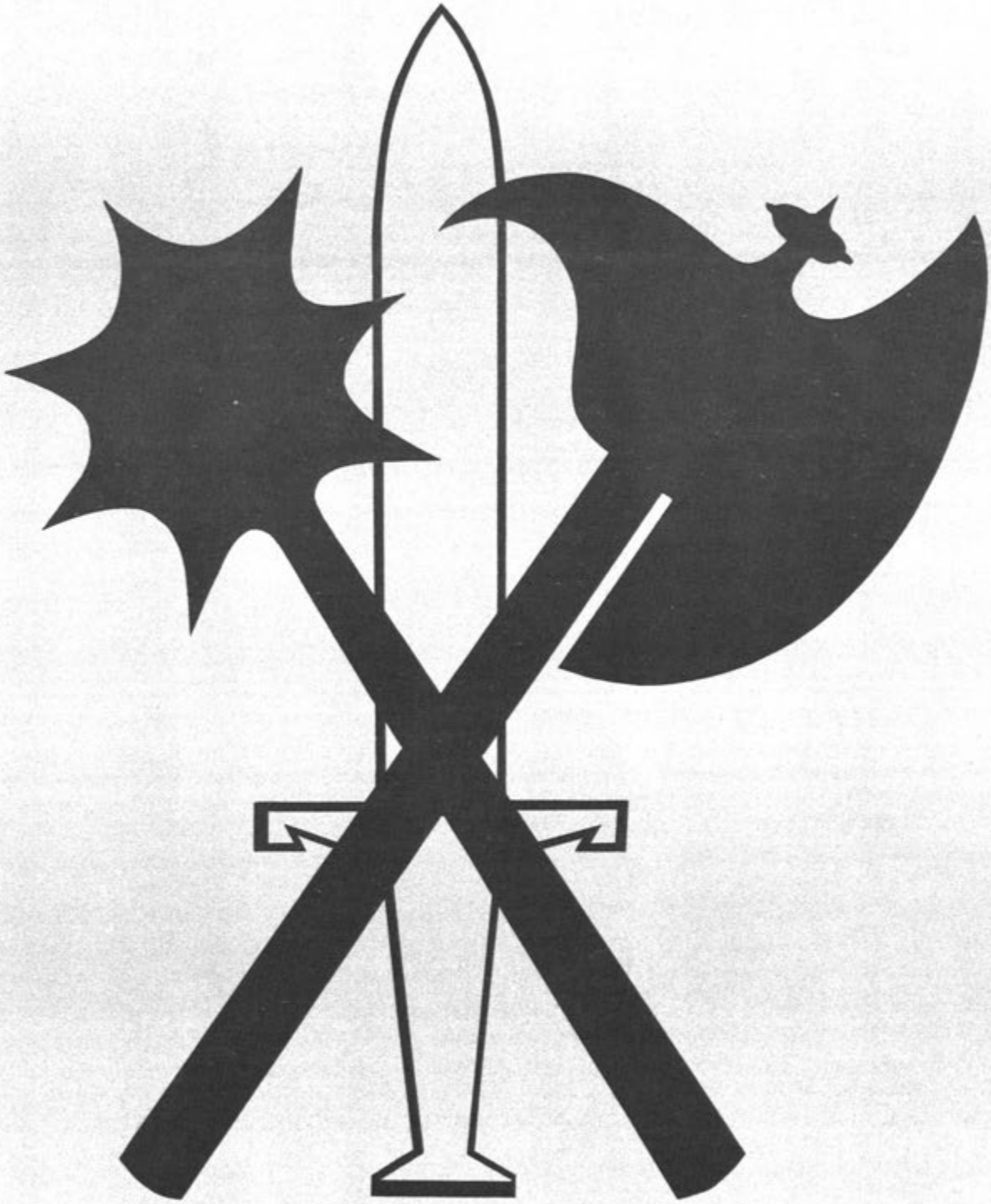
Until now, few have attempted to gather the examples and lessons of the past as a basis for developing logical and practical theory to counter this threat. They have relied instead on a strategy of reaction rather than initiative, with the former being based on trial and error and not on understanding.

In this volume, Colonel McCuen explores revolutionary war doctrine as practiced by communist insurgents from Indochina, Malaya, Algeria to Greece. The lessons in subversion, terrorism, guerrilla and mobile warfare, so long in learning, are fully recognized and woven into crucial maxims which can be applied today. The possibility that this book provides the table-turning answer to Mao, Giap, and all others who would design for conquest by modern methods is left for each individual to decide for himself.



ARMOR

JULY–AUGUST 1967



THE PROFESSION OF ARMS

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

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ARTICLES

FEATURES

DEPARTMENTS

COVER

INSPIRED BY THE 194TH ARMORED BRIGADE INSIGNIA, THE COVER PORTRAYS SYMBOLS OF MILITARY AUTHORITY LONG ASSOCIATED WITH THE PROFESSION OF ARMS. THE GOLD COLOR, SYMBOLIZING MERIT, IS EXTENDED THROUGH THIS ISSUE TO EMPHASIZE AND TIE TOGETHER ITS THEME.

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Reconnoitering

This is the second ARMOR from your new editorial team. We have taken a hard look at our first as it appears in cold print. Concerning some of it we can only quote the reply of the service school student whose solution has just been critiqued, "Well, Sir, it seemed like a good idea at the time."

For this issue we had more material from which to select. Why did we choose that which appears?

General Sir John Hackett's *The Profession of Arms* is a fine statement of the case for true professionalism. We believe that it deserves the full consideration of our readers who might never have seen it had we not reprinted it.

We are also pleased to present the work of those more junior professionals who won the annual Armor School Advanced Course writing competition. We believe that you too will be favorably impressed by the scope and content of the winning articles as well as by their style. Seldom does one find an understanding of the Oriental mind by a Westerner as perceptive as that shown by Captain Cole in *Portrait of an Enemy*. Wider discernment of this sort will contribute much to the final successful outcome of the Vietnam conflict. *Clear as a Cloudy Day* states strongly the importance of good writing as an essential professional tool. *Emphasis on Action* rekindles interest in a proven path to success in combat for the small unit.

Recent news tends to confirm a hunch that led to selection of an article on desert warfare in the Middle East. *The Turn of the Tide in North Africa* points up lessons with specific application to that area and to the conduct of armored operations in general.

The Alligator gives a comprehensive view of sea/land combat vehicles past, present and future and recognizes the importance of these as part of the arsenal of mounted combat.

Praying Mantis brings to light another possible road to solving the tank silhouette problem.

Other items round out an issue intended to be fully mission oriented.

The next ARMOR will present the address of Mr. Richard Ogorkiewicz to the 78th Annual Meeting entitled *Developments in Armored Equipment*. This noted authority on Armor looks at the present and then outlines the course that he believes future developments should take. There will be a report on the new look in Armor Association management which stemmed from the annual meeting. Other thought-provoking articles, chosen not only to inform but also to stimulate professional discussion, will be included.

We still need more "nuts and bolts" articles on communications, maintenance, training and similar subjects which those serving in units can pass along to the very real benefit of all.

Like a widely advertised car rental agency, ARMOR is not the biggest. But, by trying harder, and with your help we intend to make it number one in its field.

THE EDITOR

THE PROFESSION OF ARMS

by

GENERAL SIR JOHN HACKETT K.C.B., C.B.E., D.S.O., M.C.

GENERAL SIR JOHN HACKETT *entered the British service in 1931 as a cavalry officer. Early in his career he was stationed in Palestine and Syria. During World War II he participated with distinction in the North Africa campaigns. Thereafter he commanded the 4th Parachute Brigade in Italy. Later, in 1944, he held a key position during the Arnhem operation where he was wounded. In 1947 he returned to the Middle East to command the Trans-Jordan Frontier Force. Thereafter he commanded the 20th Armored Brigade and the 7th Armored Division. From 1958-61 he was Commandant of the Royal Military, College of Science. More recently, he served successively as Deputy Chief of the Imperial General Staff and then of the Ministry of Defense General Staff. General Hackett is now Commander-in-Chief, British Army of the Rhine and Commander, Northern Army Group. A distinguished scholar as well as soldier, General Hackett recently gave a series of lectures at West Point and the National War College.*

There are some pursuits in which what a man does cannot wholly be regulated by man-made agreement.

The Services laugh a great deal at themselves. It is important that they should. Any hierarchially organized group must do this if it is to avoid the danger of fossilization. They do it better than outsiders, too. They know their own weaknesses.

It was said of a certain cavalry officer that he was so stupid that even his brother officers noticed. I have long suspected that this little joke originated in a cavalry mess. It would have been typical of the urbane and witty bunch I found in my own. The best jokes about the meanness of Scots are often said to originate in a city whose generosity is high even by Scottish standards, in Aberdeen.

I went into the Army on a decision made at the University in my third year. Military skills were attractive to me. What I had learned of history showed a close relationship between developments in the military art and in Western society, and the contemporary place of the military institution in that society seemed to me an important one. The contribution to international order of military power in national hands was clearly as high as ever. The Army looked good to me at all levels, and I wanted an active life with plenty of opportunity and a high degree of freedom outside the professional area.

An undergraduate contemporary, who is now a headmaster and remains a friend, asked why I was going for a soldier. I wrote back saying that a world war looked pretty likely and it seemed to me on the whole tidier to be killed as a professional than as an amateur. That was good enough for him. But the real reasons were there and I joined the Army because of them. I stayed in it because they stood up.

Once or twice I had doubts, not about the value of the life, but about getting anywhere in it. I remember going to see my Commander-in-Chief in 1955 for advice. He was an old wartime friend. Ten years after the war many of us were only now being allowed to command again in ranks held during the war. Was it worth staying at the risk of stagnation? His advice was to look around. If I saw better company anywhere else I should go and join it. I looked around—and stayed.

There are some pursuits in which what a man does cannot wholly be regulated by man-made agreement. The obligations accepted by the priest, the teacher, the healer, the scholar are typical of these pursuits. The profession of arms falls fairly among them. Whatever the contract of the military professional says about terms of service—rights, duties, rewards, obligations, privileges, and so on—the military institution is dominated by an unwritten clause. This sets out an unlimited liability. It requires of a man that he be prepared to surrender life itself if the discharge of his duty should demand it. This is not often invoked in peacetime. But its existence lends a dignity to the military condition which is difficult to deny.

People sometimes get rather cross with the military because their existence is clear evidence of human imperfection. If man were not inclined to resort to the application of force in the settlement of his problems, there would be no need for soldiers or policemen either. This human tendency to violence has ugly results. It leads to immorality, inconvenience, and waste. But because you do not like it, to act as though it didn't exist seems to me scarcely more reasonable than the Puritan attitude to sex.

Nor is it reasonable to blame the instrument for the use that is made of it, if you do not happen to agree with that use. The military instrument is, or should be, apolitical. We in this country have been quite successful in recent times, I think, in keeping it so. If the military instrument starts generating policies outside the professional sphere, it must be checked, for this is not its business. So long as it does not, it should be spared criticism more properly directed at those whose business it is.

Some of the rude names levelled at military men are also misdirected. If they were justified, the military life would have left marks upon those who have led it which you are likely to look for in vain. A retired Regular officer may be complacent but I do not think he is likely to be callous, and compassion is as widespread among his kind as the integrity you are entitled to expect.

A quite widely read reviewer of novels, and a novelist himself, wrote a year or two ago that all Regular Army officers were drunken, idle, and feckless. This attracted my interest. He had been a Regular officer himself, joining the Service from the university just after the war and to his disappointment, as he honestly confessed, he was a failure and had to leave. He was talking in the piece I quote of a time when we were going through a bad patch. But all the same, his judgment seemed to me about as valid as the proposition that all reviewers are sober, industrious, and provident.

But let me here remark in passing that those who get angriest with soldiers are not always people who

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know very many of them.

The function of the profession of arms is the ordered application of force in the resolution of a social problem, at the instance of a proper authority. What does it offer?

The ordered life has a strong appeal. One good reason for this is that the regulation of considerable areas of our lives confers a high degree of freedom in other directions. In the armed services a quite astonishing variety of pursuits is followed at the inclination of the individual. Any member of the armed forces who fails to make use of the liberation of resource offered by the ordering of a part of his existence is wasting great opportunities. He is also almost certainly the worse professionally. Some realization of this may be in part the cause of the good-humored tolerance of interests and pursuits often a long way outside the normal professional pattern which you find in the officers' and N.C.O.'s messes.

I speak largely of my own Service, for I know that best. But I am quite convinced that everything I say about this or anything else, for that matter, applies to the other two Services as well.

As a matter of fact, the span of skills required for professional purposes in the armed Services is itself almost incredibly wide. Outside it, most of the other things that intelligent men like to do can be done with the encouragement of the Service, often in the Service's time and not infrequently at the Service's cost. A young officer can write a Ph.D., say, in radiation physics, if he is up to it, or spend a year learning Arabic. In either, he will be serving a direct services interest. But his choice of activity in attractive skills which do not have a direct military bearing and yet receive Service support and encouragement is tremendous. He can paint, sail, ski, ride, play in a string quartet, go exploring, and do a host of other things.

The growing encouragement to young officers to take arts degrees in the Services is significant. The requirement for a high level of expertness in academic disciplines with a direct application to Service needs is hardly worth emphasizing. It is well known and widely recognized, although the variety of disciplines which have such a direct bearing would surprise many. In addition, there has probably existed, and there has certainly been in our time, a requirement in the profession for minds disciplined in liberal studies. A rising standard throughout the country, of education, of welfare, and of information demands a maturer and better formed mind in the professional officer who is to command British troops today. It is not unimportant that even quite young officers possess some power of coercion over others, and in a society of free men it is intolerable that this power should be exercised by any but men of liberal outlook.

I used to say it did not greatly matter what disciplines these minds were exercised in, provided that the exercise was sufficiently severe. I do not think that I was entirely right.

The profession of arms has grown vastly more complex in our time. The method of application of armed force in the international sphere has been radically modified with the introduction of nuclear weapons. It is impossible to claim now that all-out war between major powers is any longer a rational act of policy. But man remains what he is and is unlikely in the near future to cease to apply force to the resolution of his problems. The lessened likelihood of general war, in my opinion, renders more likely lesser forms of military action. The evidence suggests that this may be right.

As one result, the relationship between the content of some liberal studies and the practice of arms even at quite low levels of responsibility has nowadays become very much closer. I am thinking of history, politics, economics, languages, geography, and others.

There is little military action in the world today which does not have some close, even immediate, political significance. There was a time when politicians arrived at a decision to employ military methods and then handed matters over to the military professionals. These then proceeded to handle matters according to their own rules. At lower levels (on the Western Front, let us say, in World War I) the junior military professional was largely operating in a closed system. The direct political impact of what he himself did, as opposed to its military result, was usually negligible.

This is no longer so. The lesser forms of military action, which are the order of the day in a world where total war between major powers has ceased to be a rational act of policy, have very often a close and over-riding political significance.

I believe this has developed a much more effective structure of communications between political and military servants of the state than has ever been the case before. There is, also no doubt at all that it makes demands on the young officer far beyond

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the average requirement placed upon him in the past. He must know a great deal more than ever before about the world he lives and works in, and the other people who live and work in it, in different parts and different climates. Thus, it is not only the case that the mind formed under a liberal arts discipline is increasingly a requirement for service in the armed forces. What a young man learns while he is undergoing the formative processes will very often itself be of high value professionally.

The Services already contain officers holding university degrees in quite respectable numbers. Any young man who is able and willing to take a first degree, either before or after he joins the Services. should be able to do so. This is far from saying that every officer in the armed forces is expected, in time, to have a degree. There is much good officer material of the greatest value which would be unlikely to succeed in a degree course but which the profession would be unwilling to lose. There will always be an opening in the Services for the type of young leader who is not academically of a very high standard and might not be expected, perhaps, to reach the highest ranks in his Service, but who is quite indispensable doing what has to be done at lower levels. There are types of young leaders we probably need less. A commanding officer once reported on one of them: "It is possible that there are men who will follow this young officer anywhere, but if there are it will only be out of curiosity."

The military institution has latterly come under increasingly close scrutiny from the social scientist. This is possibly because military activity is the activity of a human group and, what is more, a group discharging its primary function under stress. The military have acquired a tremendous fund of empirical knowledge about the sources of strength in human groups under stress. This is scarcely surprising. They have been fighting in battles for a long time. They know, for example, that the power of resistance to stress in a group of men is raised by increasing its coherence. They strive therefore to bring about the deepest personal engagement of the individual in the interests of the group. This does much to increase the value of the group to the individual, particularly in a world where isolation and loneliness are increasing sources of tension. This is also the origin of what is often described as the tribal organization of the British Army. The term is not always kindly used. Nonetheless, it offers accurate and useful comment. If the ethnologists were turned loose on the regimental system, they might well discover not a military museum but an instrument of high functional efficiency for its purpose.

One way to increase the coherence of a group is by demonstrating its otherness from other groups. Hence all those badges, and colors, and differences in uniform and all the extravagances of what we describe as military millinery. This regiment which wears its hats sideways is demonstrably different from that regiment which wears them upside down. Once you establish otherness you are better able to demand betterness. You can jack up your standards.

This, you can say, might do for others, but it will *not* do in the Fortieth Foot and Mouth. Beware of deriding regimental eccentricity unless you are really sure that the professional operator has got his premises wrong. It is probably by no means farfetched to draw a pretty close relationship between the impeccable performance of the Gloucesters in Korea and the fact that, whereas other regiments wear cap badges in front, this regiment, and only this, wears a cap badge behind as well.

Inconvenient the regimental system often is, but its value as a source of strength to the individual under stress is high. I hope the English will not attack it, with the recklessness with which they have dismantled so many other ancient monuments, without clearly assessing their usefulness.

There is no better example of a highly coherent military group than airborne troops. The high morale of parachute soldiers has long interested me. Much of it comes, I think, from the fact that each man knows that in his parachute training he has won an important victory over himself. Further, he knows that this is true of his comrades, too. More important still, he also knows that they know this of him.

A few days ago I was in Holland, taking my turn to lead the party of old soldiers and relatives, always more than 200 strong, which goes over every year to revisit the scenes of an airborne battle in and around Arnhem 21 years ago, and to see again the Dutch friends between whom and ourselves there has now developed an abiding bond. I remembered as we wandered around what a lively, cheerful, friendly outfit the 1st Airborne Division had been, and how closely the dwindling remnants stuck together in a nearly hopeless situation. I recalled the feeling of those times and how, even in the worst days of that long drawn battle, the structure of the 1st Airborne Division was never eroded by despair.

Even some of the wildest apparent aberrations of the Army are not always as batty as they look.

Closely related to the question of the coherence of the group is that of what are sometimes called the military virtues. These confront us, Toynbee says, "as a monumental fact which cannot be whittled down or explained away." They include courage, resolution and subordination of self. These are virtues anywhere, of course, and distinguish any group in which they are prominent. But their importance in the military group is almost uniquely high, for here they have an essentially functional significance. The more highly developed they are in the military group the more efficient it is in the performance of its primary function. If the military man finds the company agreeable in which he has cast his lot, this is scarcely the result of accident.

Here is one of the most interesting aspects, to me, of the profession of arms. The military group is not merely adorned by the existence of these qualities to whatever degree they are found, as any group of men would be. The functional efficiency of the military group in the discharge of its main function positively depends upon them. Military management sets out, therefore, to encourage them to the highest possible degree.

It must be recognized that military skills have a high attraction for many of us. The progressive mastery of attractive skills is stimulating. This is another reason why men find satisfaction in this profession. But I believe that it is in the importance of the human group, as well as in the association with something greater than oneself and the importance to each of us of an invitation to consider interests other than his own, that the chief sources of attraction lie.

Of course, adequate material reward is important, as well as fairness and consistency in the distribution of reward, praise, and blame. There must be openings for advancement and some expectation of stability. These the Services strive to offer, probably not without success.

The Army is sometimes thought to be a pretty batty sort of outfit. All that drill and stuff, for instance. Now Orpheus may be a more powerful leader than the drill sergeant. But habit is a tremendous source of strength in a time of stress, and many a man has been helped farther than he could otherwise go by habits formed under the drill sergeant and in no other way. Drill has had its uses, too, in developing group coherence, from the evolutions of the humble rifle platoon to the splendor of the Queen's Birthday Parade, with colors trooped in full tribal panoply.

Even some of the wildest apparent aberrations of the Army are not always as batty as they look.

A friend of mine was commanding a regiment in Germany which was preparing for the General's inspection. He was making his rounds and found that the Quartermaster had had whitewashed, rather inadequately it seemed, a big heap of coal.

That is to say, whitewash had been loosely flung on this coal up to about the height that the man with the brush could reach. Now my friend was a Cambridge man and an intelligent one. He has since become a general. As a lieutenant-colonel at that time, he rounded on the Quartermaster for putting up a typical example of what is sometimes called "bull." The next day the Quartermaster applied to be posted elsewhere. When my friend investigated, he found out something that probably most quartermasters know, though it may not be widely known to everyone, even those with good degrees. That is to say, the quickest and easiest way to tell whether coal (which was then scarce in Germany) was being stolen was to splash a little whitewash on the outside of the pile up to about as far as a man can reach. You could then see at a glance if any had been removed, whether the wire fence was enough, in fact, or whether you needed to use up men by mounting a guard.

I spoke of the efficiency of the Services without attempting to develop this. I believe they are efficient and I do not know many people who are closely acquainted with their work and their adaptability to so many different functions who think otherwise.

If an enterprise is planned and carried out with high efficiency—a train robbery on a huge scale, for example—I have yet to hear it said that it was planned and carried out with "industrial" efficiency, as we all know, and I do not believe that this has come about entirely by accident, either.

I have stayed some 35 years in the Army myself in spite of other possible attractions outside it. It has been said that mediocre talents take you farther in the Army and the Church than in any other profession, and this, if it is true, may have had something to do with it. In any case, I am sure that I would do the same thing again.

But any occupation to attract the reasonable man must be meaningful. That is why we must ask what is the purpose of the military institution today?

Now I accept that military power is an essential

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tool of the sovereign state. I assume this to be true and that it would be an irrational act for a state unilaterally to divest itself of all military power. I believe also that military power makes an indispensable contribution to international order and further, as I have said, that there is unlikely to be an early end to the human tendency to resort to force in the resolution of social problems. (The basis of my argument is thus a pragmatic one.)

What is the Army for? This question is harder to answer to a young man's satisfaction today than it was a generation ago. This is not because a valid answer is harder to find. The answer is still the same in essence, but to give it concrete simple application is harder. The easy answer of earlier times was probably misleading, but it was at least comprehensible and satisfactory.

The purpose of defense forces under national sovereignty is, as ever, to provide for the survival of the nation when this is threatened by force.

More closely stated, defense forces must furnish a country's government with a range of options in support of foreign policy as wide as the country can afford, in relation to all other demands on national resource.

It is sometimes argued that if a nation intends to survive it must devote all the resources to that purpose which are seen to be necessary for it. This is a respectable argument, but it is chiefly relevant when there is a grave and identifiable threat to national survival, as there clearly was in the Thirties. But it is difficult to apply this argument when there is not, and the danger of trying to do so is that you may well threaten national survival—or at least national well-being—by the imposition of too serious a burden of cost. I prefer, when there is no imminent threat by force of arms to the nation's survival, to see the requirement studied in terms of options.

It seems that to avoid the total disaster which the progress of science has now made possible, we must be prepared to try to contain outbreaks of violence before they get out of hand. There have been successes in our time here—and failures. But I believe this to be one of the principal tasks for the military professional today and in the future. There is also the problem of arms control which, far more than general disarmament, seems to me to offer a realistic chance of escaping disaster. Here, too, is work for the military professional.

The purpose of the military life is, as we know, to furnish professional armed forces to serve the state as an instrument of foreign policy. The life is agreeable. It is an active and challenging one and the company is good. But it is important to show a young man the significance of what he does. At times this is quite obvious to him. But I heard from a regiment in the British Army of the Rhine the other day, that though they were in very good order and training keenly, the young soldier found it less easy to see the point of what he was doing there than when they had recently been in Borneo. It does in fact make a considerable demand on the intellectual powers of the junior officer for him to be able to understand the importance of maintaining efficiency in preparing for a war everybody hopes and intends never to allow to be fought. It takes something of an intellectual effort to realize the importance of his own contribution to the realization of these hopes and intentions by making 3 Platoon of A Company a happy and efficient body, and to make sense of all this to his men.

The location of the military institution in our society also presents difficulties. These, too, are often a cause of uncertainty to young men in the services or inclined to join them.

Until well on into our century the conviction has widely persisted in Britain that there was an officer class from which alone officers for the fighting Services could be drawn. This conviction has a perfectly respectable origin. It was a direct product of the social articulation of an earlier time. But it is difficult to reconcile with the pattern of our society as it has evolved and is still evolving.

We seek now the qualities in a young man which are required in an officer without automatically assuming that these will be found only in one section of the population as far as this can be contrived.

On methods of selection and promotion of officers it is easy for the non-professional to argue *a priori* to the wrong conclusion. Why not democratic election of the leaders by the led, for example? This was tried out in the armies that emerged from three popular, national revolutions that I know of—the American, the French and the Russian. It was soon abandoned in each.

It is worth remembering, however, that selection criteria for managerial positions in any enterprise can rationally be criticized only in the light of the success or failure of the enterprise in the discharge of its primary function. I have heard it said that selection methods for the Brigade of Guards are on

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the old-fashioned side. This may or may not be true. What is scarcely in dispute, on the other hand, is that the Brigade of Guards produces fighting infantry with no superior anywhere. There are other enterprises who flatter themselves that their selection procedures are highly efficient and right up-to-date, but whose degree of success in the discharge of their primary function is, by comparison with that of the Brigade of Guards, surprisingly low.

There are other aspects to the search for the true location of the military institution in contemporary society.

Developments in technology have a profound effect on the pattern of society, no less than on political institutions. Technological change has been taking place at a high and increasing rate in our time. The military institution has been modifying with the parent society. It has become, for example, more professional.

When I joined as a 2nd lieutenant in the cavalry in the early Thirties and learned to look after my horses and use a sword as well as more modern weapons, we were highly efficient in our slightly archaic way. But we were still paid half a day's pay for half a day's work, and the true professional was neither very common nor highly popular. We were operating, of course, right at the end of an era. Technical change and its social consequences were swiftly overtaking us. The onset of World War II accelerated this process. For the amateur, upon whom the Army had long relied for much of its leadership (for reasons well known to the social historian), there was now no longer room.

Change is rarely painless. What you have to leave behind often contains much that you will miss.

I do not think that even as an undergraduate I was happier than as a young cavalry officer. I can recall a long night ride in winter, over the bare uplands of what is now Jordan, with my squadron of Arab and Circassian soldiers in the Transjordan Frontier Force. Sirius was blazing in a clear sky, gleams of light came from swaying sword scabbards, and there were gentle noises from the movement of a hundred horsemen and a quiet murmur of Arabic speech. I was discussing with my senior local officer the importance of religious belief and the sadness of division among monotheists anywhere. We agreed upon this, as on most other subjects. I recall wondering why anyone was foolish enough to pay me (and more than I received in the British Army from which I was on detached duty) for doing anything so delightful.

Every officer with long service in Navy, Army, or Air Force has seen changes which took from him things he valued. Some could not accept the changes and withdrew. But it is possible to confuse form and content here. The military way of life persists in essence unimpaired.

Change we have seen all round, change and decay even, but change and growth, too. The increase in the rate of change has been a chief source of stimulus in our time. It is, of course, a source of instabilities as well. But discriminating accommodation to change is a requirement as pressing upon management in this profession as it is elsewhere and it is widely seen in the management to be so.

I do not suppose senior officers in armed forces anywhere are always entirely free from complacency. But I find around me less of this than might perhaps be expected. I find enquiry, a healthy tendency to challenge assumptions, even some welcome scepticism and irony. What I do not find is disillusion.

British institutions have been not only slow to mature but also, not unexpectedly, slow to change. We still have a set of institutions, constitutional, parliamentary, legal, educational and so forth, probably on the whole more appropriate to the late 19th century than the late 20th. They are evolving, but of necessity, slowly. The military institutions also in this country are even now by no means free from archaism. But much of military practice can be readily regulated and the development of weapon technology has had an irresistible modernizing effect on structure. Some traditional patterns of structure and behavior have proved highly persistent. The officer-soldier relationship of Wellington's time, reflecting a pre-Industrial Revolution pattern of society, persisted well into the 20th century in this sheltered country practically unchanged. Strong traces of it are perceptible still, in a society no longer predominantly rural, agrarian, and semi-feudal, but now predominantly urban, industrial, and tending to technocracy. But it may not be out of place to repeat a warning here. Traditional patterns of behavior are often a source of strength in human groups under stress. It is wise, therefore, to handle traditional military practice with caution. Change for its own sake alone offers doubtful advantages.

The profession of arms . . . a professional livelihood with a significant moral content . . . a fit and proper calling for a rational man . . .

Methods of management have also changed in the profession. Command is now far less by authoritarian dominance, far more by rational direction. Here again the development is in keeping with changes in the pattern of the parent society. The bloody backs of British redcoats in the 18th century were evidence of brutality widespread not only in Britain, and certainly not confined in Britain to the Army. The relationship today between the higher and lower ranks in our Services has often been remarked upon to me by officers of other nations, with interest, even with envy. It is a happier one than some you find elsewhere, less rigid, perhaps, warmer, less formal. It suits the present outlook and temper of this country and in my opinion is far more resistant to stress than a relationship based only on a rank structure. This, upon the battlefield, can be a brittle thing.

Effective military management has always been manipulative. The method of manipulation has changed and the points at which you handle the material. It would be wrong to claim that the contemporary military method in this country is perfect, that there is no room for modification. Changes in the pattern of subordination in Britain has been swift in our time, and radical. Many military professionals are cautious over the further modification of a pattern which has been successful up to now and has in any case been greatly modified in this generation. The necessity for further modification cannot, however, be denied. We are looking closely at this.

The battalion, the ship's company, are people and their members must be treated by authority—and treat each other—as such. However great the strides made in the study of man's environment, the proper study of mankind continues to be man. Whatever technical developments are found in the military art, however complex and sophisticated its techniques have become, its successful practice depends in the last resort not upon a man's mastery of techniques but upon his mastery of himself.

The military institution should, I think, as I have indicated before, reflect pretty closely the structure and content of the parent society. The less closely it does so, the less likely it is to remain an efficient and reliable instrument of the national purpose. If there is a marked divergence, the relations between the military institution and the source of sovereign power will come under strain, and a dangerous instability can result.

In this country rather earlier than in most, a relationship was stabilized of complete subordination of military power to civil. No other relationship is consistent with the lines of our political development in the last 300 years.

Divergence of the pattern of a nation's armed forces from the pattern of the nation is one of the most obvious causes of the generations of policy in these forces and this can lead to praetorianism, which is such an unwelcome and illiberal and remarkable feature of so much of the contemporary scene abroad.

I do not fear it greatly at home. I do not lie awake picturing the dangers of holding the Queen's Birthday Parade, with its great mass of disciplined soldiery, so close to No. 10 Downing Street and the Cabinet Offices. There is attractive material for a good short story there, if anyone wants it, but no more than that.

The military profession, then, offers an ordered life, with the freedom of an ordered life and its stability. It offers membership of a highly articulated system of human groups. The military group is by functional necessity a closely coherent one. Its values are high. Fairness and consistency are important in it. People are important.

The military life associates a man with something greater than himself. It is lived under an unlimited liability. It uses a wide range of skills. Many men find purely military skills attractive. Armed service offers many others.

The essential purpose of the military institution has not changed, though much that is incidental to it has. The military professional now contributes to its main end the survival of the parent society more by the control of violence than by its exploitation. There is no sign of an early end to the requirement for military professionals. So long as the well-being of mankind—let alone its survival—continues to be threatened by the application of force, so long will the well-being of mankind and even its survival continue to depend in some degree upon those whose professional business includes the management of violence.

The profession of arms, by which the military institution is both manned and managed, offers a professional livelihood with a significant moral content. It has shown itself, I think, to be a fit and proper calling for a rational man, and there is no apparent reason why this should not continue to be so.

THE UNITED STATES ARMOR ASSOCIATION

IS PROUD TO RECOGNIZE

THE AUTHORS

OF THE OUTSTANDING ARTICLES

IN THE

1967

UNITED STATES ARMY ARMOR SCHOOL

ADVANCED COURSE COMPETITION

ARTICLES WRITTEN FOR PUBLICATION

1st Place: *Portrait of An Enemy* by CAPTAIN ROY W. COLE III

2d Place: *Company B* by CAPTAIN WALTER B. TULLY, JR.

3d Place: *Clear As a Cloudy Day* by CAPTAIN WILLIAM E. HOCKER

4th Place: *Hanoi's Underestimated Weapon* by CAPTAIN J. P. GARGILE

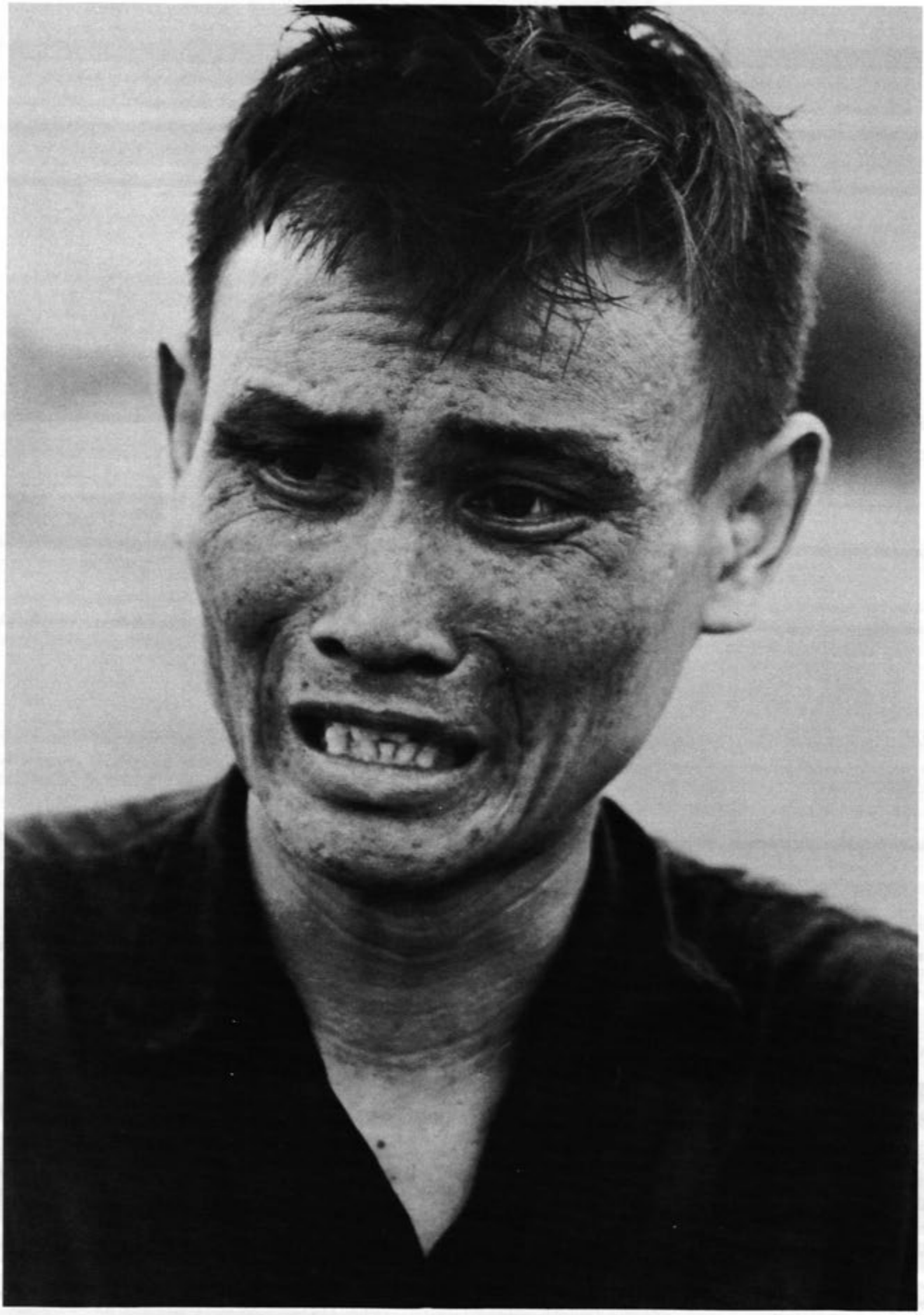
5th Place: *Emphasis on Action* by CAPTAIN WILLIAM M. BOICE

Honorable Mention

Winston Churchill's Folly by CAPTAIN ROBERT A. VOGEL

Each of the first five place winners has received an engraved silver cigarette box presented by the Association as a permanent memento of his achievement.

The works of the 1st, 3d and 5th place winners appear in this issue of ARMOR. When the required security review has been completed, the remaining articles also will be published.



1st Place

PORTRAIT OF AN ENEMY

by CAPTAIN ROY W. COLE III

Loc woke up quickly. The sun was streaming through the palm-thatched roof and he berated himself for having slept so late. He quickly parted the gauze mosquito net and slid off the bamboo slat bed that he shared with his only child. Rubbing his eyes, he made his way out of the hut.

Three bedraggled chickens were scratching in the mud and a sway-backed sow grunted noisily as she suckled her young. He walked around to the back of the hut and gazed at the green and gold rice paddies, shimmering in the early morning sun. The heat of the day was beginning to grow and a light mist was rising off the flooded fields. It had rained the night before and the air smelled fresh and clean, in contrast to the dank and fetid atmosphere of the hut. This was his land and the very center of his life. Noticing the earthen mounds to his right, he remembered that he must hasten to repair the damage the recent rains had done or the spirits of his ancestors would be offended and his land would cease to prosper. He would have to do it next week though, for far more urgent things were at hand.

CAPTAIN ROY W. COLE, III, *was commissioned in 1962 from the United States Military Academy. He graduated from the Infantry Officer Basic Course and Airborne Course in 1962 and the Ranger Course in 1963. He was then assigned to the 5th Infantry Division (Mech). In 1964, he transferred from Infantry to Armor. From June 1965 to June 1966, he served in Vietnam as an advisor to an ARVN Infantry Battalion and a Regional-Popular Force Training Center. In June 1966 he returned to the United States to attend the Armor Officers Career Course.*

After relieving himself, he strolled back around the hut and down to the muddy sluggish canal that lay practically at his doorstep. The canal, like the land, had served his family well. It was their avenue to the outside and according to a peddler he had once listened to, one could even follow it all the way to Cantho. The canal provided them with fish and eels. It irrigated their fields and allowed the water coconut to give several crops each season. It even gave them drinking water during the dry season when the rain water in the big earthen jars was gone. As he squatted on the plank that served as a miniature pier, and washed, he wondered why he had been summoned again.

The messenger had come during the night and had said that Loc was to have his squad of village militia at the junction of Rach Ong Thanh and Song Dao Lon by dawn tomorrow. Loc had wanted to question the man as to the purpose but he knew it would do no good for in all likelihood, the messenger would not know. He had probably just received a note from the military committee of the National Liberation Front to pass the word, nothing more.

After the messenger had left, Loc couldn't go back to sleep. He had lain awake, staring into the dark, as he thought of what lay ahead. Finally, he got up and sat at the heavy carved table that occupied the center of the hut. As he gazed into the flame of the small spirit lamp that burned all night, his mind had whirled back to former days.

It had been good then. He had joined the Viet Minh at the age of 17 and they had given him an old French rifle, of which he was very proud. They were all proud to serve and they would sit around the fire at night and sing of their cause and the victory that would come in time. They were very popular with the people and as they passed through the villages the people would bring them food and water and the girls would treat them like heroes. They were one with the people and that was their strength.

Shifting and swatting a persistent mosquito, he continued.

He had hated the French and with good reason. They had slaughtered his wife and sister and the sight of their mutilated bleeding bodies had haunted his dreams for a long time. The bearded ones had burned his village and anyone who failed to bow and pay respect received a rifle butt in the mouth. The first Frenchman he killed had a beard and it soaked up his blood like a sponge, after he lopped off his head with a machete. They had placed the head on a bamboo pole and it had led the file back to the village, where they celebrated their victory.

His head began to nod with drowsiness as he continued.

Somehow it is changed now. The young men no longer consider it an honor to fight with the National Liberation Front. Some of them have to be bound and dragged from their houses, squealing like a pig on its way to market, and the people are not all with us. They are tired of war and no longer do they run out to greet us when we come. They hide in the fields instead. We can't even stay in one place for a long time because there are spies everywhere. It is just no good anymore! He finally slept.

Shaking his head to dispel the thoughts of the night before, Loc quickly finished washing and walked back up to his hut and stepped inside. As his eyes adjusted to the gloom, he greeted his mother who had just finished placing out a fresh offering of rice to the guardian spirits. Loc bowed before the inlaid chest at the rear of the hut, that served as the family altar. It was festooned with scrolls and pictures of the family, and as he paid his respects, he felt another gnawing doubt. The Front had never directly attacked his beliefs, but he could feel that it was hostile toward them and that he could never express them around the Front's political representatives for fear of being denounced or criticized.

As he sat down, his mother placed a glass of weak tea and a banana before him . . .

"They came again last night didn't they?," she queried anxiously.

"Yes, almost at dawn," Loc replied.

"What do they want now—more rice?"

"No, I think it is another raid."

Her voice rose and took on that nagging tone that he disliked so much. "I wish they would leave you alone and we could return to our old ways. I'm tired of having to sit through their lectures, make little flags and foot spikes. Yesterday Ba Chi told me that soon we'll have to start digging trenches again."

Loc stilled her with an apprehensive glance for the hut's walls were thin and people were beginning to move about outside. You never knew who would be listening, and he remembered the night that he had accompanied one of the political cadre to an old man's house to still his dissenting tongue forever. They had held him in the canal until he had ceased to kick. It had seemed right then, but now he wondered?

With a hollow feeling, he reassured his mother that, with time, the Front would win, just as they had against the French. He hastily finished his tea and stepped over the red-stained doorsill, into the sunshine. He immediately felt better out in the light, away from his mother's questioning and whining tongue. She had seen too many seasons, and it seemed that now her biggest joy was listening to the reformed opera on the small battered transistor radio he had taken from a dead government soldier

a few years ago. As he strode back around his hut, he remembered that he would have to warn his mother not to play the radio loudly for the village committee had recently decreed that the government-sponsored broadcasts were a harmful and corrupting influence.

Loc stooped to pick up three woven baskets, each about the size of a pail. As he moved out past the entrenched tree line into the knee-deep paddy, his thoughts brightened as he contemplated the prospect of trapping some plump rice rats for his family. It had been a long time since the grey little rodents had been so plentiful, and he had recently spotted a few likely trails along the small irrigation dikes that subdivided his land into manageable rectangles. Loc made for the nearest one, his splayed and calloused feet sinking ankle-deep in the rich ooze.

He stayed in the field setting his traps until the sun was directly overhead and even his weathered conical hat afforded little protection. Retracing his steps, he noticed his first trap was sprung and, judging by the movement of the woven basket, his prey was still within its confines. With a smile on his seamed face, he carefully raised the trap and seized the struggling rat. He quickly killed it with a small stick and after resetting the trap, struck out for the distant tree line again.

His hamlet lay still and silent in the stifling heat of the midday sun. Loc washed off the grey mud that caked his body and entered his hut. His mother looked up from her task of mending a frayed shirt and her face lit up as she saw the rat dangling in his hand . . .

"It has been a long time since we've had such good meat," she said with a toothless smile.

"Yes, here, take it," he replied.

She took the rat by its hairless tail and placed it in a small charcoal brazier to burn off its hair. Then, she wrapped it in banana leaves and soon the aroma of roasting meat filled the small hut.

They had just sat down when, with a ripple of laughter, his young daughter bounded into the hut. She was a slender girl of twelve and with a pang, Loc reflected that with every passing season, she seemed to resemble her mother more and more. He had never taken another wife after Nguyet was killed, perhaps because the hard hate that drove him on rejected the softness that a woman would bring into his life. It wasn't difficult for him to associate the *"My-Diem"* puppet government with the despised French and the Front's propaganda only reinforced this shift. However, his daughter was his link to a happier time and as he fondly gazed at her, his eyes lingered on the now healed scar on her right forearm.

It had been a year now since they had almost lost her. She had stumbled and slashed her arm on a punji stake that he had just planted. Within a week's time, the arm had swelled to the size of a small melon. They had called in the village healer who had placed a magic cloth on the wound and had applied suction cups along the child's arm. He had charged Loc a week's supply of rice for his services. The black lines had continued to radiate up the child's arm and Loc, after consulting with the socerer, had bled her. However, the child's condition grew progressively worse. In desperation, Loc had rowed deep into the interior to a village which he knew had a Front dispensary. The young nurse had been very sympathetic but had firmly turned down his plea for medicine on the basis that what little medicine the Front had, must be used to treat the wounded soldiers. With a sinking feeling, Loc had set out on the journey home and had steeled himself to the knowledge that nothing remained but to wait for his child's death. Upon arrival, his mother excitedly told him that a chance remained. She had learned that in two days, a government medical team would visit a village a half day's journey away and their medicine was very powerful. He had struggled with the decision for two days. The idea of seeking aid from the enemy ran contrary to every belief he had held for so long, but when he had thought of his daughter's wasted and feverish body, he knew he would have to take the risk.

After a sleepless night, he had loaded his child into his sampan and they arrived at the village when the sun was high overhead. Except for an occasional moan, she had remained silent throughout the trip and he knew that the end was near. When a soldier gave him a suspicious glance, it took a physical effort to stifle the urge to run but he had swallowed his fears and had taken his place in the long line that had already formed. As he waited, every second was filled with apprehension that someone would recognize him and he would be pulled out of line and shot. However, as time passed, his fears abated. While the line dwindled, he had even begun to listen to two old men, clad in the black robes of village elders, discussing the merits of some candidates for the soon to be elected village council. The idea was new to him and as he tried to evaluate it he heard a strange voice at his elbow. Swiftly turning, he found himself gazing directly into his enemy's face. For the second time that day he stifled the urge to run but this face wasn't the same as the one he had formed in his imagination.

The American had a friendly smile and warm blue eyes that softened as he took in Loc's daughter's plight. He had gently taken the child and had soothed her. His big hands had worked quickly and skillfully as he lanced and dressed the ugly wound. While administering a shot of penicilin, he quietly

berated Loc, in broken Vietnamese, for allowing the village healer to apply suction cups. Pointing to the purple bruises, he made it clear that this only harmed the child. Loc was so taken aback by the kind treatment that he bowed in gratitude. Flushed with confusion and embarrassment, he had quickly retreated and as he pushed his sampan out into midstream, he wondered why this American was so different from those the Front had described. He shrugged it off as a strange exception.

The girl began to improve, and within a few hours her fever had subsided. Her recovery was slow but very evident. She delighted in describing the *"Bac-si-My,"* with his long nose, pale face and hairy forearms, and finally Loc had to quiet her for she had become too lavish in her praise and the Front would not tolerate this. He had tried to convince her that the magic cloth had worked her recovery, but her critical look of disbelief pointed out the inadequacy of his own explanation.

They ate the rat and rice in silence and after the meal, Loc retired for his customary nap.

He awoke when the sun was beginning to slide towards the distant horizon. The hamlet had come alive as the shadows began to lengthen, and the air was filled with the purgent aroma of nuoc mam and smoldering charcoal. After splashing some water on his face, he hastened out to alert the seven other men in his squad. As he went from hut to hut, the old familiar feeling of anticipation returned, and he began to sense a growing exhilaration as he sensed action after so many weeks of inactivity. The nagging doubts of the past few hours were dispelled by a wave of enthusiasm and he again felt the thrill of command as he answered his men's questions and gave them their orders.

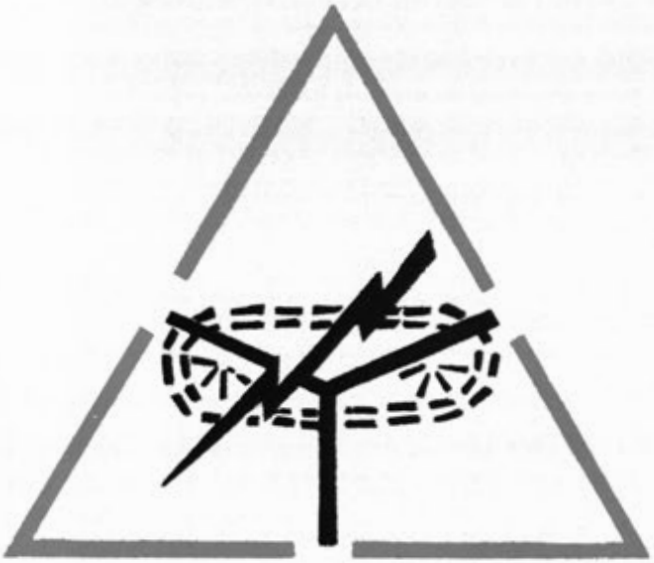
Hurrying back to his own hut, he felt a hot flush of shame as he recalled his earlier thoughts which now seemed so nonsensical and incompatible with his present mood. Who was he to question the methods and aims of the Front, and how could he lead his men if he doubted the worthiness of their cause? He gave an involuntary shudder as he thought of his fate if the Front ever suspected him of treason. As he reached his porch, he resolved to never again let such doubt cross his mind.

Scowling at his mother, he tossed her a small plastic bag and told her to prepare a three-day supply of rice. His eye fell on the small transistor radio and, remembering his earlier resolution, he picked it up. With a glance at his mother's turned back, he deftly removed the two batteries and quickly stepped out of the hut and threw them into the canal. With a smile of satisfaction, he re-entered the hut. His mother would never know why the radio ceased to work and he would not have to worry about her violating the new decree.

After eating a hasty supper, he packed a small knapsack with rice, salt and a small flask of nuoc mam. As an afterthought, he enclosed a rubber ground sheet, and with a nod to his mother and daughter, he stepped out into the twilight. Hastening around to the rear of the hut, he squatted before a pile of discarded palm thatch. He quickly pulled way the thatch to reveal a carefully concealed wooden box, buried with its top flush with the ground. Scraping the earth from the lid, he lifted it, and reached inside to pull out a Thompson submachine gun, carefully wrapped in a plastic sheet. He laid the weapon aside and took out five loaded magazines and two American grenades. He carefully concealed the lid and, after rearranging the thatch, he turned to the weapon. With a hard smile, he unwrapped the weapon and inspected it for rust. He quickly polished a few specks on the snub barrel and worked the action. The cold metal felt good in his hands and with a surge of confidence, he swung the Thompson in a flat arc, as if disposing of an imaginary enemy. He checked the oiled magazines to insure there was spring tension of the first cartridge and hefted the two grenades to inspect their pins. Satisfied with his weapons, he put four magazines and the grenades in his knapsack, and inserted the fifth magazine into the weapon. It slid home with a dull click, and he slung the Thompson over his shoulder.

Loc met his small band in front of the hamlet cadre's hut. His eyes darted from man to man as he appraised their readiness. With a disgusted grimace, he quickly stepped in front of a slim youth with a pock-marked face. Fixing the offender with a piercing glance, he snatched the youth's carbine and pointed to the rusted magazine. Visibly unnerved, the recruit scurried off to find some oil. As he scowled at the rest of his men, he felt an inward twinge of pride. They were all good men and had seen many hard years of fighting. Several bore large white scars that stood out against their brown bodies as mute testimony. His gaze softened as it fell on old Hai. Loc remembered the night that Hai had carried him from a burning outpost that they had seized after a short, bloody fight. A burst of machine gun fire had shattered his right leg and as he lay amidst the dying, Hai had returned for him and had carried him away with the government artillery crashing all about. Sensing his leader's thoughts, Hai smiled.

Their bond was broken by the sound of the recruit breathlessly taking his place in line again. With another quick glance, Loc rechecked his men, and then indicating with a nod that it was time, he set out down the trail. The small group fell in behind him, automatically picking up their interval. They were soon swallowed up in the gathering dusk.



THE ARMOR OFFICER IN THE MODERN ARMY

CORRECTION—The chart on page 14 of the May-June 1967 ARMOR showing officer short tour distribution should indicate that the data for Vietnam is shown in red.

In the May–June issue, Part I of this series written by the officers of Armor Branch, Office of Personnel Operations, covered WHERE WE STAND TODAY. This second article covers the development of the Armor Officer and the direction in which this development is taking him. Part III, to appear in the September–October issue, will present the Armor Branch Chief's observations in Vietnam. EDITOR

PART II

DEVELOPMENT OF THE ARMOR OFFICER

Once commissioned, all Armor officers begin their career development with their first assignment. There is rarely such a thing as a "good" or a "bad" first assignment. These descriptive adjectives invariably apply to the officer's attitude rather than to the job he is sent to do. Time alone dispels the notion that there are preferred geographic areas, since what is one man's Paradise is another's Purgatory. Typifying the traditional Armor spirit, complaints are almost never received on assignments.

The initial assignment, like every one thereafter, begins with a study of the Officer's Assignment Preference Statement, DA Form 483. This form is submitted by all officers beginning active duty, by student officers, by officers overseas due to rotate home, and by officers in CONUS due for overseas service. It may be submitted at any time an officer's preference changes. A current preference statement is a valuable tool in the hands of the assignment officer since it allows him to personalize the assignment in accordance with stated desires. In addition, the officer being assigned is taking advantage of the opportunity to influence his own assignment pattern. While the requirements and priorities of the service will always govern, often they can be met within the individual officer's preference, *if that preference is known.*

Officers are assigned in response to approved requirements placed on Department of the Army by authorized internal and external agencies. Requisitions are received in Armor Branch after having been screened for accuracy and timeliness, and validated as to necessity. To the maximum extent possible, the officers assigned to fill these requisitions will be ordered to arrive in the gaining command in the month for which they were requisitioned. Conflicts in availability of personnel, schooling schedules and other factors sometimes cause arrival from a month early to two months late. The officer overseas has a more definite movement date to CONUS and fares somewhat better in knowing the 'when' of

his next move, while the CONUS officer due for an accompanied tour or an unaccompanied tour is generally not so sure of 'when' as he is of 'where'. Either way, the ability of Department of the Army to forecast in advance, in other than general terms, is very limited until the actual assignment is made and orders are being published. In today's army the leadtime on assignments has been sharply reduced to meet the demand in support of combat operations in Vietnam. This is nothing new to Armor and has caused hardly a ripple. *Every effort is made to inform each officer at least 60 days prior to a move.* Within this framework then, what assignments are considered to contribute most to an officer's development?

THE THREE C's

For the sake of simplicity we can divide assignments into those for company grade officers and those for field grade officers. (The master plan is shown on the Armor career pattern extracted from an updated version of DA Pamphlet 600-3, Army Officer Career Planning, Figure 1). The company grade pattern is conveniently known as the three C's:

Command Combat Career Course

Because of the variety of possible assignments and the flexibility of OCS and the Armor Basic Course trained junior officer, there are no hard and fast criteria for the three C's. Command may be as typical as a tank company commander's job or as unique as a special provisional detachment commander. Combat today means Southeast Asia. Attendance at the career course is largely a matter of availability for selection, relative rank, seniority, and course size. Once through the "three C's" the officer's personal preferences take on real meaning. The additional career development assignments for the company grades are unlimited and include troop or staff duty at battalion and brigade level, service school assignments, and ROTC instructor duty, to name but three.

FURTHER COMMAND, STAFF AND SCHOOLING

For the field grades, assignments should include command, high level staff, and attendance at the Command and General Staff College or an equated college. It is an understatement to say that competition becomes keen in the grade of major and above. It has been keen all along. For the field grade officer, command usually comes only to the ablest lieutenant colonels; selection for Command and General Staff College comes only to about 50 percent of a given year group; and high level staff assignments go to those who prove themselves most capable and promising. That an Army officer rising to the grade of major has reached the upper 3.5 percent of rank in his profession is a little known indicator of just how sharp the competitive pyramid becomes at the top. The promotion statistics show that the number of officers reaching the colonel/general officer level of responsibility is limited, even though each assignment has this ultimate level as its development goal.

HOW ASSIGNMENTS ARE MADE

Each assignment, regardless of grade, is carefully weighed against the best career development of the officer, the filling of a validated requirement for an officer to be assigned to a certain job, and the officer's stated assignment preference. Normally, the order of *consideration* is:

(1) The officer's preference.
(2) The officer's career development.
(3) The validated requirement.

The order of *consideration* is then replaced by the order of *priority,* which is:

(1) The validated requirement.
(2) The officer's career development.
(3) The officer's preference.

The objective of this two-phase assignment action is to achieve the best blend of each element involved. While satisfaction in every assignment is sought, it is by no means guaranteed. Mission, as always, comes first; career development, second; and, whenever possible, both agree with preference.

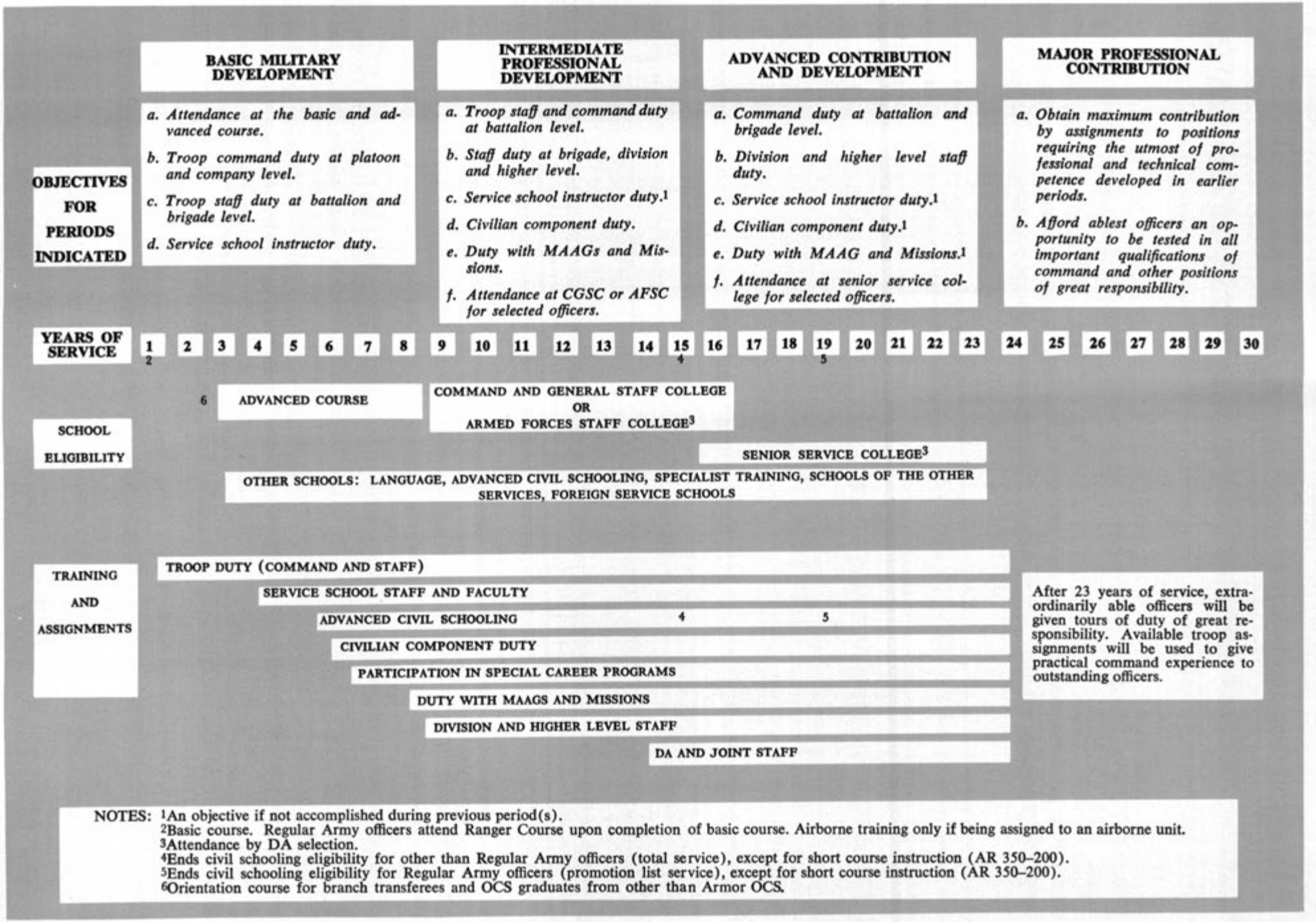
VERSATILITY IS THE GOAL

The importance of a wide variety of branch and branch immaterial assignments cannot be overemphasized. The future will belong to those who can do many things well—rather than just a few expertly. Key assignments go to the most versatile officers as more and more branch immaterial and joint service positions are established in integrated headquarters and top Army, Defense, and intergovernmental agencies. Such consideration is given every Armor assignment.

THE ROLE OF EDUCATION

Another essential element in the development of today's Armor is education. The days of the uneducated officer "who made it on sheer ability alone" are not numbered. *They never existed.* In years past, as today, many officers began their career with less than the desired degree of formal education. Few officers serve a full career without the opportunity to increase greatly their educational level. The opportunities today are vast, and range from the Branch Basic Course through a Senior Service College and from a baccalaureate through the doctoral level of civilian study.

It is somewhat inaccurate to divide education into military and civilian, since the purpose of all education is to provide essential skills, enhance job performance, and increase potential. However, if categorized according to the administration of the school, the terms military and civilian can be used.



NOTES: [1]An objective if not accomplished during previous period(s).
[2]Basic course. Regular Army officers attend Ranger Course upon completion of basic course. Airborne training only if being assigned to an airborne unit.
[3]Attendance by DA selection.
[4]Ends civil schooling eligibility for other than Regular Army officers (total service), except for short course instruction (AR 350–200).
[5]Ends civil schooling eligibility for Regular Army officers (promotion list service), except for short course instruction (AR 350–200).
[6]Orientation course for branch transferees and OCS graduates from other than Armor OCS.

Figure 1

SERVICE SCHOOLING

Branch military schooling begins with Officer Candidate School or the Armor Officer Basic Course. Following these courses and one or more duty assignments, selected officers may attend courses in Armor maintenance or other special subjects. Company grade officer branch schooling ends with Armor Officer Advanced Course. For field grade officers there is a two week refresher course.

Further military schooling includes the Command and General Staff College or the Armed Forces Staff College for about one-half of Armor's officers and the Senior Service Colleges for a very few senior officers who will advance to positions of great responsibility. In between come such specialized courses for those interested or qualified as aviation training, language training, and various types of specialist training.

For the Armor Officer Advanced Course, the goal is attendance of all officers as soon as practical after promotion to captain. Selections are made by Armor Branch based on the criteria previously mentioned. For the higher levels of military education, Department of the Army competitive selections following the eighth year of promotion list service determine attendance.

ATTENDING CIVILIAN INSTITUTIONS

For civilian schooling, opportunities begin with the Degree Completion Program, better known as "Bootstrap." This program provides for the culmination of off-duty study with a maximum of twelve months resident study at a college or university. Due to the press of requirements for their services, Armor officers are generally selected when they can complete their degree work in six months. This program directly supports the Army goal that all officers earn at least a baccalaureate degree. However, it works similarly for the completion of advanced degree work.

Advanced Civil Schooling is a voluntary program open only to Regular Army or Voluntary Indefinite category officers with a proven capacity for advanced education and a record of good duty performance. Selection is highly competitive. While academic evaluation is important, the applicant's military performance is overriding. The best years of entry for graduate schooling are from the third to the eleventh year of service.

Armor Branch prefers to select officers for training in the physical sciences early in their career, usually between the third and seventh year of service. For training in social sciences, selection usually occurs later in the optimum attendance period, often after attendance at the Command and General Staff College.

THE FACTS ON SERVICE OBLIGATIONS

Among the most frequent questions concerning educational advancement are "What service obligation do I incur?" and "Where can I get the full facts?" Figure 2 summarizes the answer to both these questions.

PERFORMANCE IS THE KEY

While assignments and education are contributing to the Armor officers career development, each career management action is being weighed based on the officer's record. This is done for the very simple reason that the best must go forward fastest. Put another way, the most able not only rise to the top but are assisted along the way by their sustained high performance of duty as compared to their contemporaries.

It should be pointed out here that Armor Branch is equally concerned with the officer who has fallen slightly behind his contemporaries. Action is swift and precise to appraise the officer of trends in his performance of duty which require attention. He is advised of the availability of correspondence schooling for the Command and General Staff College, if he has not been selected to attend. He is advised of the need for a specific type of assignment, when appropriate, to insure full development of his potential. He is afforded the opportunity to command if he has been too long in a specialty, or to develop a specialty, if his troop command and staff abilities have been proven. *Always,* he is encouraged to call, write, or if possible, visit Armor Branch for career counseling. Few—hopefully none—fail to profit from such contact.

A primary basis for judging the progress of an officer's career is the record of efficiency reports rendered on him. As emphasized in Part I of this series, no numerical averages, medians, or quartile standings are kept. Each report is carefully weighed based on the factual data and recorded evaluation for the duty performed. Just as professional judgment is used by the rater, indorser and reviewer on each report, professional judgment is also used in comparing its overall place in an officers record and the evaluation of that record against competitors. When this evaluation takes place it provides the basis for decisions on key assignments, selections for schooling and promotion, and a host of other career management actions. This is but one form of competition. Others include, to a lesser degree of importance, competitive standing in academic institutions, both military and civil, and awards and decorations earned for acts and accomplishments.

THE ARMOR OFFICER SPECIALIST

Special career programs develop and use officers talented in specific functional areas. While these areas are important and have Army-wide applica-

SERVICE OBLIGATIONS AND SCHOOLING REFERENCES

MILITARY SCHOOLS	OBLIGATION	REFERENCE
Senior Service College Level	*2 years*	*AR 350-2*
Armed Forces Staff College Level	*2 years*	*AR 350-2*
C&GSC Level	*2 years*	*DA Pam 350-10*
Advanced Course Level	*1 year*	*DA Pam 350-10*
Fixed Wing Aviator	*3 years*	*DA Pam 350-10*
Rotary Wing Aviator	*3 years*	*DA Pam 350-10*
Defense Language Institute	*3 years*	*AR 611-82*
Non-volunteer	*None*	
USMA (Class of 1968 & later—5 yrs)	*4 years*	*Public Law 88-276*
DMG's	*3 years*	*AR 601-100*
Officer Candidate School	*2 years*	*AR 350-50*
Other Courses		*DA Pam 350-10*

CIVILIAN SCHOOLS	OBLIGATION	REFERENCE
Advanced Civilian Schooling	*3-4 years*	*AR 350-100*
Foreign Area Specialist Training	*4 years*	*AR 350-100*
Nuclear Engineering (Effects)	*3-4 years*	*AR 350-46*
Training with Industry	*3-4 years*	*AR 350-100*
Civilian Contract Language Training	*3 years*	*AR 611-82*
Non-volunteer	*None*	
Degree Completion Program	*2 years*	*AR 621-5*
Tuition Assistance	*2 years*	*AR 350-100*

Figure 2

tion, they do not fit solely within the career development pattern of Armor or any other single branch. The special career programs are characterized by:

- *Voluntary participation*
- *Maintenance of Armor qualification*
- *Designation as key positions at higher assignment levels*

While Armor does not have an overage of officers in any specialist program, certain of the fast growing programs are currently critically short. The programs available for those qualified to enter are:

Atomic Energy (AR 614-131)
Automatic Data Processing (AR 614-138)
Civil Affairs (AR 614-134)
Comptroller (AR 614-136)
Foreign Area (AR 614-142)
Information (AR 614-140)
Intelligence (AR 614-41)
Logistics (AR 614-132)
Operations Research/Systems Analysis (AR 614-139)
Procurement (AR 614-133)
Research and Development (AR 614-135)

The programs in which Armor is particularly short are Operations Research/Systems Analysis and Automatic Data Processing. Armor officers choosing to enter a specialist program retain their branch identity and maintain branch qualification by alternating assignments in their special career field and the branch. As the organizational evolution always underway progresses, the integration of specialist program members into branch material positions will increase. For example, the Armor officer Civil Affairs Specialist in an Armored Division G5 job is in both a branch and specialist position.

EXPERIENCE IS IMPORTANT

Certain problem areas emerge from any discussion of career patterns. One facing us today is the compression of time in grade. It is an established fact that when an officer reaches the grade of captain with only 30 months commissioned service, he has rocketed past some of the career development markers so fast that he hardly saw them. This gives rise to another special problem—inadequate experience levels.

There is a danger that the identification of these two problems may sound like the rumblings of those who spent five or more years as a lieutenant and think it is essential for all who follow to do the same. On the contrary, the more rapidly advancing junior officer of today can and should move forward faster. He has grown up in a mod, swinging, turned-on, fast-paced world and he develops faster. But not *that* fast. It still takes the simple factor of time to provide the opportunity for the variety of assignments and levels of responsibility necessary

before an officer enters the field grade ranks. Similarly within the field grades. Armor can't get a well rounded lieutenant colonel from a major who has had one school, one assignment and two short leaves. Without exaggeration, this problem is faced by some officers today. One possible, though not desirable, solution is simply to avoid any assignment of long duration. That this does *not* complement stability is both a problem and a solution. The lack of stability causes retention headaches; but, on the other hand, it does allow development of expertise in a job done in depth. Ultimately, Armor officers must seek the solution to the time in grade compression and experience level problems by seeking the fundamentals first and the extras thereafter. For the company grades this means getting the three C's and then, and only then, the teaching job, advanced degree or the staff slot. Similarly the field grade officer must strive for his basic requirements and then for the other positions he might desire.

THE REWARDS

On our retention of Junior officers: it's not good, and it's getting worse. Comparing the first nine months of FY 66 to the first nine months of FY 67, Armor is down from 22.3 percent to 20.7 percent retention of Junior non-RA officers. The things we can do about it? Nothing radically new, just sell Armor—hard sell, soft sell, any sell to fit the man. Know and stick to the facts because they're good enough to support the product. We've had four consecutive years of pay raises with one coming up. New housing is being authorized at many locations.

Our profession is an honorable one; it's serving our nation well; it's a satisfying life having served one's country, a satisfaction not available to many. Few professions can offer the same measure of daily job satisfaction, the feeling of achievement through successful exercise of great responsibility, and the growth that comes from personal commitment to the defense of freedom. It's challenging. It's no place for the weak or the timid. It's certainly where the action is!

WHERE ARE WE GOING?

Certain trends in officer development can be isolated for the fall of 1967 and the foreseeable future. One is the ever increasing promotion opportunity in an expanded force structure. In another year or two over half the officers of Armor will have less than two years service. This means an increased rate of promotion of the best junior officers to fill the captain/major ranks. Another trend is the vast increase in combat experienced officers brought about by operations in Southeast Asia. The filling of the combat experience gap between Korea and Vietnam has and will continue to contribute to an enhanced professionalism in Armor. Another trend is the further integration of the combat arms through a program known informally as the Infusion Program. Briefly, this consists of assigning selected Armor officers to Infantry positions in Vietnam following a special two week refresher course at Fort Benning. Like the Armor officers who are commanding Infantry battalions in Vietnam, the Armor officers in the Infusion Program are among the best the 'Combat Arm of Decision' can offer the 'Queen of Battle'.

Further emphasis on educational achievement, and continued primary interest in command ability should be expected.

THE ARMOR AVIATOR

The trend to Armor air mobility continues. As the buildup in Vietnam has progressed, one of the most significant trends in Army aviation has been the increasing interest in the organization and employment of air cavalry units. The success of the First Cavalry Division (Airmobile) with its organic 1st Squadron, 9th Cavalry was a major consideration in the decision to organize additional air cavalry squadrons.

The organization of these new units impacts directly on existing and future training requirements for Armor officer aviators, since the majority of the officer positions in air cavalry units require Armor MOS's with aviator prefixes. As a result, the number of Armor officers requiring aviation training will increase in order to provide a rotational base for deployed air cavalry units. Requirements generated by these branch material assignments will significantly reduce the number of Armor officer aviators available for branch immaterial aviation assignments. The majority of Armor officer aviation assignments require rotary wing qualification. For the rotary wing aviator, the future holds a wide variety of branch material aviation command and staff assignments. Since fixed wing requirements constitute only a small portion of the total Armor aviation requirements, dual rated aviators can expect a preponderance of rotary wing aviation assignments.

An analysis of our aviator strength indicates only a slight gain of resources compared with aviator requirements. Therefore, aviators are not yet available to serve in branch material, ground oriented assignments. In addition, the rapid growth of aviation requirements has temporarily curtailed civil education for aviators. Compared to pre-Vietnam years, a smaller percentage of Armor aviators are now selected to attend the Armor Officer Advance Course, but a higher percentage now attend the Command and General Staff College. Promotion opportunities are not affected by this temporary condition. Promotion Boards are given specific

The startling growth of Armor officer aviator training requirements during the FY 64-FY 68 time frame is shown by figure 3.

INITIAL ENTRY AVIATION TRAINING

	Rotary Wing	Fixed Wing	Total
FY 64	24	84	108
FY 65	87	10	97
FY 66	112	4	116
FY 67	409	27	436
FY 68	476	118	594

Figure 3

A three-year comparison of Armor officer aviator strength by grade is shown by figure 4.

ARMOR OFFICER AVIATOR STRENGTH

	30 Jun 64	30 Jun 66	30 June 67
COL	8	12	15
LTC	30	52	70
MAJ	111	208	240
CPT	393	343	425
LT	122	134	200
TOTAL	664	749	950

Figure 4

guidance to insure equity of consideration for promotion. Normal career patterns should be reestablished for aviators by the close of FY 69. The expansion of Army aviation and the redistribution of assets to meet increasing requirements in Vietnam has created personnel turbulence. As a result, the length of time between short tours will be less for aviators than for other officers. Although personnel turbulence is undesirable, one of the brighter aspects of tours in Vietnam is the large number of command assignments now available for aviators in the grades of lieutenant colonel and major. Command of an aviation battalion or air cavalry squadron does equate with command of a tank battalion. Command credit is also given for command of an aviation company or an air cavalry troop. When a choice is available, an Armor officer aviator should seek assignment with an air cavalry squadron/air cavalry troop. Armor officer aviators who have completed *successful* tours in these branch related assignments have enhanced their primary role as an Armor officer *and* their secondary role as an aviator.

IMPROVED MANAGEMENT TOOLS

A few trends in career management techniques worth mentioning:

Officers Master Tape. *The use of this computerized information bank of* U. S. ARMY DATA COMMAND *to provide career managers with complete and timely information on all Armor officers continues to expand. While it helps to insure complete consideration of all eligibles, Armor Branch assignment officers—not the computer—make the choices.*

Termatrex. *Armor Branch is streamlining this simple, manual, desk top device to edit out unneeded information and to include new requirements on all career officers of Armor. The hours saved through use of this quick system for isolating certain combinations of skills or factors, is devoted to insuring improved individual attention to Armor officer development.*

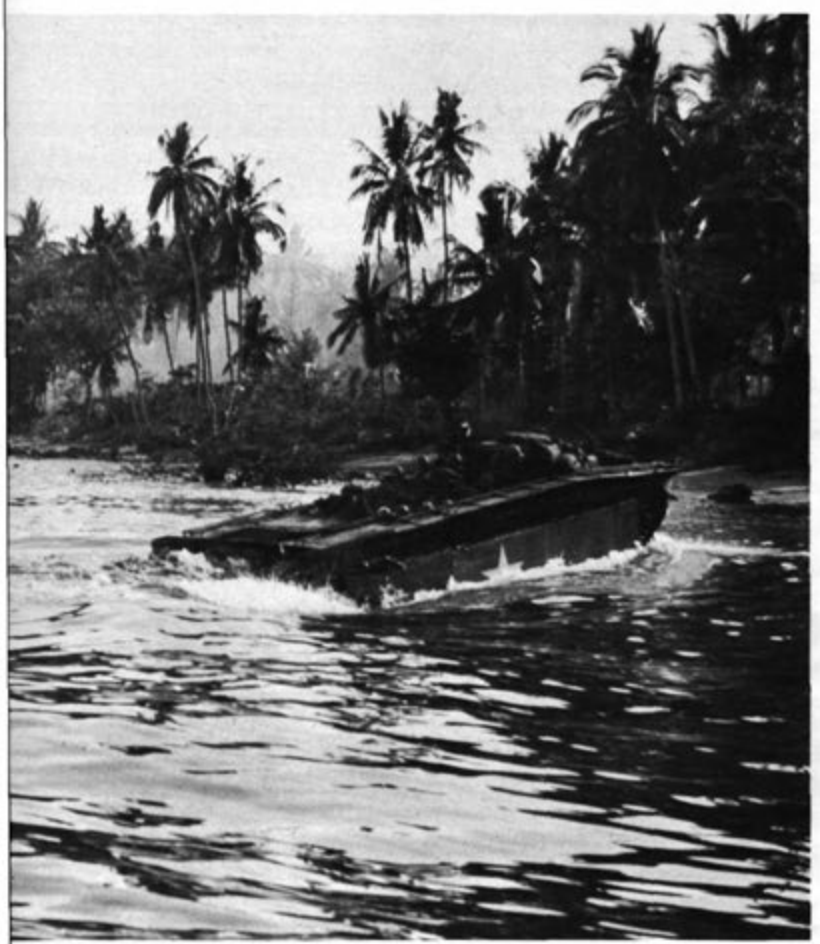
RAPIDS. (*Random Access Personnel Information Data System*) *Ultimately this system will make available to career management officers on-call, real-time, master tape extract printouts of any information required for personnel actions or assignments.*

These management tools mean only that more complete information will be available more rapidly. *Armor officers will continue to be served by other Armor officers—not by machines.*

ARMOR IS ON THE MOVE!

Armor Branch has pushed and will continue to push for every career development opportunity possible. Efforts in recent years speak for themselves: Armor promotion selection rates equal or exceed our proportionate share at almost every grade level and in a few notable examples such as the recent high selection rate of secondary zone colonels, far exceed the Army average. In selections to higher educational institutions we equal or exceed our proportionate share. Our 15 percent of the recent selection to brigadier general is well above our proportionate share. In short, an Armor career has never been more promising. Armor Branch intends to keep it that way!

One of the tenets of amphibious warfare is that men and their logistical support be moved from ship to shore quickly and in sufficient quantities to continue the operation. The answer . . . .



It was July 1942 and war had come to the far corners of the Pacific. So had the men of the United States. At Wellington, New Zealand, a group of curious onlookers gathered to watch the "Yanks" debark. The first American ground unit, the 5th Marines, had arrived and this alone was reason enough for the curious to be on the scene. But it was something new which the Marines brought with them that really caught the fancy of the New Zealanders that day.

From the harbor, a group of what at first appeared to be boats, headed toward shore. As a gasp went up from the crowd, the "boats" suddenly made a sharp right turn, hit the beach and kept right on going. The amazed New Zealanders were having their first look at the new American amphibious tractors, later to be more widely known as *amtracs*.[1]

Today, a quarter of a century later, descendents of the first *amtracs* are being used in combat against the Viet Cong and North Vietnamese Regulars by the Marine units deployed to Vietnam.

Although many remember the *amtrac* from World War II, the prominence of its role in amphibious assault appears to have been largely forgotten. In the well-known book, *Great Weapons of World War II,* not a single picture of an *amtrac* appears. In many other publications covering the war in the Pacific, there is frequently only a brief mention of the multiplicity of roles it played in nearly every amphibious campaign conducted by the Americans.

Yet the Marine Corps amphibious tractor must rank as one of the most successful combat vehicle developments ever undertaken in the United States. However, few people outside of the Marine Corps remember or know of the unique set of circumstances which led to its creation and the many

changes which the original *amtracs* underwent throughout the course of the war and up to the present time.

Logically, the amphibious tractor was a direct outgrowth of the early amphibious doctrine which the Marine Corps, along with the Navy, pioneered and developed between 1920 and the late 1930's.[2]

It was during these years that Major Earl H. Ellis and a few other farsighted officers of the Marine Corps had the unpopular notion that Japan would someday become a power opposed to United States polices and holdings in the Pacific. They reasoned that with the former German island groups known as the Carolines, Marshalls, and Marianas mandated to the Japanese by the League of Nations, that our country would in the future experience serious concern over Tokyo's plans for its eventual role in the Pacific.

With Japan's imperialist aspirations growing more apparent and further reinforced by these new acquisitions, she alone would be in a likely position to dispute our "Open Door" policy in China. True, we had naval bases in the Philippines and Guam, but the Japanese-mandate islands flanked our bases. If Japan were to build airfields or naval bases on them, our superiority in the Pacific would be seriously jeopardized.

MAJOR JOHN A. ESKAM, *USMC, was commissioned in 1956 after prior enlisted service. He has since served with the 1st Marine Division, Fort Pendleton, the 3d Marine Division, Okinawa and with the 12th Marine Corps District, San Francisco. His duty assignments have ranged from Amphibian Tractor platoon leader to battalion operations officer. He is a graduate of the U.S. Army Armor School Officer's Career Course. A veteran of the Korean War, Major Eskam is currently assigned to a Marine Corps logistics unit in Vietnam.*

. . . THE ALLIGATOR

by

MAJOR JOHN A. ESKAM
USMC

Marine Corps planners set out to develop the doctrine of amphibious warfare, write the plans and specify the need for equipment which might be required for such a complex form of warfare.

It was uphill sledding all the way. One of the problems was to convince the rest of the military establishment that the Marine Corps was best suited for this particular type of warfare by virtue of its duties with the Navy on land and sea. This was not an easy task, for within the Marine Corps itself there were numerous senior Marine officers who felt that future wars would be fought in much the same way as World War I. Thus, it was ever so gradually that the seed of this new concept took root and spread.

THE FIRST DAYS

One of the tenets of amphibious warfare is that men and their logistical support must be moved from ship to shore quickly, and in sufficient quantities to continue the operation. Some of the Pacific islands on which the early Marine planners envisioned amphibious assaults were fringed with dangerous coral reefs. They knew that the standard open whaleboats and motor launches of the Navy could not safely cross these reefs. Clearly, the need existed for an amphibious vehicle which could negotiate coral reefs as well as move supplies inland from a congested beach, through sand and other terrain.

The Marine Corps began experimenting with an amphibious vehicle developed by J. Walter Christie as early as 1924. This occurred during Fleet Problem Number Four conducted at Culebra off the Puerto Rican coast.[4] General Holland M. Smith, USMC, in his book *Coral and Brass* said;

> "As far back as 1924, we experimented with an amphibious tank called the 'Christie,' but had lost faith in it. In trials held that year the 'Christie' was put over the side of a ship and it worked fairly well in the water. Unfortunately, the captain of the ship lost his nerve at the sight of this strange monster wallowing in the waves and put out a boom and slung it back on the deck. After that abortive experiment, interest dwindled though we never lost hope of one day having a waterborne tank as a troop transport and combat vehicle."[5]

A new prospect did not arrive until the middle 1930's when a machine invented by Donald Roebling Jr., of Clearwater, Florida appeared on the scene. Mr. Roebling was an engineer and inventor who had retired to Florida for his health. Working independently, he developed a lightweight, tracked-vehicle, for rescue work in the inaccessible swamps of the Florida Everglades. He called his machine the *Alligator*.

The *Alligator* was constructed of a new material called aluminum. Roebling found through trial and error that this metal could not be worked as other metals. He also found that woodworking tools made the job of cutting aluminum much easier. Riveting was still another problem. Rivets made of aluminum could not be heated and driven as could steel ones. Many of these had to be replaced with aluminum alloy bolts. An innovation was Roebling's use of tracks as the means of propulsion on land and in water.[6]

The first *Alligator* was completed in 1935. It was 24 feet long, weighed 14,350 pounds, and was capable of doing a respectable 25 miles-per-hour on land and a disappointing 2.3 miles-per-hour in the water. This machine was powered by a 92 horsepower Chrysler industrial engine. Two years and three modifications later, the *Alligator* was shorter by four feet, lighter by five thousand pounds and equipped with a new track which had sealed roller bearings in place of bogie wheels.

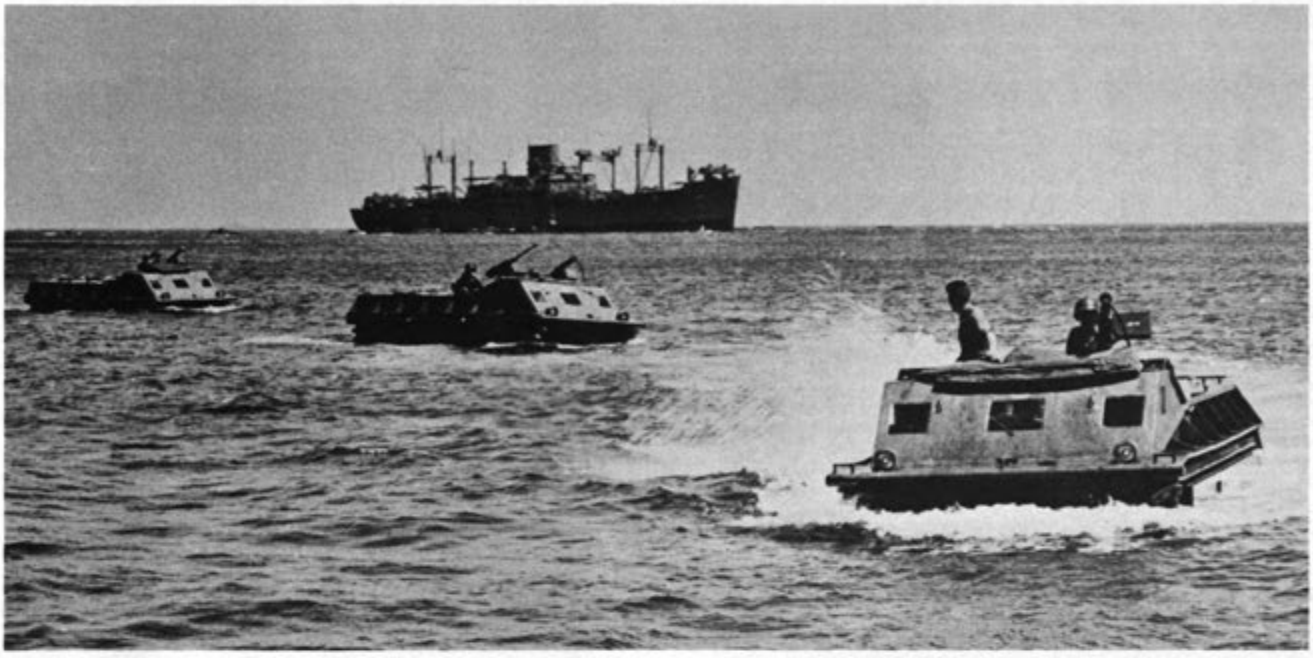
These roller bearings were a part of the chain-type track which rotated around grooved metal skids. The *Alligator* now weighed 8,700 pounds, could travel over 8 miles-per-hour in the water and between 18 and 20 miles-per-hour on land. It was also much more maneuverable.

Between 1937 and 1940, Roebling continued to refine his invention. It was during this period that the vehicle came to the attention of the Marine Corps. It happened this way.

During the course of a dinner, an article on the *Roebling Alligator* which had appeared in LIFE magazine was brought to the attention of Major General L. M. Little, USMC, Commanding General, Fleet Marine Force by Rear Admiral E. Kalbfus, USN. General Little in turn, was instrumental in having his chief of staff forward the article to the Commandant of the Marine Corps, Major General Thomas Holcomb. General Holcomb in turn asked the Equipment Board at Quantico to consider the military potential of the vehicle.[7]

In September 1938, members of the Equipment Board visited Mr. Roebling in Florida. The machine looked promising to the board members, but they quickly found that it would require modification to withstand the rigors of military use. Surprisingly, Roebling wasn't at all interested in a military application of the *Alligator*. He had developed his invention for humanitarian rescue purposes.[8]

This completely unexpected obstacle was overcome in September 1939 when Roebling was visited by Brigadier General E. P. Moses, President of the Equipment Board. General Moses convinced the reluctant inventor that the military needed the *Alligator*. To this day, it is not known whether the casualty evacuation capability of the *Alligator* was the trump card which General Moses used in persuading Mr. Roebling to redesign his tractor for military use.



Early editions of the "Alligator" head for shore during the battle for Guadalcanal in 1942.

By January 1940, Roebling had redesigned his vehicle with the characteristics desired by the Marine Corps. The major obstacle now remained funds for procurement. Headquarters, Marine Corps had no money for the purchase of a land vehicle. However, the Navy's Bureau of Ships did have funds for the development of landing craft and tank lighters. After many requests and an equal number of refusals by the Navy, the Marine Corps finally succeeded in having $20,000 of this fund diverted for the purchase of a "boat" which was, in reality, their much-needed amphibious tractor.[9]

In November 1940, the Bureau of Ships ordered 200 steel tractors for the Marine Corps.[10] Arrangements had been made with the Food Machinery Corporation of San Jose, California for production of these vehicles at their Dunedin, Florida plant. The Marine Corps dream of a truly amphibious vehicle had at long last become a reality.

In the spring of 1941, a small detachment of Marines was assigned to Dunedin to establish the first training center for amphibious track drivers and mechanics. In August 1941, this group received the first amphibious tractor from the assembly lines. It was designated the LVT-1.

However, training was to be much shorter than expected. Europe was already engulfed in war and the storm was ready to break over the Pacific. On the 7th of December, it did.

It was also in December 1941, that Company A, 1st Amphibian Tractor Battalion was formed at New River, North Carolina. The unit was composed of the officers and men who had been trained at Dunedin.[11]

The production of vehicles gradually increased so that by early 1942, elements of the 1st Amphibian Tractor Battalion were able to participate in actual training exercises. Ironically, these were conducted in the Solomon Island area of Maryland. This same unit was later to prove the value of the LVTs at another island group with the same name.

On the 7th of August 1942, the first American offensive action of the Pacific began at Guadalcanal.[12]

From that action until the end of the war, the *Alligators* were to continue to dramatically demonstrate their usefulness. They carried supplies and replacements from the ships to the beaches and on their return trips evacuated the wounded. They were also used to move artillery pieces and for bridging operations over rivers and streams. Constantly in demand for every conceivable job, their reputation for versatility grew.

However, these early machines were not renowned for their mechanical reliability, and the hard use they received in the adverse conditions of the South Pacific rapidly wore them out. One of the more glaring weaknesses of the LVT-1 proved to be the track and suspension system. Tracks came off easily when turning and the sealed roller bearings wore out quickly once penetrated by salt water or sand.

Recommendations for correcting these and other deficiencies resulted in a new and larger tractor, the LVT-2, developed by the Bureau of Ships in conjunction with the Food Machinery Corporation. This model, called the *Water Buffalo* was a more powerful and reliable vehicle utilizing a rear-mounted, 250 horsepower, radial-type Continental engine. It propelled the tractor by means of a long

drive shaft going forward to the manually selected transmission, then to a controlled differential and outward to each of the forward-mounted drive sprockets.

The vehicle carried 6000 pounds of cargo or 18 combat equipped troops. It had a land speed of 20 miles-per-hour and with luck could navigate at 7 miles-per-hour when waterborne. This design provided a cruising range of 150 miles on land and 75 in the water and remained the one used for the vast majority of amphibious tractors constructed during World War II. The LVT-2 first went into action at Bougainville in November 1943.

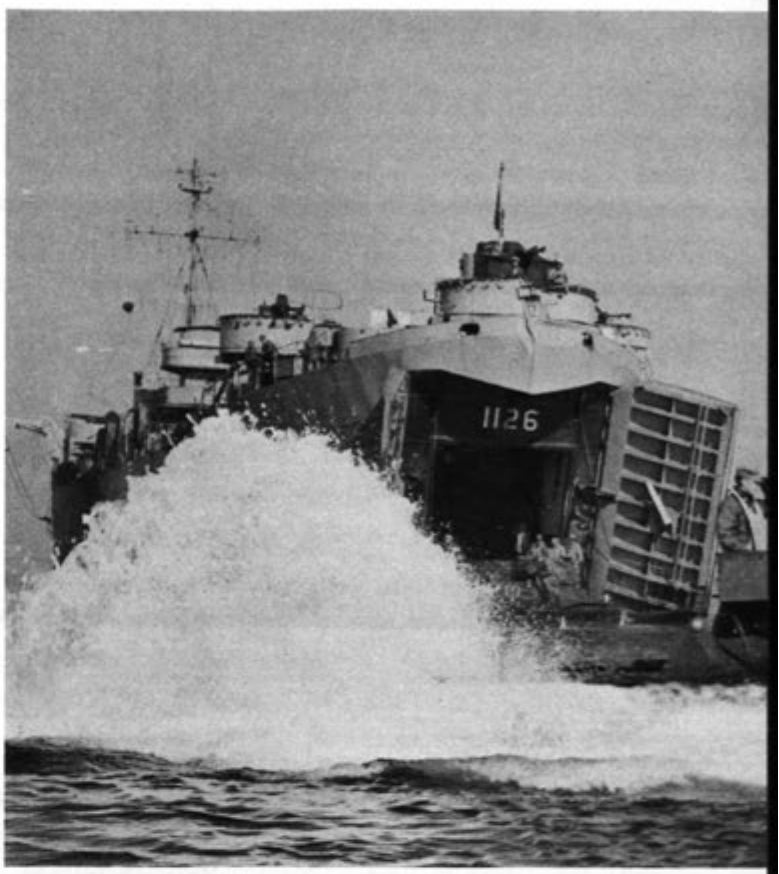
When the need for an amphibious vehicle capable of direct fire support was recognized, a hybrid tank was created by adding the M-3 light tank turret with 37mm gun. Armorplate was substituted for sheet steel. The modified LVT-2 was designated the LVTA-1, the "A" simply standing for "armor."

But the 37mm gun was too light. In March 1944, an open turret from an M-8 motor gun carriage equipped with a 75mm howitzer was substituted and the LVTA-1 became the LVTA-4. An additional modification was made in 1945 by incorporating power traverse for the turret and a gyro-stabilizer for the howitzer. This vehicle became the LVT-5, but did not arrive in time to see combat in World War II.

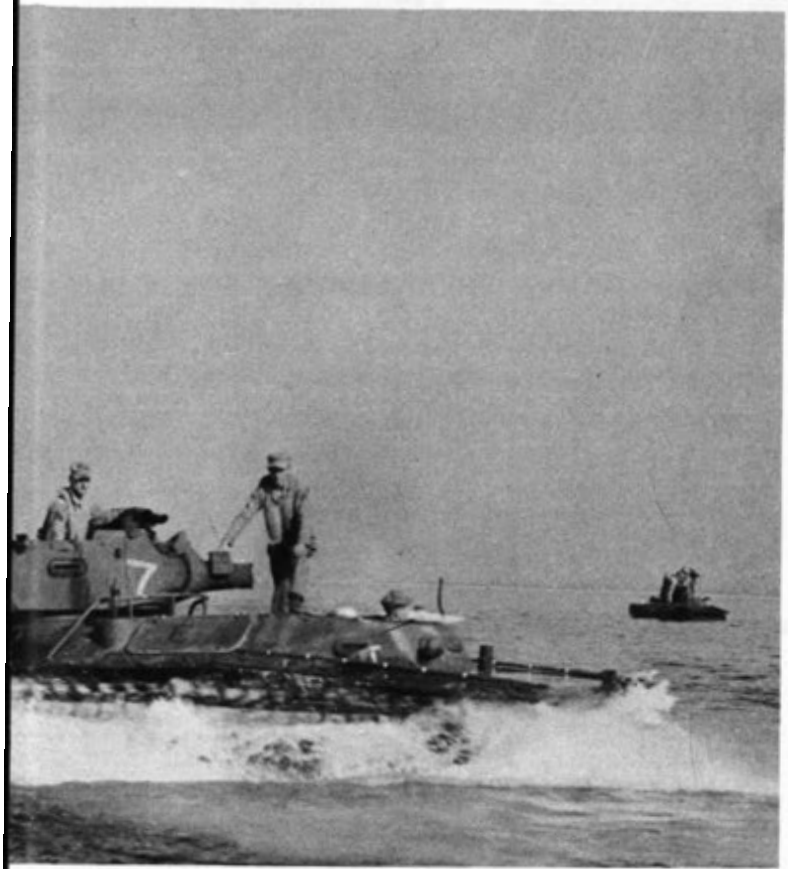
Realistically, none of these, from the LVTA-1 to the LVT-5, was a true amphibious tank and the Marine Corps never referred to them as such. The organizations equipped with them were called Armored Amphibian Battalions.

While one form of the LVT-2 was being modified as the LVTA-1, the basic LVT-2 configuration was modified by locating the engine directly behind the driver's cab. Additionally, a stern ramp was provided to ease cargo handling and to facilitate safer and faster debarkation of combat troops on enemy-held beaches. Heretofore, it had been necessary for them to climb over the side of the vehicles to deploy. The ramp corrected a cumbersome and risky process.

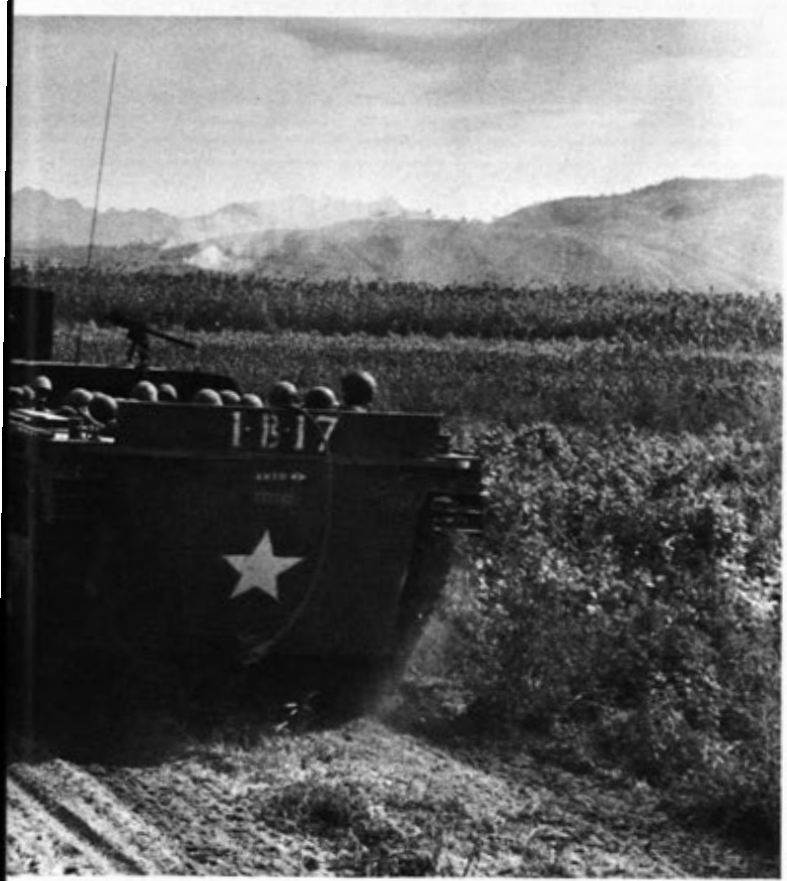
This brings us to the LVT-3 which was Borg-Warner's venture into the amphibious tractor field during World War II. This vehicle was produced in 1944 and represented a distinct departure from the tractors evolved from the basic LVT-2 design. It was powered by two Cadillac V-8 engines, located on the port and starboard side of the tractor. Coupled to each engine was a hydramatic transmission. These delivered torque to each drive shaft through a right angle drive to the center of a controlled differential and outward to each of the forward mounted final drives. This open-topped vehicle was primarily a cargo carrier and had a manually winched stern ramp.



[Above] The gyro-stabilized 75mm howitzer of the LVTA-5 is clearly visible as the amphibious tractor churns away from an LST during landing operations.



(Below) A Marine AMTRAC of the 5th Marine Regiment, First Marine Division rolls toward the Han River following the Inchon landings.



The twin engines and drive trains proved more reliable than the Continental radial system employed on earlier LVTs and had the added advantage of being easier to maintain. The *Bushmaster,* as it was named, also proved to be more efficient, especially during its debut in the Okinawan campaign, where the automatic transmissions kept the vehicles moving despite the mud caused by two weeks of extremely heavy rain. The older tractors, also used in great numbers during the campaign, simply bogged down because the drivers were unable to shift the manually operated transmissions quickly enough.

The LVT-3 continued in service with the Marine Corps during the postwar years. In 1949, its top was covered with aluminum cargo doors and it received a machinegun turret. With this modification the vehicle became the LVT-3C, the "C" meaning that it was covered. During the Korean War it was the LVT-3C which supported the famous Inchon landing, often called one of the most perfectly executed amphibious operations in history.

The LVTA-5s, the armored amphibians, also received modifications during this period. The turret was covered and a false bow was added to increase bouyancy in the water. The only change in designation was the addition of the words "modified."

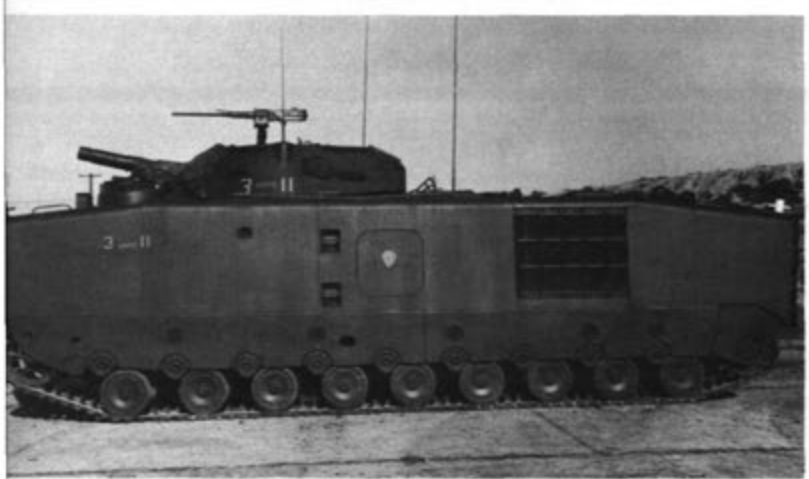
Despite the success of the Inchon landings it became increasingly apparent as the Korean War continued that the LVT-3C and LVTA-5 had become obsolete. However, new developments were already being considered. Under a Bureau of Ships contract, the Ingersoll Kalamazoo Division of Borg Warner Corporation was performing extensive research and investigation covering every aspect of the existing amphibious vehicles. Their goal was the design and production of an entirely new and modern series of LVTs. The result was the LVTP-5 "family" of vehicles, issued to troop units in 1955-1956 and still in use today.

In contrast with the past, the present series represents a unique achievement in standardization of major components, but specialization according to tactical roles. Four distinct vehicles are built on the same hull, using the same track and suspension systems. All but one use the same power train.

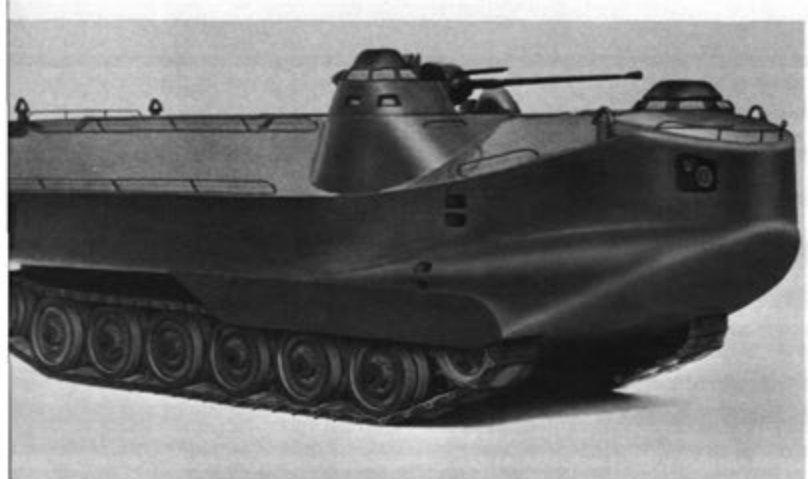
A LOOK AT TODAY'S VEHICLES

LVTP-5 (*Landing Vehicle Tracked, Model 5*). This is the principal tractor organic to the Amphibian Tractor Battalion. It is capable of transporting large groups of personnel, combat equipment vehicles and supplies. It can be loaded and unloaded either through the cargo hatches or the bow ramp. This is the basic vehicle of the present family of LVT's. Therefore most of its characteristics are common for the other types presently used.

LVTP-5s roll inland during "Operation Piranha" conducted in September 1965.



The LVTH-6 is equipped with a 105mm T96E1 howitzer making it ideally suited for providing close fire support.



The shape of things to come may well be represented by the new LVTPX-12 now under development.

LVTH-6 (*Landing Vehicle Tracked, Howitzer, Model 6*). This is the armored amphibian used to provide close fire support during a landing operations by initially delivering direct fire on landing beaches, and after landing by providing field artillery fire support to operations ashore. This versatile vehicle's true potential is yet to be tapped. It mounts a T96E1 howitzer with gyrostabilizer, a coaxial machinegun and a .50-caliber anti-aircraft machinegun on top of the turret. It can carry 100 rounds of 105mm ammunition while waterborne or 151 rounds on land. It has a crew of six.

LVTP-5 (*Command*). This is the command vehicle version of the standard LVTP-5. It is used by the supported unit commander to provide him with all the necessary communications needed during the ship-to-shore movement and initial operations ashore. Its additional radios allow the commander to communicate with the air and naval gunfire, artillery, and infantry elements of an amphibious assault. It is a true mobile command post equipped with writing desks, seats and interior lighting.

LVTR-1 (*Recovery Vehicle*). This is the versatile recovery and maintenance tractor used by all amphibian tractor companies. It carries a recovery winch powered by an auxiliary engine, a lifting winch, an air compressor and an arc welder. It is also equipped with the necessary power tools, hardware and accessories for repairs and recovery of other LVTs in the field. Because of the additional weight of all accessories, it is not a good towing vehicle.

LVTE-1 (*Landing Vehicle Tracked, Engineer, Model 1*). This is a special purpose vehicle used primarily for clearing minefields. It does this by firing a rocket propelled line charge onto the mined area and detonating it electrically from within the vehicle. This can be done while the vehicle is still waterborne. As the tractor comes ashore, it lowers its mine excavator blade and clears a 12-foot wide lane to a depth of about 16 inches. The mine excavator blade is quickly detached in emergencies by means of explosive bolts. This blade will displace 10,000 pounds of water and is filled with styrofoam to retain buoyancy in case of puncture. This vehicle is powered by an air-cooled version of the same engine used in the other vehicles. It has no bow ramp since it carries no cargo other than the hydraulically lifted pallet containing the line charge. There are eight such vehicles in the Headquarters and Service Company of each Amphibian Tractor battalion. Their crews are a composite of both engineer and amphibian tractor personnel.

The great grandson of the first "Alligator," the LVTE-1 presents an imposing sight as it supports Marines of the 2nd Battalion, 5th Regiment in action against an entrenched Viet Cong unit.

CONCLUSION

This then, is a brief story of the *Alligator* and the vehicles that followed it. They were not then nor are they now the panacea of all the problems inherent in the amphibious assault. It is true that through refinement and modernization their capabilities have been increased, but it should be emphasized that the amphibian tractor has always been a compromise between a boat and a land vehicle. It cannot do all the things that each of the others can. It remains for the skilled engineer/designer to solve that frustrating problem. The refinement continues—FMC Corporation has just recently received a contract to develop a follow-on amphibian to replace the LVTP-5. This vehicle under design study is called the LVTPX-12.

Today, we know that the campaigns of the Central Pacific in World War II could not have been successful without the amphibious tractor. And as long as an ocean laps the shores of potential enemies, we will still have to go ashore to fight—just as we have done in the past and just as we are now doing in Vietnam.

FOOTNOTES

[1]Croizat, *The Marines' Amphibian,* Marine Corps Gazette, June 1953, p. 40.

[2]Isely and Crowl, *The U. S. Marine and Amphibious War,* (Princeton University Press, Princeton, New Jersey, 1951), Chap. I & II.

[3]*Ibid.*

[4]Croizat, *The Marines' Amphibian,* Marine Corps Gazette, June 1953, p. 42.

[5]Smith, *Coral and Brass,* (Chas. Scribner's Sons, New York, N. Y., 1949), p. 133.

[6]*Research, Investigation and Experimentation in the Field of Amphibian Vehicles,* Borg-Warner Corporation, Final Report 1957, Marine Corps Contract No. 66245. Declassified from Confidential by CMC ltr A04F-wj of 12 May 1960.

[7]Croizat, *The Marines' Amphibian,* Marine Corps Gazette, June 1953.

[8]*Ibid.*

[9]*Ibid.*

[10]Smith, *Coral and Brass,* (Chas. Scribner's Sons, New York, N. Y., 1949), p. 97.

[11]Croizat, *The Marines' Amphibian,* Marine Corps Gazette, June 1953, p. 43.

[12]*Ibid.*

ARMOR LEADERS

GEN CREIGHTON W. ABRAMS
DEPUTY COMMANDER
U. S. MILITARY ASSISTANCE COMMAND, VIETNAM

GEN RALPH E. HAINES, JR.
VICE CHIEF OF STAFF
UNITED STATES ARMY

ASSUME NEW POSTS

GEN JAMES H. POLK
COMMANDER-IN-CHIEF, U. S. ARMY EUROPE
SEVENTH ARMY AND CENTRAL ARMY GROUP

MG JOSEPH A. McCHRISTIAN
COMMANDING GENERAL
2D ARMORED DIVISION

MG E. C. D. SCHERRER
COMMANDING GENERAL
4TH ARMORED DIVISION

MG JOHN E. KELLY
ODCSPER
UNITED STATES ARMY

MG JAMES W. SUTHERLAND, JR.
DCS/OPERATIONS
USAREUR AND SEVENTH ARMY

LTG GEORGE R. MATHER
COMMANDING GENERAL
THIRD CORPS

LTG ANDREW J. BOYLE
COMMANDING GENERAL
FIFTH CORPS

LTG JAMES D. ALGER
CHAIRMAN
INTER-AMERICAN DEFENSE BOARD

3rd Place

CLEAR as a CLOUDY DAY

By
CAPTAIN WILLIAM E. HOCKER

Regardless of rank or assignment, every officer in the Army is a writer. His ability to put together words, phrases, and clauses to convey an idea may range the entire spectrum of descriptive adjectives. Bad or good, indifferent or interested, dull or imaginative, he is still a writer; and he usually has a captive audience. The army writer can do one of two things: provide clarity or produce confusion.

There must be some explanation for the confusion and verbal nonsense circulated within the Army under the guise of something called "military writing." What are the reasons behind this verbal dilemma? The first reason is the opinion held by some officers that anyone can write clearly without any noticeable effort or little attention to the basic rules of English usage. Just sit down and write. The belief that effective writing requires innate ability and cannot be acquired through practice is a second reason. This idea offers little hope for most of us army writers. The third reason is that some officers subscribe to an unfounded argument that military writing is or has to be different from other types of English exposition. Good English writing is good English writing regardless of where it is found, and the converse of that is equally true.

Learning to write effectively requires work and attention to detail. Even the best writer must strive for improvement. Verbal effectiveness is not necessarily the child of natural ability. Learning to write well, like most other achievements, is 20 per cent talent and 80 per cent practice. The average officer may never become a novelist, but he can learn to express himself with the clarity and the accuracy expected of him.

It is necessary to recognize individual deficiencies, however, before improvements can be made. No officer worth his salt would attempt any type of tactical maneuver or employment without first developing a sound plan and then vigorously executing it. Unfortunately, that same officer often uses pencil and paper in combination to produce verbal disaster. Sound tactics are achieved through practice and a critically conscious effort to learn from previous experiences; effective written communication is achieved in an identical fashion.

There are many qualities which characterize an effective writer. The most important of these is that his writing does what it is supposed to do. The proficient writer accomplishes this by being aware of his reading audience, by using proper diction, and by knowing thoroughly what objective or purpose he wants his writing to serve.

CAPTAIN WILLIAM E. HOCKER, *was commissioned in 1962 from Western Kentucky University. He graduated from the Armor Officer Basic Course in 1962 and was assigned to the 3d Armored Cavalry Regiment. During his tour with the 3d Cavalry, he served as platoon leader, squadron and regimental staff officer, and troop commander. In 1966, he returned to the United States to attend the Armor Officer Career Course.*

"You communicate effectively only when you use words and ideas your reader understands easily. Whether they 'read you' with ease and understanding will depend on their knowledge and experience —not yours."[1] This requires the military writer to be as versatile as possible. No one enjoys reading something that he cannot understand, nor does the reader appreciate writing that is condescending. The gist of writing is to communicate with the reader, not up to or down to him. Being aware of the reader's identity requires the writer to tailor his work to fit this reading audience and to fit the occasion or situation.

People like to be treated as individuals, and writers must oblige them.

Adjutants are often perplexed by the number of letters, endorsements, and other miscellaneous correspondence which they must write for their commanders. As a result of this perplexity, the adjutant often will use a standard letter or standard endorsement. Use of these impersonal bits of writing should be limited to the *most routine correspondence*. The effective writer will avoid them in most instances in which people are involved. It seems hardly fair to send the same letter to a lower-ranking enlisted man, who has been selected "Soldier of the Month," that is sent to a platoon leader, who received the highest score in the battalion on a platoon training test. People like to be treated as individuals, and writers must oblige them. Correspondence which seems routine to the writer may be of paramount interest to the reader. Standard letters usually indicate to the reader that his problem, his accomplishment, or his assigned duty is considered to be unimportant by the writer.

The writer's consciousness of his reading audience and the method the writer uses to show his interest often will determine the action that the reader will take. The Archivist of the United States in the General Services Administration handbook, *Plain Letters,* recommends the principles of shortness, simplicity, strength, and sincerity as the key to success in writing.[2] These principles give the writer a good starting point in understanding and appreciating the reader's point of view. Their use will insure that your reader "gets your message." Directives are likely to go unheeded if they are not understood. Requests lacking clarity will not be answered promptly. Suggestions which are not simply stated will not be considered. The consistent use of short, simple, strong, sincere writing will insure that your reader gets the message which you intended.

The words a writer chooses must be capable of carrying to the reader an accurate account of the writer's thoughts.

Diction, or word choice, is a matter to which the aspiring military writer must pay special attention. "An extensive vocabulary is a fine asset, but better for catching than for pitching."[3] It is a foolish notion that readers will be impressed by big words. Readers are impressed by the clarity of ideas. The words a writer chooses must be capable of carrying to the reader an accurate account of the writer's thoughts. "What is the best word?" is a difficult question to answer. George G. Williams, a noted writer and teacher of writing, reports that from 70 to 78 percent of the words used by Somerset Maugham, Katherine Mansfield, John Galsworthy, Sinclair Lewis, Charles Dickens, and Robert Louis Stevenson were of one syllable.[4] Why did these successful writers choose little words? They selected them because they carried sharp, precise signals to the reader and enabled the reader to see exactly what they were describing or telling. Language would be regarded "as an immense hoard of treasure to which writers resort for words. In this accumulated hoard is hidden one word for every purpose, and only one word. All others besides the one are mere make-shifts with which no self-respecting writer could be content."[5]

In an effort to show their etymological knowledge, some writers cloud and confuse their writing with big, long, unfamiliar words. This clouding or muddling is called obfuscation and has no place in effective writing.[6] If the word *obfuscation* is not a clear enough example of its own meaning, then consider this gem: "This semi-automatic, small-caliber shoulder-fired weapon, because of mechanical derangement, ceased to function." In other words, *the rifle jammed!*[7] The big-word user defeats his purpose. Remember it is the reader's knowledge that counts—not yours.

It appears to be a common practice in the Army to adopt pet words and to use them indiscriminately. This practice leads to stilted writing, and stilted writing leads to the reader's disinterest and boredom. Words, like antibiotics, which are used too often lose their punch. Broad or general terms will bring about a general reaction on the reader—not the specific reaction which the writer desires. When words having specialized meaning are used for something other than their acknowledged purpose, the reader will be confused by them and his reaction will not be the one wished for by the writer. An example of this is *diction* which means *word choice,*

not *enunciation, cognizance* means *knowledge,* not *jurisdiction; verbal* means *pertaining to words,* and it is not synonymous with *oral* which means *uttered* or *spoken.* Words should describe accurate and vivid situations or conditions. A writer's knowledge of his subject is often betrayed by the diction he uses.

Writers sometimes find themselves in verbal trouble by imitating the diction of their superiors. This practice should be avoided unless you are absolutely sure of the definition of a particular word and understand fully the context in which your boss used it. Superiors are not infallible in their choice of words, and to imitate them may mean that you are compounding the error. When the boss spoke to you, he may have had the exact opportunity to use his word—you, the writer, may not have that "exact" opportunity. The best method for insuring proper diction is to look up the questionable word in a dictionary.

The practice of using recently coined words is poor and unnecessary. There is certainly a sufficient stock of acceptable words to provide any writer a wide choice suitable to any situation without using words that are of questionable origin and meaning. This is said not to hamper the healthy and normal development of the English language, but to remind you that the coinage, acceptance, and publication of new words is primarily a job for lexicographers—not military writers. Words such as *accurize, optimize, cannibalize, ruggedize, charterize,* and *dieselize* certainly leave something to be desired.[8] They would be more aptly named *Armese* (not in the dictionary) than English.

Good writing is nothing more than organized thinking.

Writing anything is a process exactly like building a bridge. Before the building starts, a plan must be drawn-up and a foundation laid. If the bridge is not planned and foundation not firmly laid, it cannot be expected to support much traffic. A piece of writing will not have much meaning if it is not planned before words are placed on the paper. Good writing is nothing more than organized thinking. Since military writing serves one of three purposes: to direct, to explain, or to persuade, the writer must know precisely what he wants to do and how he proposes to do it. Writing must serve a single purpose. Until the writer has done his planning and identified his purpose, he should refrain from writing anything which he wishes to have read.[9]

The use of outlines is helpful for even the most experienced writer. After the outline is finished, continue to do research and improve your knowledge about the subject. This process is called gaining authority. Don't avoid re-writing; in most instances the second draft is a marked improvement over the first. Before releasing your piece of writing, read what you have written, or have someone else read it. If it is not clear, unified, and coherent, write it again.[10]

A large part of your image as a commander, your effectiveness as a staff officer, and your usefulness as an officer of the Army depends on how well you communicate your ideas in writing to others.

All of this discussion implies that the military writer should strive for accepted usage. Accepted usage, like good manners, serves a variety of purposes. It helps us to understand each other, denotes self-respect and respect for others, and it enables us to know what to do or to expect in a given situation. Substandard grammar, esoteric diction, and poor punctuation cloud the meaning and indicate lack of preparation or the disinterest of the writer. The oft-quoted adage, "Anything worth doing is worth doing well," surely applies to military writing.

Improving your skill as a writer is as much a part of the military profession as improving your skill with tactics and your understanding of men and missions. In fact, your skill as a writer is so integrally a part of these other responsibilities that to overlook the need for improving what you write is foolish. A large part of your image as a commander, your effectiveness as a staff officer, and your usefulness as an officer of the Army depends on how well you communicate your ideas in writing to others.

FOOTNOTES

[1]Department of the Army Pamphlet No. 1-10, *Improve Your Writing* (Department of the Army, January 1959), p. 5.
[2]*Ibid.*, pp. 21-22.
[3]*Ibid.*, pp. 12.
[4]George G. Williams, *Creative Writing for Advanced College Classes* (New York: Harper and Brothers Publishers; 1954), p. 96.
[5]*Ibid.*, p. 94.
[6]DA Pamphlet No. 1-10, *op. cit.*, p. 14.
[7]N. J. Anthony, "Battered Military Ornaments," *Army,* June 1961, p. 70.
[8]*Ibid.*
[9]DA Pamphlet No. 1-10, *op. cit.*, pp. 5-11.
[10]*Ibid.*

THE BLACKHORSE KICKS BACK

A SPECIAL COMBAT REPORT

CAPTAIN JOHN F. VOTAW, *Armor, was commissioned in 1961 from the United States Military Academy. That same year he graduated from the Armor Officer Orientation Course. He graduated from the Ranger School and Airborne School in 1962. After serving as platoon leader and squadron adjutant, 3d Squadron, 4th Cavalry, 25th Division until 1964, and as company commander, 1st Battalion, 69th Armor, he attended the Infantry Officer Career Course, graduating in 1966. He is now troop commander, Troop A, 1st Squadron, 11th Armored Cavalry Regiment.*

Day and night, armored vehicles of the 11th Cav swept into areas not under government control giving the Viet Cong no respite.

The Viet Cong main force regiment had been idle for several months concealed in their base areas deep in the jungle. The increasing influence exerted by the 11th Armored Cavalry Regiment in Long Khanh and Bien Hoa provinces had resulted in the initiative being seized from the Viet Cong.

The local villagers in and around Xuan Loc began to notice that the cavalry was everywhere. Day and night, armored vehicles moved quickly from their base camp to the far reaches of an area which had not been under government control for some time. The Viet Cong guerrillas began to feel somewhat hungry; some were not returning to visit their families as regularly as they had before the arrival of the Blackhorse Regiment.

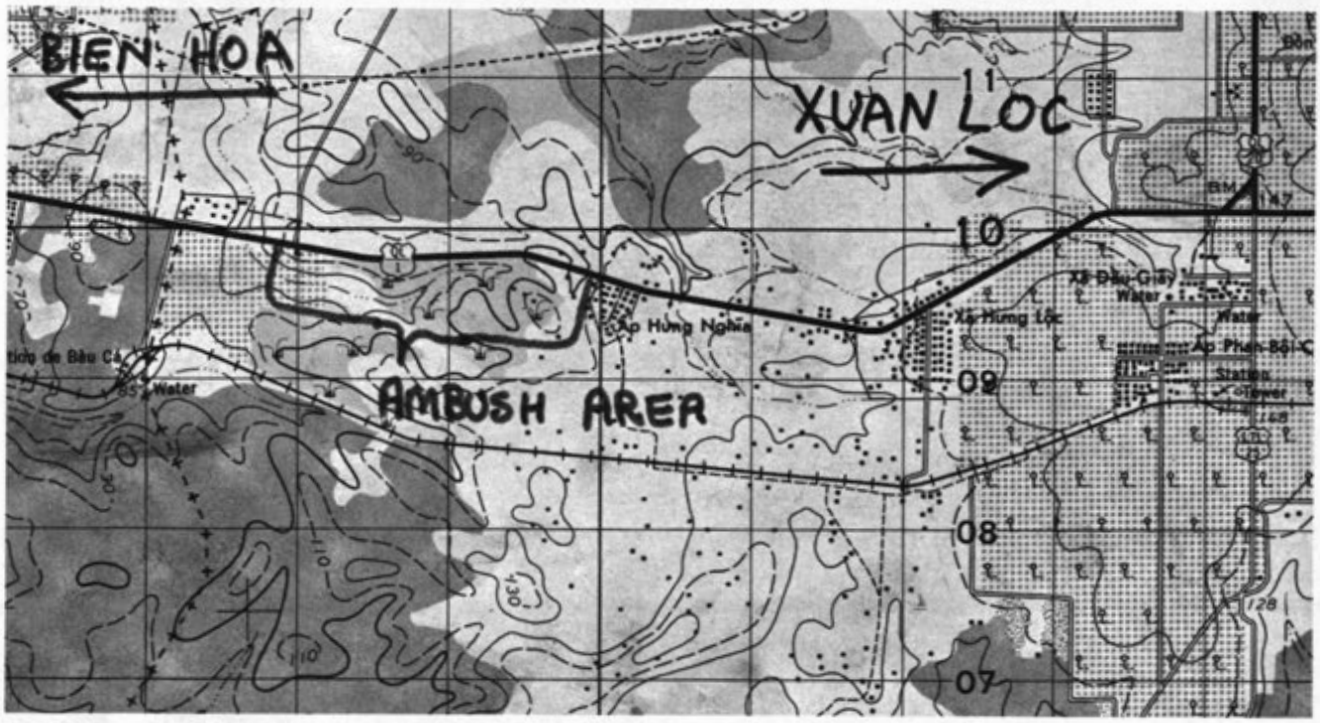
The Viet Cong had to act. U. S. intelligence sources indicated that the VC would begin offensive operations in November 1966 by ambushing and harrassing allied convoys and by interdicting supply and communications routes. The exact capability of the enemy to undertake a major campaign against the Blackhorse Regiment was unknown because airstrikes, disease, and desertion had most certainly taken their toll during the period of inactivity in the VC base camps.

The 2d Squadron was guarding the base camp at Long Giao. The 3d Squadron was involved in Operation Uniontown, an exercise to defend the Long Binh logistical complex. The 1st Squadron was away on Operation Attleboro. The time must have seemed right to the VC planners.

However, on 20 November the 1st Squadron closed into their staging area at Long Binh after escorting the 173d Airborne Bridade over the 110 kilometer route from Minh Thanh to Bien Hoa. This march closed out Attleboro.

The following morning LTC Martin D. Howell, commanding the "First of the Blackhorse" ordered CPT Garrott, CO of C Troop to send one platoon of ACAVs (Armored Cavalry Assault Vehicles) to escort 50 trucks from Long Binh to the regimental base camp 11 kilometers south of Xuan Loc. 1LT Neil Keltner was assigned to command the convoy. He departed the staging area at 0930 with nine ACAVs and the trucks.

At this time, unknown to the cavalrymen, two battalions of the VC 274th Regiment, reinforced with heavy weapons, antitank munitions, and command and control elements from regimental headquarters, were making final preparations at an ambush site. As the cavalry passed Ho Nai and turned east on Route 1, a VC flashed the message "Convoy coming" to his headquarters at the ambush site 20 kilometers to the east.



Battle map shows why the Viet Cong selected their ambush site . . . but they didn't count on the "Blackhorse" reaction.

Keltner had organized his convoy so that the trucks were protected front and rear by the ACAVs. (See figure 1) As he approached the ambush site and began to pass through it he received a message from squadron headquarters at Long Binh that intelligence sources reported a sizeable enemy force at coordinates YT2809. As he was plotting the location on his map, his lead elements began to receive small arms and mortar fire. Because the initial fire was from small arms, he believed the force to be a small one and ordered his elements in contact to break on through the enemy.

The two lead ACAVs and the first group of trucks passed safely through and were ordered to continue on the base camp. 1LT Keltner did not realize that the two rear ACAVs had halted the last and center groups of trucks and that ACAVs 13 and 18 were bearing the brunt of the VC firepower in the killing zone.

At this time the squadron commander put the remainder of C Troop, B Troop and D Company on the road to the ambush site while he himself took to his chopper to get to the decisive point. The squadron S-3 (Air) had begun to dispatch flights of Air Force jet fighters to the scene. 1LT Keltner, assisted by LTC Howell and the FAC overhead, called in their firepower. Squadron armed helicopters began arriving at the ambush area and started machinegun and rocket runs on the enemy.

One ACAV and three trucks had been hit and the fight was growing. Mounted in ACAV C-16, and with ACAV C-10 along, 1LT Keltner moved to extricate his halted elements. After going about 1000 meters back to the west he found C-13, battered but still fighting, proceeding on eastward. It had been hit by 4 recoiless rifle rounds, mortar fire, and grenades. Keltner dropped C-10 off to assist in the evacuation of the crew from the burning track and continued on by himself.

By now the VC probably had received word that American reinforcements were rolling from Long Binh because they began to withdraw.

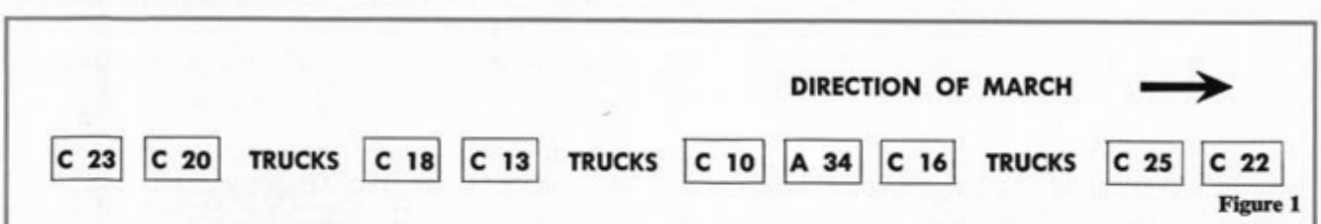


Figure 1

Like a well drilled football team, the men of the 11th swing their vehicles into a herringbone formation ready to react if attacked.

As 1LT Keltner proceeded west from C-13 he called for a dustoff for the crew of that stricken vehicle. Just at that moment he saw about 10 VC soldiers cross the road from north to south. He killed three of them with his .50 cal machinegun. Moving on, he began to receive intense enemy fire; his left gunner was shot and killed. A recoiless rifle antitank round penetrated the left side of the ACAV wounding Keltner in the leg and then passed out the other side of the vehicle. This same round also destroyed his radio.

He continued moving until he arrived at C-18. There, still under fire, he checked the ACAV, found the driver dead and began a quick, but unsuccessful, search for the crew. (The crew members were later found protecting their critically wounded vehicle commander in the elephant grass beside the place where the vehicle had received the first of six hits. The driver, hoping to decoy the VC, moved C-18 on up the road to where Lt Keltner found it with the driver dead in his seat.) 1LT Keltner then moved on firing at the enemy as he went. Passing the location where four of the escorted trucks had been destroyed and were burning, he paused momentarily to render first aid to the truck drivers and then continued to the western end of the ambush area where he jumped on ACAV C-23 to regain communications.

Then he saw elements of B Troop arrive and swing to the north. Actually, C Troop (-) arrived first having covered the distance in less than 30 minutes. But it had swung south to the railroad tracks out of Keltner's sight or hearing.

Realizing that reinforcements had arrived and having accounted for his entire command, 1LT Keltner turned around and made repeated passes through the ambush killing zone pouring machinegun fire into the retreating enemy. He continued the fight in true cavalry fashion, refusing medical attention for his wounds while there was still a chance to inflict casualties on the enemy.

Above the battle area in his command helicopter, the squadron commander saw the opportunity to hit the retreating enemy in the flank and rear with C Troop (-) from the west and with A Troop (then securing 1st Howitzer Battery which was under control of the regiment at YT3200) from the southeast.

Lt Stewart, 2d Platoon, C Troop, was aggressively pushing to the east along the railroad tracks when a man dressed in black pajamas emerged from the jungle, turned, smiled and waved at Stewart's ACAV, and began to move south. Lt Stewart had been warned that there were ARVN soldiers in the area so he hesitated to fire at this seemingly friendly type. Just then a second man emerged from the jungle carrying a 57mm recoiless rifle. Lt Stewart shot and killed both men and captured the weapon.

There were many acts of uncommon courage by members of the "First of the Blackhorse" throughout the day's fighting and the night occupation of the battlefield that followed.

SSG Ballard, Troop A Supply Sergeant, and SP5 Wagner were riding in the convoy in A-4, the troop supply truck. When a VC soldier charged the truck with a hand grenade, SSG Ballard calmly took aim with his .45 pistol and shot and killed him.

A five-ton wrecker driver stopped his wrecker and removed a Conex container, which he believed had classified papers inside, from one of the four destroyed trucks, placed it on another truck and moved out.

The driver of C-13 personally saw to the evacuation of his crew from the damaged and burning ACAV, which later exploded.

LTC Howell decided to occupy the battlefield to indicate to the villagers in the area who had won the day. The VC attempted to return during night to remove their dead, wounded and weapons. They were surprised by withering fire from the Cavalry.

Documents and material seized on the battlefield identified two enemy battalions and indicated that the enemy ambush was conducted by a regiment.

This VC ambush and the successful counterattack by the "First of the Blackhorse" illustrated the soundness of the following principles:

a. When attacked by the VC, "think big." Use every bit of artillery and airpower available and keep pouring it on while there is still any possibility of inflicting casualties on the enemy.

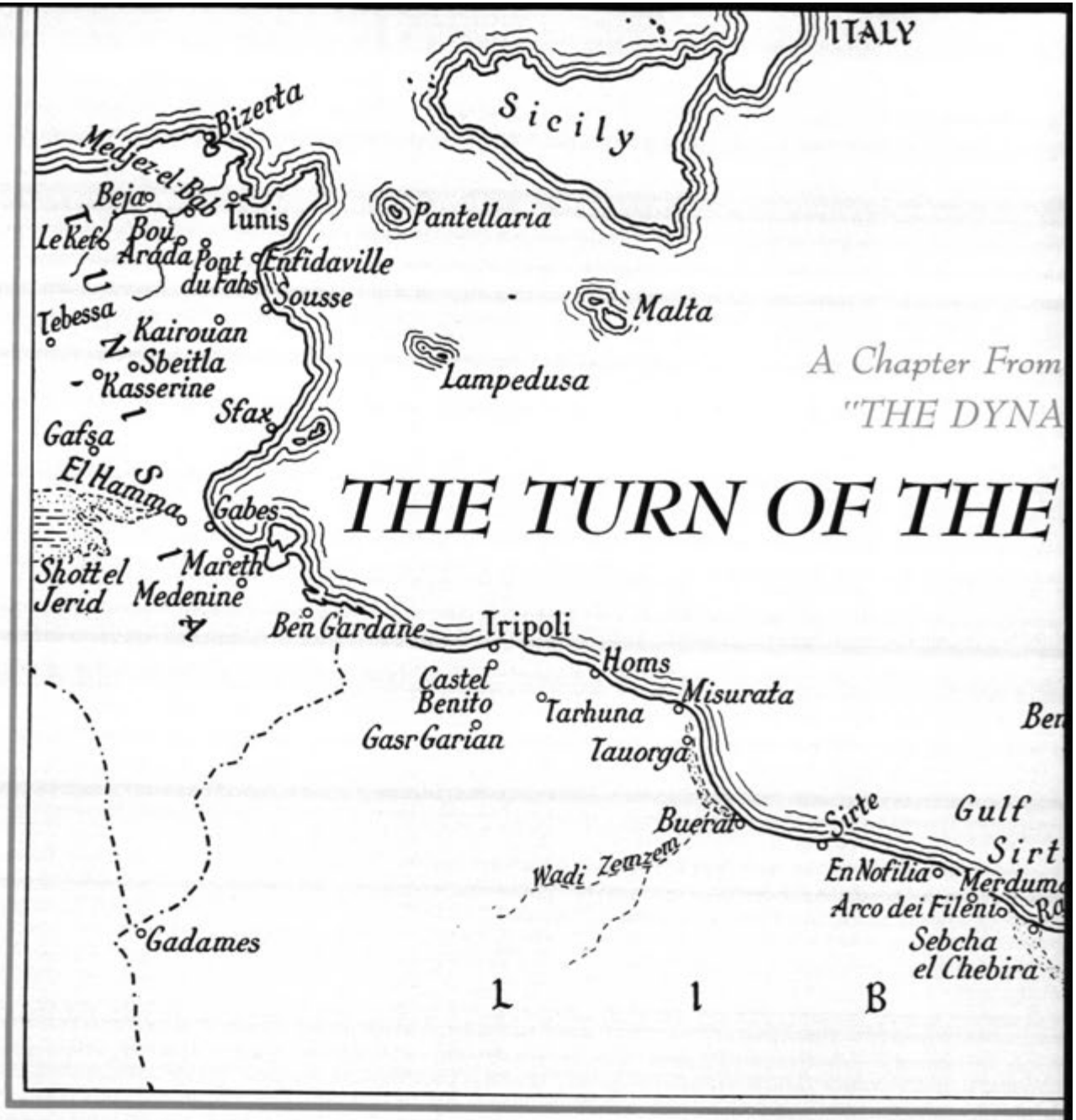
b. The "herringbone" formation is the most effective way for armored cavalry to stand and fight from the road until fire superiority can be achieved. This formation allows all guns to be fired and provides for mutual support between vehicles.

c. The cavalry maxim of gaining and maintaining contact is particularly important in the counterambush. The VC are placed at a distinct disadvantage when they attempt to face the tremendous firepower of the ACAV.

d. Relentless pursuit following an ambush yields the best results because one can often overrun the base areas and communication installations to the rear of the battle site. Superior relative mobility allows the cavalry vehicles to strike the retreating enemy in the flanks and rear. In most cases the VC do not blaze trails coming to the ambush site. They use existing trails and footpaths so it is often possible to run them down.

e. Even though the objective is the enemy and not ground, physical occupation of the battle area assists in reassuring the local civilians that we have actually won the field of battle. In addition, this prevents the VC from using our leaving the area as a basis for false propaganda.

Combat reports indicate that the herringbone formation is one of the most effective ways for armored cavalry to stand and fight from the road until fire superiority can be achieved. ACAVs of Alpha Troop, 1st Squadron.



The Battle of El Alamein is one of the more famous battles of World War II. It is often described as being a turning point in the war against the Axis. *In fact, the Battle of Alam Halfa more truly marked the turning of the tide. El Alamein merely confirmed and exploited the military decision which was determined in the Battle of Alam Halfa.* Before exploring this contention further and describing the circumstances of this clash between the armies of Rommel and Montgomery, let us review the preceding principal events.

The war in North Africa began on 11 June 1940 with Italy's declaration of war. The first major event was the invasion of Egypt from Libya by the Tenth Italian Army led by Marshal Graziani. After advancing to Sidi Barrani, however, this attack halted for alleged logistic reasons. Determined to seize the initiative, General Wavell, Commander-in-Chief Middle East, ordered the Western Desert Force (later to become Eighth Army) under Lieutenant General O'Connor to attack in December. This surprise but limited operation was so successful that the British were able to rout the Italians, driving them across Cyrenaica (the eastern portion of Libya) and destroying the Tenth Italian Army. Halting their advance at El Agheila, the gateway to the western portion of Libya named Tripolitania, the British turned their attention to the support of Greece. Simultaneously, Rommel and the famous *Deutsches Afrika Korps* began arriving in Tripoli to support the Italian position in North Africa.

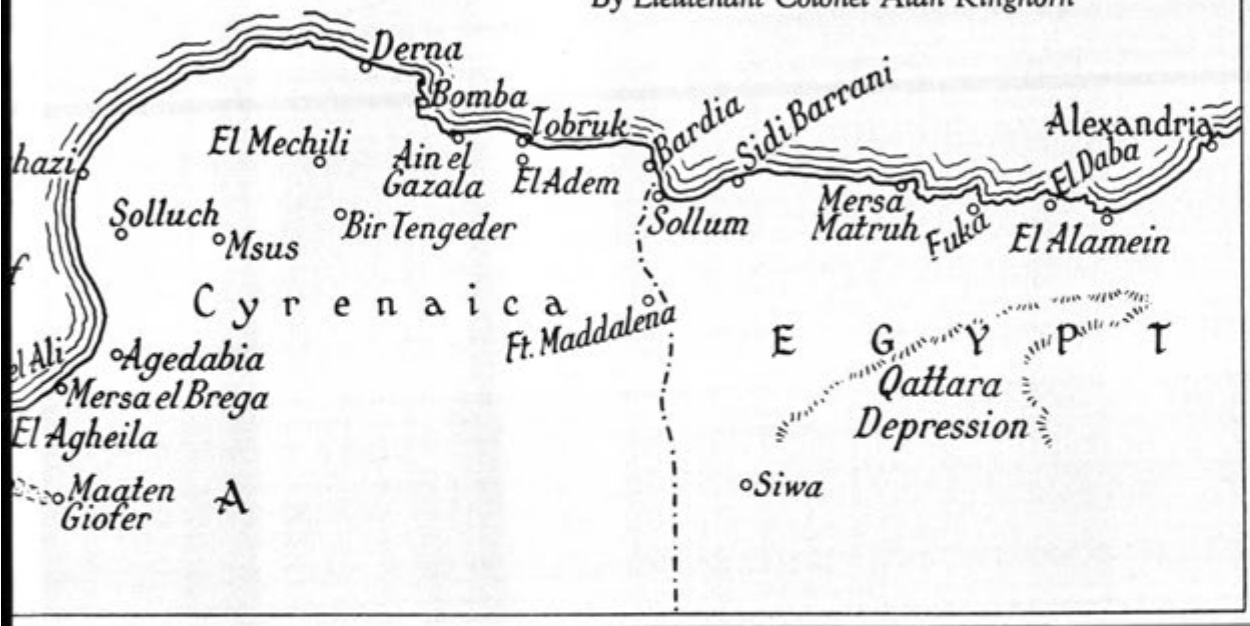
Characteristic of his dynamic leadership, Rommel unexpectedly attacked at the end of March 1941 and threw the British back out of Libya with the exception of the besieged port of Tobruk. Although numerous battles were fought, and the British repeatedly sought to relieve the forces in Tobruk, no significant advances were made until December 1941. At this time, General Auchinleck, who had replaced General Wavell, succeeded in driving the Italian-German forces beyond Tobruk and back to Rommel's original starting point of El Agheila. By

The New Book
MIC WAR"

LIEUTENANT COLONEL ALAN KINGHORN *is a graduate of the Artillery Advance Course, the Army Language School (German), and the Command and General Staff College. He served as an Exchange Officer with a German Army Artillery Battalion in 1960 and 1961. This experience proved invaluable in the research which went into the writing and preparation of "THE DYNAMIC WAR." Subsequent assignments have been Headquarters, USAREUR; Headquarters, Central Army Group; Combat Development Command Artillery Agency; and Headquarters, U.S. Forces Dominican Republic. He is presently serving with Headquarters, United States STRIKE Command.*

TIDE IN NORTH AFRICA

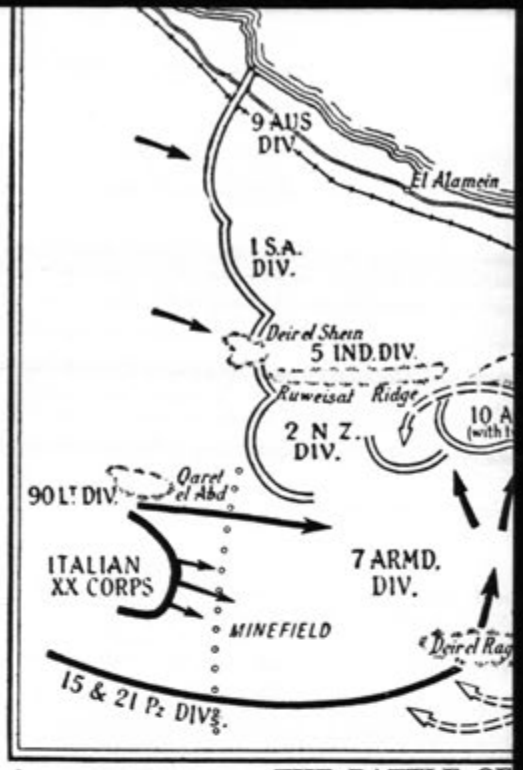
By Lieutenant Colonel Alan Kinghorn



the end of January 1942, however, the *Panzerarmee* regained the offensive, pushing the British back to a defensive line at Gazala, about halfway between Benghazi and Tobruk. After a three-months lull, during which both sides frantically prepared for offensive operations, Rommel attacked in early June 1942. In a tremendous armor battle, the British were defeated and streamed back to Egypt, losing Tobruk in the process. Rommel pursued the British army to the vicinity of El Alamein, a natural defensive position some 65 miles west of Alexandria. Both sides were exhausted from the toll of battle and the long pursuit in the rugged desert. During the first few days of July Rommel failed to achieve a breakthrough. One of Rommel's principal staff officers, Friedrich von Mellenthin, has stated that in July 1942 the *Panzerarmee Afrika* had 36 tanks in running order and a few hundred infantry in the last stages of exhaustion, and "there is no doubt that we could not have resisted a determined attack by Eighth Army."[1] During the remainder of July, however, Auchinleck counterattacked without success.

This was the situation in August 1942 prior to the Battle of Alam Halfa, Rommel's last, desperate thrust toward Alexandria, Cairo, and the Suez Canal.

August 1942 was a period of critical decision for the *Panzerarmee*. Eighth Army was known to be regaining its strength rapidly. Convoys laden with considerable reinforcements from Britain and America were known to be en route, and their arrival by mid-September was forecast. On the Axis side, the supply situation was deteriorating and no fresh units could be expected. ". . . between the 1st and 20th of August, the *Panzerarmee* consumed almost double the supplies that were brought across the Mediterranean during the same period."[2] The failure of the Italian navy to provide sufficient protection forced most of the cargo ships to use the ports of Tobruk and Benghazi. This resulted in a tremendous wastage of vehicles (85% of which had been



THE BATTLE OF

captured from the British)[3] and a high consumption of gasoline due to the long road trip to the front. Control of shipping was in Italian hands, and Rommel's pleas for greater efficiency in logistic matters produced many promises but few results. He proposed to his superiors that *Feldmarschall* Kesselring be given full powers in these supply and shipping matters, but this was not done for diplomatic reasons.[4]

One of the major factors affecting the difficult supply situation was the retention of the island of Malta by the British. In this regard, Kesselring's comments are significant:

> "Italy's missing her chance to occupy the island Malta at the start of hostilities will go down in history as a fundamental blunder. The O.K.W. [*Oberkommando der Wehrmacht*] very soon recognized the crucial importance of the island, but in spite of my reiterated arguments for its occupation, afterwards supported by the Commando Supremo and Rommel, they were satisfied with trying to neutralize it by air bombardment. This deliberate refusal to repair the first mistake was the second fundamental strategic error which placed the Mediterranean Command at a decisive disadvantage."[5]

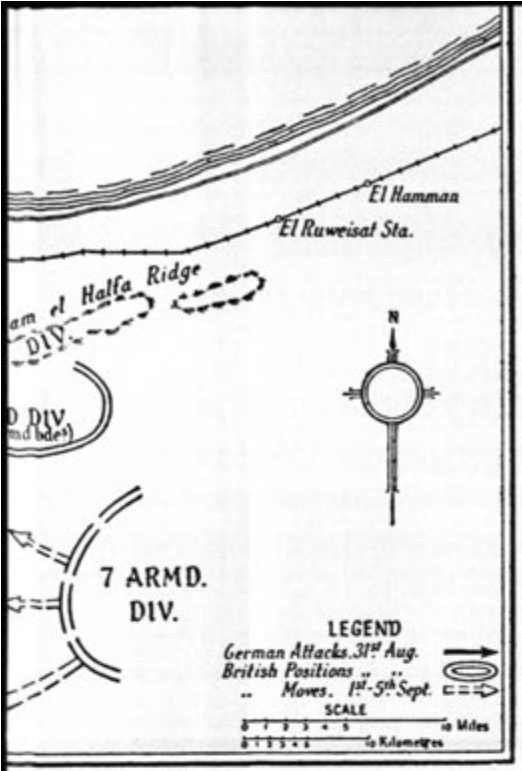
As we shall see, the shortage of fuel became a decisive factor. During the month of August, 25% of the general military cargo and 41% of the fuel shipped to North Africa was lost en route.[6] In the event, Rommel was forced to attack relying on Kesselring's promise of 90,000 gallons of gasoline per day and the arrival of a large tanker due in Tobruk in late August.[7]

In view of the adverse situation which was growing worse, Rommel's staff considered withdrawing the infantry divisions to Libya and conducting a mobile defense. But it was recognized that Hitler would not permit such a solution, and consequently the alternative was to strike for the Nile while they still had the strength. Perhaps the circumstances can best be summed up in Rommel's own words:

> "We reckoned on mid-September as the arrival date of the Eighth Army's reinforcements (other than normal routine replacements) from Britain and America. The balance of strength would then go so heavily against us that our chances of mounting an offensive would be gone for good. So we intended to strike first."[8]

The British defensive line ran from the Mediterranean coast west of El Alamein some 35 miles to the south where it met the Qattara Depression, which was impassable for large units. Thus, both flanks were anchored on an obstacle, whereas so often in North Africa the southern flank was hanging in mid-air. The northern 25 miles of the front was heavily fortified and defended by the British, but the southern portion was more lightly held although considerable mine-fields extended throughout. Rommel planned to thrust through this southern sector during the night of 30-31 August, being the last opportunity for favorable moonlight. While the 90th Light Division with part of the XX Italian Corps covered the flank of the breakthrough, the *Afrika Korps* would strike some 25-30 miles eastward and then swing northward to the coast in the vicinity of El Hamman astride the British supply lines, forcing the Eighth Army to fight a decisive battle or break out to the east. Success depended on the speed of the breakthrough and the usual sluggish reaction of the British.[9]

On the British side, General Bernard L. Mont-



ALAM HALFA

gomery had assumed command of the Eighth Army on 13 August. His first steps were to cancel all plans pertaining to the withdrawal of Eighth Army. All troops working on the defenses of Alexandria and Cairo were brought forward to the El Alamein position. Visiting all major units, he breathed new confidence and certainty into his army, asserting that ". . . the defense of the cities of Egypt must be fought out *here* at Alamein."[10]

Montgomery perceived that ". . . . the key to the whole Alamein position was the Alam Halfa Ridge."[11] This ridge lay midway to the rear of the main defensive line and its axis lay in a southwest-northeast direction. Montgomery recognized that Rommel liked to get the opposing armor to attack the German armor which would deploy behind a screen of antitank guns, resulting in heavy losses and allowing Rommel to counterattack with superiority. He was determined not to allow this to happen. Consequently, his plan included the positioning of the 22d Armoured Brigade at the western foot of the Alam Halfa ridge, the tanks being dug-in. Of the 164 new Grant tanks available, 92 were concentrated in this brigade. Known for their 75mm guns, these tanks were sometimes called the E.L.H. —Egypt's Last Hope.[12] The 44th Division occupied the major portion of this vital ridge, and the 7th Armoured Division was to play a mobile defensive role on the extreme south flank during the early stages of the battle.

The *Panzerarmee* attacked during the night of 30-31 August 1942. Progress was slower than planned due to the unsuspected extent and strength of the British mine belt. The defending troops fought with extraordinary stubborness aided by relay bombing attacks by the RAF using parachute flares. By dawn the leading elements had advanced approximately 10 miles instead of the anticipated 30 miles. Realizing that the essential element of surprise had been lost, Rommel contemplated breaking off the action. After discussing the situation with Colonel Bayerlein, who as chief of staff had succeeded the wounded General Nehring as the commander of the *Afrika Korps* during the night, Rommel decided to continue the attack in a modified form:

> "With the British armour now assembled for immediate action, it was impossible for us to continue with our wide sweep to the east, as our flanks would have been under constant threat from the 7th Armoured Division in the south and the 1st and 10th Armoured Divisions in the north. This compelled us to decide on an earlier turn to the north than we had intended."[13]

Thus, the *Panzerarmee* wheeled to the north in the direction of the eastern half of Alam Halfa ridge, which suited Montgomery's scheme of defense perfectly. The 15th and 21st Panzer Divisions got off to a ragged start in the early afternoon in the midst of a dust storm. Some fierce fighting ensued but with the coming of darkness and the high consumption of fuel the attack ceased.

During the night the RAF struck with all aircraft available, so that the battle area was bright with flares and burning vehicles. Not only was the damage great, but the fighting capacity of the troops was reduced by the strain and lack of sleep.[14]

On the morning of 1 September the shortage of fuel had become so critical that only the 15th Panzer Division attacked, with limited objectives, while the remainder of the army remained immobile. In order to meet Rommel's fuel requirements, seven

Mellenthin has observed that Alam Halfa was the . . . "Turning point of the desert war and . . . .

ships had been dispatched to arrive in Libya between 25 and 30 August. Four of these were sunk to include the largest vessel which was torpedoed as it approached Tobruk harbor on 30 August. Kesselring provided some promised gasoline also, but much of it was consumed enroute to the front.[15]

The high consumption of fuel by the attacking forces, referred to earlier, may be partially attributable to the planting of a false 'going-map' by the British. General De Guingand states that this map, left in an abandoned reconnaissance vehicle, cleverly portrayed certain areas as being good for cross-country movement when in fact the soil was quite soft and sandy.[16] Mellenthin confirms this story stating that the map was accepted as authentic and served its purpose.[17] Rommel refers to the depletion of petrol stocks due to the heavy going but does not mention the captured 'going-map'.

By the evening of 1 September the *Panzerarmee* had only "one petrol issue" remaining, a quantity intended to move an armored force 100 kilometers under good conditions."[18] The RAF continued to attack in relays night and day. During the morning of 2 September Rommel made a deliberate withdrawal because of the shortage of supplies and the lack of air cover. He recognized that the offensive had no possible chance of success and had reached the stage where material strength alone would decide the course of battle.

The British made some limited counterattacks, and the New Zealand Division attempted to prevent the enemy from withdrawing through the minefields but was repulsed. Montgomery has been criticized for not launching a major, decisive counterattack before Rommel withdrew. He explains that "the standard of training of the Eighth Army formations was such that I was not prepared to loose them headlong into the enemy; moreover my purpose was to restore the line, and to proceed methodically with my own preparations for the big offensive later on."[19]

By 6 September the battle was over and the German-Italian forces had relinquished most of their gains. During the week's fighting they had sustained 2910 casulties and 49 tanks were destroyed. British casualties totaled 1750, and 67 tanks were put out of action. In addition, 36 German, 5 Italian and 68 British aircraft were lost.[20]

In retrospect Rommel listed three causes for the failure of the offensive at Alam Halfa: (1) the greater strength of the British southern defenses than reconnaissance had indicated; (2) the "non-stop and very heavy" attacks by the RAF; and (3) the failure of the promised petrol to arrive.[21]

Kesselring admits that all of the gasoline was not delivered, but he does not feel that this was the decisive factor. He attributes the defeat to psychological reasons, referring to Rommel's poor health at this time and asserting that the "old Rommel" would not have withdrawn after having encircled the enemy. "I know today that his troops were unable to understand the order to retire."[22] Rommel's bad health, a result of 19 months in North Africa, had been reported the latter part of August. Rommel considered that General Guderian should take his place, but OKW replied that Guderian was unacceptable. Subsequently, the medical specialist reported that Rommel's condition had improved enough for him to command the forthcoming battle but that a replacement on the spot was essential. Rommel did return to Germany after the battle for a lengthy cure and a subsequent

. . . the first of a long series of defeats on every front which foreshadowed the defeat of Germany."

reassignment to the Russian front, but interrupted his treatment and returned to Africa at Hitler's request during the crisis of the Battle of El Alamein.

From Montgomery's viewpoint the battle had been fought according to his conception, and ended in a satisfactory manner. He had foretold the course of the battle, demonstrated the value of concentrated resources and centralized control, and proved that Rommel could be beaten. Above all, the morale and confidence of the Eighth Army had been restored and the way prepared for the resumption of the offensive.

The Battle of Alam Halfa was the high-water mark of the Axis forces in North Africa. It was the last chance for the *Afrika Korps,* spearhead of the German-Italian army, to reach the Suez Canal, close the Mediterranean, and seize the Middle East. It had been fought by Rommel under adverse conditions in a last desperate thrust for victory knowing that the predicament of his army could only grow worse. El Alamein merely confirmed and exploited the decision at Alam Halfa.

Mellenthin has observed that Alam Halfa was ". . . the turning point of the desert war, and the first of a long series of defeats on every front which foreshadowed the defeat of Germany."[23]

General Montgomery made this evaluation:

> "I think that this battle has never received the interest or attention it deserves. It was a vital action, because had we lost it, we might well have lost Egypt. In winning it we paved the way for success at El Alamein and the subsequent advance to Tunisia."[24]

General Fritz Bayerlein provides a footnote of interest by relating an incident told by Rommel's doctor concerning the morning of the battle:

> "Professor Horster states that Rommel left his sleeping truck on the morning of the attack with a very troubled face. 'Professor,' he said, 'the decision to attack today is the hardest I have ever taken. Either the army in Russia succeeds in getting through to Grozny and we in Africa manage to reach the Suez Canal, or . . . . He made a gesture of defeat."[25]

FOOTNOTES

[1]Friedrich Mellenthin, *Panzer Battles* (Norman: University of Oklahoma Press, 1956), 134.
[2]Erwin Rommel, *The Rommel Papers,* ed. Liddell Hart (New York: Harcourt, Brace and Co., 1953), 269.
[3]*Ibid.,* 266.
[4]*Ibid.,* 268-9.
[5]Albert Kesselring, *Kesselring: A Soldier's Record* (New York: William Morrow and Co., 1954), 141.
[6]I.S.O. Playfair, *British Fortunes reach their Lowest Ebb,* Vol. III of *The Mediterranean and Middle East* (London: Her Majesty's Stationery Office, 1960), 327.
[7]Mellenthin, 142.
[8]*Rommel Papers,* 264.
[9]*Ibid.,* 273-4.
[10]Bernard Montgomery, *Memoirs of Field-Marshal Montgomery* (Cleveland: The World Publishing Co., 1958), 93.
[11]*Ibid.,* 95.
[12]Harold Alexander, *The Alexander Memoirs, 1940-1945* (New York: McGraw-Hill Book Co., Inc., 1962), 23.
[13]*Rommel Papers,* 277.
[14]Playfair, *British Fortunes reach their Lowest Ebb,* 387.
[15]*Ibid.,* 382, and Siegfried Westphal, *The German Army in the West* (London: Cassell and Co., Ltd., 1951), 117.
[16]Francis De Guingand, *Operation Victory* (New York: Scribner, 1947), 147-8.
[17]Mellenthin, 144.
[18]*Rommel Papers,* 280.
[19]Bernard Montgomery, *El Alamein to the River Sangro* (Germany: Printing and Stationery Services, British Army of the Rhine, 1946), 8.
[20]Playfair, *British Fortunes reach their Lowest Ebb,* 391.
[21]*Rommel Papers,* 283.
[22]Kesselring, 152.
[23]Mellenthin, 142.
[24]Montgomery, *El Alamein to the River Sangro,* 10.
[25]*Rommel Papers,* 274.

5th Place

EMPHASIS ON ACTION

"Front eastward—
Left wheel—
Right wheel by divisions—
Take intervals while riding forward—
Form line to the front—
CHARGE!"[1]

On these commands, Prussia's heavy cavalry brigade, commanded by General von Bredow, rapidly executed a series of drilled movements. The brigade charged in perfect order into the French infantry and artillery with overwhelming success during the battle around Mars-la-Tour on August 16, 1870. Although tactically significant, as this classic charge stopped the attempt by the Army of the Rhine to turn the flank of the Prussian army, it is also significant in the manner in which it was accomplished. By using short commands, von Bredow was able to maneuver his six squadrons, amounting to approximately 800 horse cavalrymen, through a series of difficult wheeling movements. This enabled his entire brigade to deploy from squadrons-in-column into a brigade-on-line formation, culminating with a charge into enemy ranks.

The Prussian cavalry was well drilled in mounted movements similar to those mentioned above; therefore, it is no surprise that success was so easily attained. This was a classic example of the value of battle drill.

With the evolution of armored vehicles, cavalry tactics changed and battle drill was omitted from our doctrine. It appeared that our Army had become too sophisticated to worry about the mechanics of an obsolete technique.

In the early 1950's, General Hamilton H. Howze,

CAPTAIN WILLIAM M. BOICE, *was commissioned in 1963 from the United States Military Academy. He graduated from the Armor Officer Basic Course, Ranger Course, and Airborne Course in 1963. He was then assigned to the 2d Squadron, 11th Armored Cavalry Regiment, Germany, where he served as a platoon leader. In 1964, he was assigned to the 2d Squadron, 3d Armored Cavalry Regiment, Germany, where he served as a liason officer, troop executive officer, and troop commander. In 1966, he returned to the United States to attend the Armor Officer Career Course.*

devised a new battle drill for modern armored units. His concept was adopted by the Seventh Army and once again battle drill became part of our doctrine for mobile warfare.

The impetus created by General Howze faded with time and it was not until 1965 that the formations and movements devised by General Howze finally appeared as Appendix VI of FM 17-36. Although battle drill is now firmly established in armored cavalry doctrine, it has been my observation that small unit commanders know little about it and its uses. The reason behind this lack of knowledge appears to stem from the absence of command emphasis at all levels of command. By allowing this technique to stagnate in the field manual we are depriving our combat units of an important tool for use on the battlefield.

Battle drill may be compared to simple football plays since they are both formations and movements employed to defeat the opponent's tactics. In football, the quarterback makes a rapid estimate of the situation (opponent's defense), and calls the particular play that he feels will achieve his objective. Each member of the team has a definite position in the formation and a definite assignment in the execution of the play. Naturally, many factors influence the results that are achieved. If the team is well drilled and if each player executes his assignment precisely, the team's probability of success is high. If the offensive players are heavier, or possess greater speed, their probability of success is increased. Additionally, if they surprise the defense with an unexpected play, their probability of success becomes even greater. In battle, many of these same basic factors apply. The well-trained, fast, and hard hitting unit, achieving the element of surprise, should enjoy a high probability of success in tactical encounters.

Our units possess all of the qualities necessary to achieve the desired results. However, with the use of battle drill these qualities could be improved. For example, how many times has the element of surprise and the momentum of the offensive been lost because the commander had to stop his unit and give a rather detailed operations order on his tactical plan? Of course, in some cases, this is either necessary or advantageous. However, we are concerned here with the numerous tactical meeting engagements which are lost to the enemy because of a delay in the execution of tactical plans. As Field Marshall Erwin Rommel wrote:

> "I have found again and again that in encounter actions, the day goes to the side that is first to plaster its opponent with fire. The man who lies low and awaits developments usually comes off second best."[2]

Battle drill gives the commander the ability to deploy his unit into various tactical formations and movements *immediately* with minimum commands. Herein lies the beauty of battle drill tactics.

Instead of tying up the radio net for a prolonged period of time with the issuance of a fragmentary order, thereby giving the enemy increased reaction time, the commander simply gives a two or three word *command* over the air and his unit moves into action. The commands may also be given visually by the use of flag signals if some of the unit's radios are inoperative. Visual and voice commands should be given simultaneously to ensure receipt by all elements. Once the battle drill command has been given, the unit should execute the plan violently in order to achieve success. A violent execution of any tactical plan will, in most cases, provide sufficient shock effect to favor the attacker.

To illustrate the battle drill concept let us consider an armored cavalry platoon making a route reconnaissance in front of a fast moving Armor task force. The scouts locate two enemy tanks blocking the route. The platoon leader, after a rapid terrain analysis, informs his commander of the situation and his plan. Since the enemy armor threat must be neutralized with all haste, the platoon leader decides to attack the enemy right flank.

Upon approval by his next higher commander, the platoon leader issues his battle drill command: "HOOK LEFT." Since his section leaders have been monitoring their radios they are aware of the enemy situation and no further explanation is necessary. The platoon immediately moves into a vigorous execution of a "HOOK LEFT," as shown in figure 1.

The scouts immediately begin screening on the flanks. The support squad delivers fire on the objective. This fire is adjusted by the scouts. The tanks and infantry assault the objective. The entire process of reporting, analyzing the situation (since development was not necessary), selecting a course of action, and execution took place within seconds, thereby maintaining the momentum of the offensive while achieving initiative and surprise.

In this illustration the platoon leader, similar to a quarterback, called the play (battle drill maneuver) that he determined would accomplish his mission. His unit was well drilled in this maneuver, as well as many others. Therefore, there was no necessity to issue specific instructions to each section or element of his platoon. His two word command was all that was necessary to initiate the action. A predetermined and drilled consolidation of the objective would preclude the use of further instructions. Although this is one of the formations presented in FM 17-36, there are many variations of the basic formations which are limited only by the commander's initiative and his unit's proficiency in battle drill tactics.

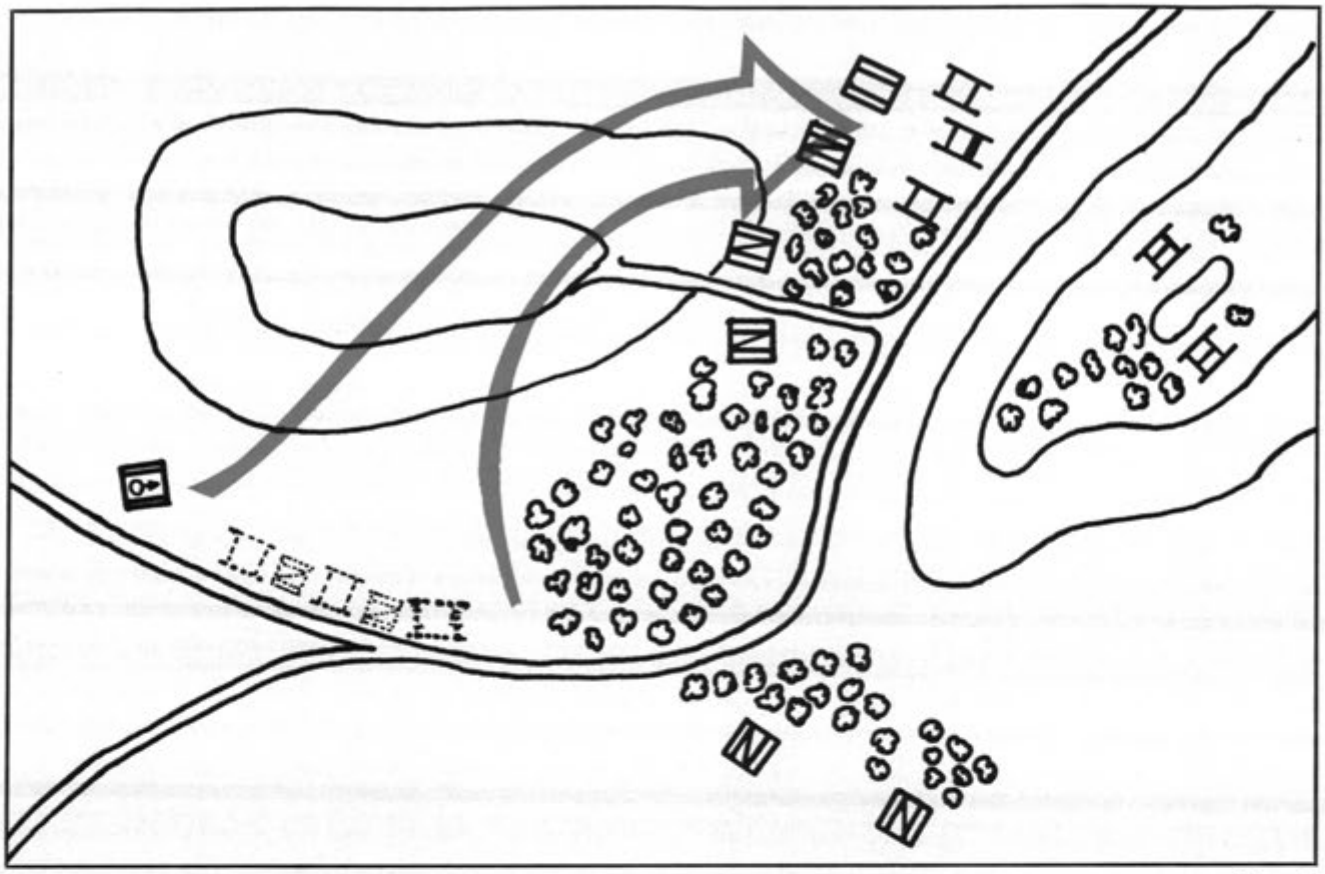


Figure 1

The most important factor in battle drill proficiency is the learning process. Only through precise knowledge and drilled execution will battle drill achieve the desired results. One method of teaching battle drill is by using three phases: classroom, ground-dismounted and mounted.

In the classroom, battle drill and its basic formations should be explained and shown to the unit by the use of blackboards, slides, and other appropriate visual aids. Another technique might be to have enough copies of the various drills printed and given to each member of the unit so that the drills can be committed to memory. It is necessary that the drills be learned explicitly in this first phase for the other two phases to succeed.

Once it is evident that each member of the unit understands his part in battle drill, the tactics should be practiced on the ground, dismounted. In the dismounted phase each drill should be walked through, keeping the various elements in their respective groups. Once the dismounted elements are able to perform battle drill with preciseness and speed, they are ready for the final mounted phase.

Initially, during the mounted phase, the elements should remain close together in order for each member to understand his part in the overall concept. As the unit becomes proficient, proper distances are taken up and variations to the drills are added. At the completion of the mounted phase the unit should be able to move any distance, and execute maneuvers which may be initiated merely by issuing short battle drill commands.

Not all small unit commanders begin with the inherent qualities of initiative, self-confidence, and audacity. Battle drill techniques cannot give them these qualities but they can help them to develop the qualities. The mere fact that the commander can make an immediate decision on a particular maneuver and execute it with precision and timeliness, will give him initiative and self-confidence. By selecting his course of action rapidly, and insisting on violent execution, he will more than likely enjoy the fruits of success. With time, he will become an audacious commander. General Carl von Clausewitz, in his *Principles of War,* wrote:

> "If the theory (of war) does advise anything, it is the nature of war to advise the most decisive, that is, the most audacious. Theory leaves it to the military leader, however, to act according to his own courage, according to his spirit of enterprise, and his self-confidence. Make your choice, therefore, according to this inner force; but never forget that no military leader has ever become great without audacity."[3]

FOOTNOTES

[1]James D. Lunt, *Charge to Glory!* (New York: Harcourt, Brace and Company; 1960), p. 150.

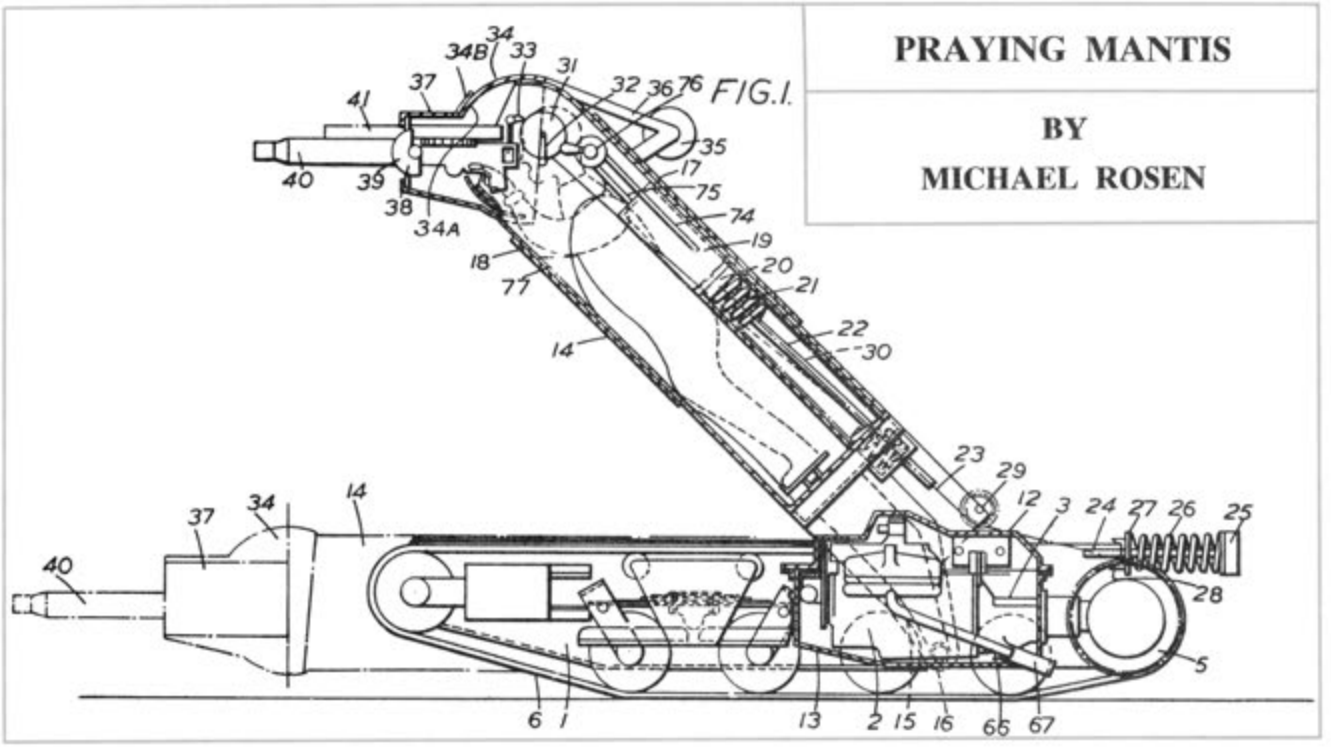
[2]Field Marshal Erwin Rommel, *The Rommel Papers* (New York: Harcourt, Brace and Company; 1953), p. 7

[3]General Carl von Clausewitz, *Principles of War* (Pennsylvania: Military Service Publishing Company; 1942), p. 14.

PRAYING MANTIS

BY

MICHAEL ROSEN



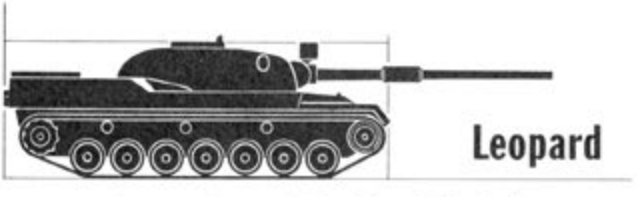
Today, as in the past, the tank's ability to fulfill its mission on the battlefield remains above all else, a function of two things. These are the level of crew competence and the extent to which design facilitates continued operation in the face of enemy countermeasures. This article will concern itself solely with design and one of the divergent paths it has taken in armor vehicle development.

Presented with a list of desired characteristics, it becomes the task of the engineer to pursue, within the framework of the technology available to him, the best possible balance of the three primary components which make the standard tank. These are categorized as armor, armament, and mobility (speed and maneuverability being included in the latter).

That too much emphasis on any one of these must necessarily bring with it detrimental modifications or sacrifices in the others, is so well known as to require no additional comment.

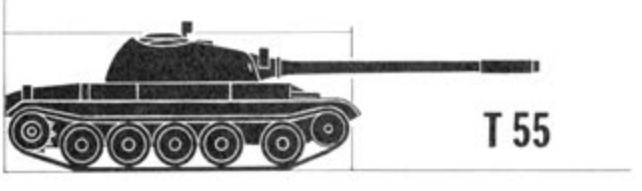
Armament and mobility provide what might be termed an *active* defensive capacity. They enable the tank to seek out and destroy the enemy and to evade being brought under his firepower. But once caught in hostile fire, survival depends largely upon the effectiveness of the tank's two principal *passive* defenses. There are armor plating (which may vary in thickness, quality and placement) and vehicle profile or silhouette.

Let us consider the latter. The attractiveness of lowering overall silhouette is obvious, although if conventional tank configuration is to be retained, there is a limit now being approached as to how far this can be carried. Current examples of note are:



The German Leopard (height: 93 inches)

The French AMX-30 (height: 90 inches)



The Russian T-55 (height: 94 inches)

Mr. Michael Rosen *maintains a lively interest in armored vehicles. He currently resides in San Leandro, California. The drawings of the Leopard, T55 and AMX 30 tanks were supplied by* **George Bradford** *who is the editor and publisher of AFV NEWS, a bi-monthly publication devoted to armored force vehicle histories and miniatures. Both Mr. Bradford and Mr. Rosen are members of the A.F.V. Collectors Association. Mr. Rosen supplied the other drawings and the photos with the exception of the Swedish "S" tank, which was supplied by the Swedish Information Service.*

Employment of oscillating turrets, auto-loading guns, and remotely controlled sighting and firing devices can conceivably bring main battle tank height down to 66-72 inches . . . or less than the height of the average man. Another alternative would be to completely dispense with a turrent mounting for the main armament as has been done in the new Swedish *S* tank (height: 77 inches).

Further reduction in height dictates that the crew assume prone and/or supine positions. For all intents and purposes, ultra-low vehicles are nearly invisible on the battlefield. The possibilities of extreme height reduction have been explored extensively since World War II, particularly in the field of light-weight tank destroyers. Typical examples are:

French ELC (armament: 4x75mm recoilless rifles/ height: 60 inches)

Japanese SS4, Type 60 (armament: 2x106 recoilless rifles/height: 54 inches)

Franco-Swiss VP-90 (armament: 75mm recoilless rifle and 20mm gun/height: 36 inches)

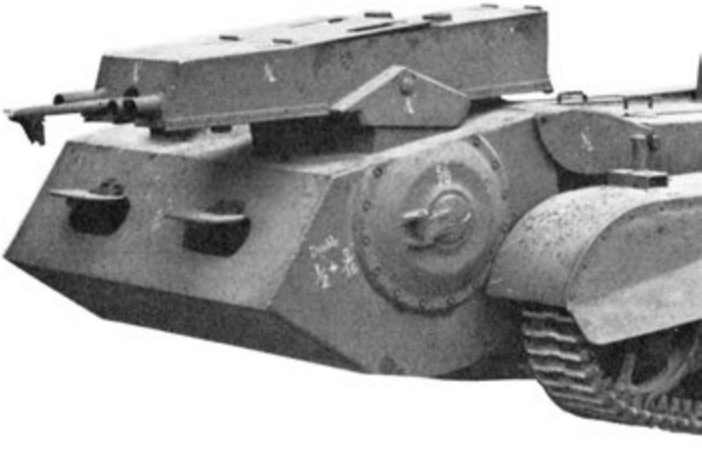
The former are lightly armored and the latter only partially armored since all rely upon their inconspicuousness for protection. Unfortunately, while the capacity to evade detection increases markedly as vehicle height falls below 54 inches, new complications present themselves. Vision becomes severely restricted. Great difficulty may also be experienced in bringing weapons to bear on constantly shifting targets from a point which, as in the case of the VP-90, is often not more than 30 to 36 inches above the ground.

The new Swedish "S" tank has abandoned normal configuration to achieve a lower silhouette.

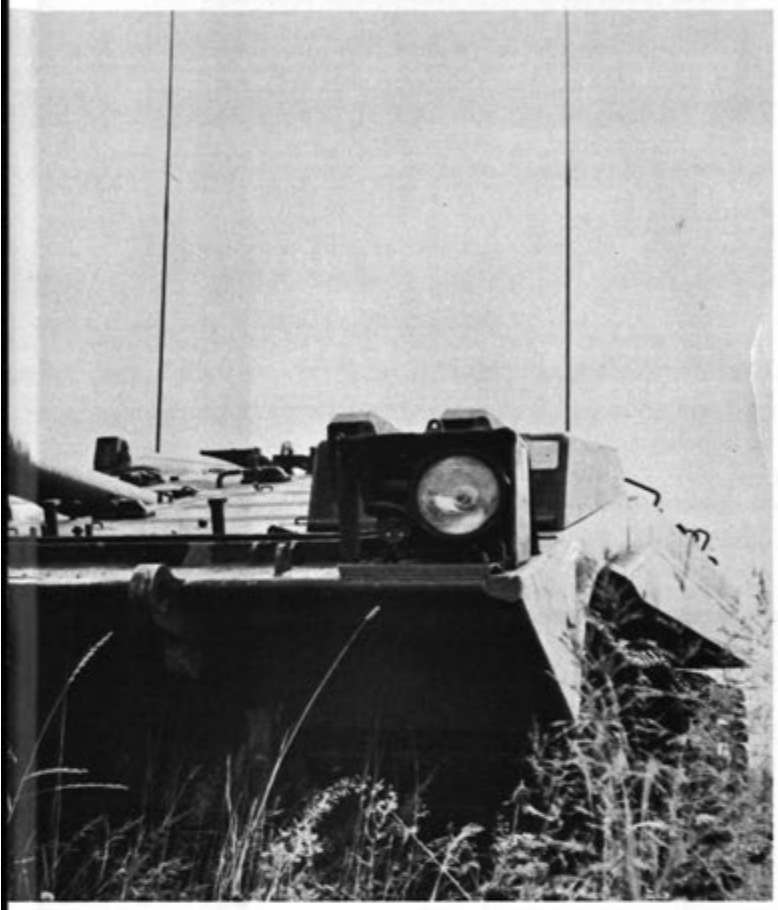
A LOOK AT THE PAST

However, these are not new problems nor have highly imaginative solutions been lacking. The failure of most of the solutions attempted in the past has come from the existence of advanced ideas, but insufficient technological sophistication to bring them to reality.

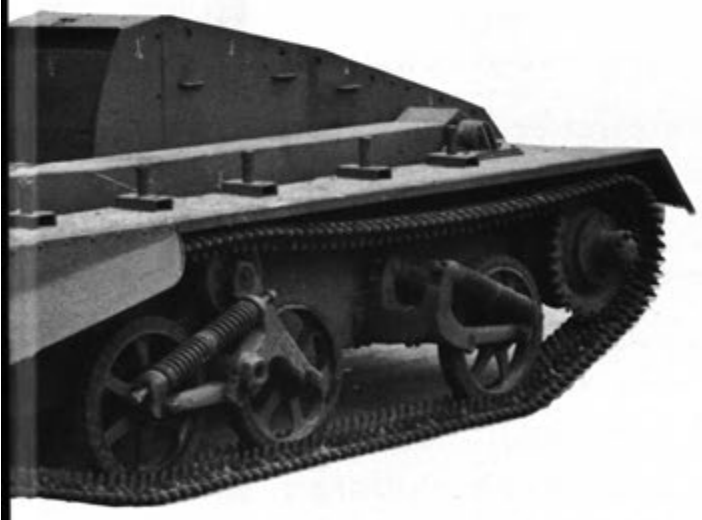
A significant case occurred in England during World War II when a unique solution to the height and visibility problem was offered through the development of a vehicle which came to be known as the *"Praying Mantis."* Indeed, this little known and long forgotten machine may someday prove the forefather of a completely new generation of ground-hugging battle tanks and tank destroyers. For this reason the design principles represented by this project merit historical review.



The *Praying Mantis* was actually the second of two vehicles developed by Mr. E. T. J. Tapp, a British veteran of World War I whose regular pursuit was civil and mechanical engineering. The feature which now makes the *Praying Mantis* of extreme historical and technological interest was its ability to radically alter its profile as the situation demanded.



The Praying Mantis—was it a product of advanced ideas but insufficient technological sophistication?



The story actually begins during the latter months of World War I when Tapp was witness to the systematic destruction of twelve Allied tanks attempting to lead an assault against German lines. As the tanks were destroyed, the attack faltered and the infantry was thrown back with heavy losses. As an experienced machinegunner, Tapp knew that once exposed to accurate counterfire, the tanks became easy targets because of their high silhouettes and slow speed.

This experience moved Tapp to action and the idea for a dramatically new type of tracked-vehicle was born. Initially, he was concerned solely with developing a fighting machine which could carry mechanization down to the level of the individual infantryman. He felt a genuine need existed for a vehicle of low silhouette, possessing high speed and maneuverability which would enable the infantry to continue to attack, should the supporting tanks be destroyed or disabled.

But when the war ended, Tapp's ideas went into limbo. However, the seed of invention had been planted. After a brief historical synopsis tracing the eventual development of the Tapp vehicles, the potentialities of their design will be further discussed in the light of today's technological developments.

DEVELOPMENT OF THE PRAYING MANTIS

The approaching war clouds of the mid-1930's and the darkening days which followed Munich stimulated Mr. Tapp to attempt to mold his long dormant thoughts into mechanical reality. After consulting with a number of military figures including Generals Swinton and Martel, the plans for a one-man vehicle were completed and a patent applied for in August 1937. Of particular interest was the self-contained fighting and driving compartment which was free to move up and down in relation to the supporting chassis. This device enabled the vehicle to vary its height and the height of its main armament by over six feet.

During the development period the authorities were notified of the progress being made and as the project advanced, the War Office asked for and was granted exclusive rights to the invention.

Encouraged by the War Office approval and cooperation, Tapp pressed ahead with his work and by the end of 1938 reported that construction of the prototype was underway. Through the assistance and cooperation of General Paget, Commandant, Minely, Sandhurst, a preliminary test was scheduled for early October 1939. At this time the vehicle was formally shown to General Taylor and other members of the General Staff at Chobham. The officers were impressed, but it soon became apparent that for psychological and mechanical reasons the crew would have to be increased to two members. The immediate development of a new two-man vehicle was recommended.

PRAYING MANTIS DATA SUMMARY

Crew:	*Two*
Dimensions	
Length:	*16 feet, 4 inches*
Width:	*6 feet, 2 inches*
Height:	*Maximum 150 inches* *Minimum 53 inches*
Armament:	*Two Bren guns, periscope sighted, inverted to permit loading from within the vehicle. Muzzle brakes reduced the recoil. The mount had 30 degree elevation and depression, with a 360 degree traverse.*
Suspension:	*Coil spring, short pitch*
Weight:	*4 ton, 14 cwt* *Combat weight 5 tons 2 cwt*
Engine:	*Ford, 30 horsepower*
Transmission:	*Ford modified*
Miscellaneous:	*Produced in 1942-43 by County Commercial Cars, Ltd. It is now on display at the Royal Armored Corps Tank Museum, Bovington, England. A power take-off from the gear box drove a Lockheed combined clutch and pump which, in turn, operated the two hydraulic rams that raised the lift box. Reserve oil pressure was sufficient to work these pistons when the engine was not running.*

With special effort, Tapp was able to complete the drawings and forward them to the War Office in December. Meanwhile, the Ministry of Supply had assumed responsibility for the project and in their first communication with Tapp, on the 22d of January 1940, they halted all further work on the two-man vehicle. This decision may be credited to the growing demands for the increased production of regular tanks and a reluctance to support low priority projects and experimentation . . . particularly if initiated outside the Ministry.

Thus the matter stood until October 1941 when the Ministry of Supply requested that Tapp's existing machine again be made available for demonstrations and tests. Generals Martel and Richardson, as well as engineers from the Department of Tank Design, observed the tests. As was the case two years earlier, development of a two-man model was called for. In May 1942, a contract was signed with Tapp for the production of two such vehicles.

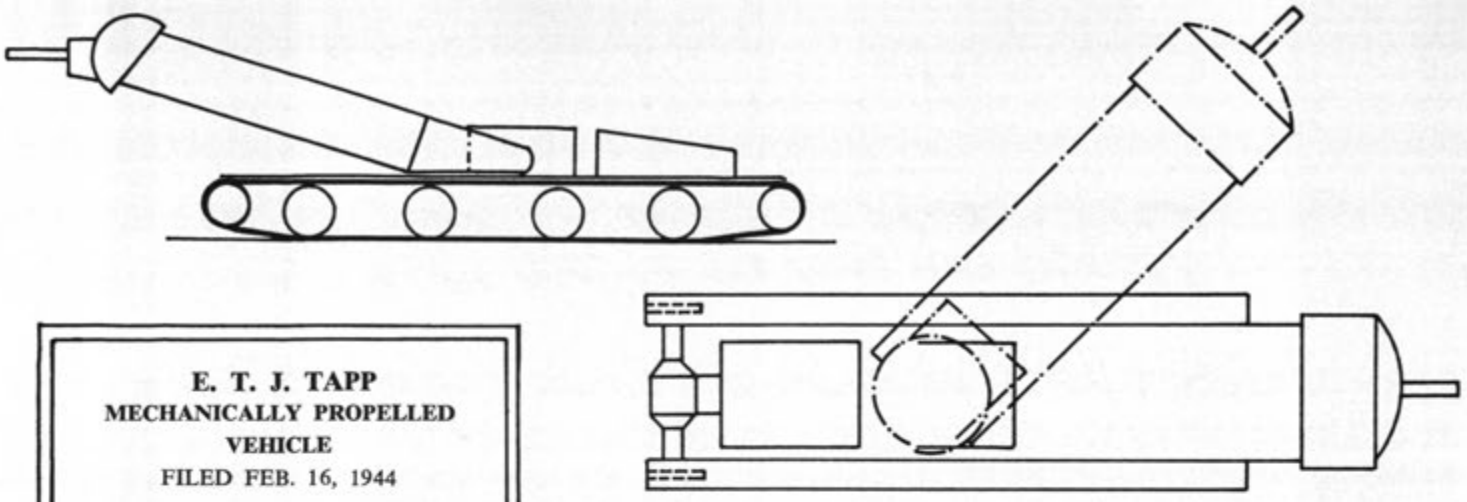
Private trials of the new machine conducted in July 1943 revealed defects in the fittings of the gun mount. Their correction was immediately undertaken. The official tests were held at Chobham during October, but this time over the protests of the builder who had not yet completed his modifications or acquainted the Army crew with the proper operating procedures.

A resemblance to the Praying Mantis insect had been remarked upon by General Richardson and this subsequently came to be applied as the official designation. Testing continued intermittently throughout December, but after a succession of minor difficulties, the ministry once again ordered the work stopped. During this period the vehicle had covered 435 miles cross-country and 115 miles on paved roads.

The *Praying Mantis* was then returned to the manufacturer with the request that it be held in readiness for any future contingencies. Though both the General Staff and the Ministry of Supply were now in agreement that there was no requirement for an AFV (Armored Fighting Vehicle) like the *Praying Mantis,* Mr. Tapp completed the remodeling of the gun mount on his own initiative. In April 1944, he unsuccessfully sought permission to conduct firing trials. Negotiations with the local Home Guard proved more fruitful and the new mount was duly tested.

In June 1944 the advisability of producing 12 *Praying Mantis* vehicles for combat testing in the Far East was briefly considered, but without result. On the 31st of July 1944, Mr. Tapp was informed by the Department of Tank Design that the General Staff had again reviewed the project and as before had concluded that there was no requirement for the *Praying Mantis.* The project was officially abandoned and the vehicle turned over to the military authorities.

The fact that the *Praying Mantis* was not accepted at the time of development should not come as a surprise to many. The tremendous versatility which Tapp's revolutionary lifting arm and fighting compartment could have afforded was heavily negated by the many mechanical imperfections which the vehicle possessed. For example, speed and steering were handled through footpedals. Cables were employed to allow for any displacement of these controls. As the cables became stretched additional difficulties arose. An automatic transmission could have provided the means of circumventing this problem, but its limited availability at the time of production made its use infeasible.



E. T. J. TAPP
MECHANICALLY PROPELLED VEHICLE
FILED FEB. 16, 1944

More importantly, the operational durability, limited strength, and mechanical complexity of the lifting arm made it virtually impossible to mount a sufficiently powerful, recoil-type weapon within the fighting compartment. This left the *Praying Mantis* nearly as vulnerable as the unprotected foot soldier. Armed with only two machineguns, it could not perform the missions Tapp had originally envisioned for it. It should not be forgotten that a corresponding advancement had taken place in enemy capabilities. These advancements made it costly for lightly armed vehicles to breach his lines or to seriously disrupt or repell his armored thrusts. Thus the overwhelming advantages offered by high speed and variable silhouette had little significance without the capacity to meet and defeat enemy armor.

Finally, it was believed that even though the mechanical difficulties might have been resolved and the vehicle adequately armed, the maintenance requirements for a lifting mechanism supporting heavy armament would have been difficult to achieve under combat conditions.

In retrospect, the lack of heavy firepower appears to have been the real *Achilles Heel* of the original *Praying Mantis*. Ironically, at the very time that the project was being terminated, the introduction of the shaped-charge in conjunction with the lightweight recoilless launchers dramatically increased the potential of the individual infantryman to stop tanks. A further and related ordnance breakthrough came with the development of the guided antitank missile.

Light and compact and yet capable of crippling the heaviest of tanks, both the recoilless rifle and the guided missile appear to be uniquely suited for the main armament used on ultra-low tank destroyers.

There is little doubt that if either missiles or rockets as we now know them had been available and affixed to a mechanically reliable *Praying Mantis* configuration, the result undoubtedly would have been a highly formidable antitank combination.

Perhaps there is still life for such a vehicle today. By what other means can a low silhouette vehicle hope to overcome the restrictive interference of obstacles if not equipped with a weapons system capable of some method of vertical displacement for aiming and firing?

Using a suitable lifting device to support the basic weapons system it would be an easy matter to connect the necessary sighting and firing devices to the crew through remote-control linkages. To avoid the risk and difficulty of actually elevating a crew member, the special fire direction problems of the ground-hugging AFVs can be countered by utilizing a periscope or closed circuit television operating from a telescoping mast.

This enthusiastic endorsement of the *Praying Mantis* concept is not meant to imply that there are no other solutions available to the problem of keeping the silhouette low while guaranteeing maximum flexibility for the main weapon and its component systems. The U. S. Army has already taken a step in another direction by fitting the T95 prototype tank with an experimental hydro-pneumatic suspension. Still in the early stages of development, this suspension allows alterations in the ground clearance over a range of one foot. It is however, a modification of the standard turreted battle tank. A dead end street is in sight. Further progress now warrants consideration of the concepts embodied in the *Praying Mantis*.

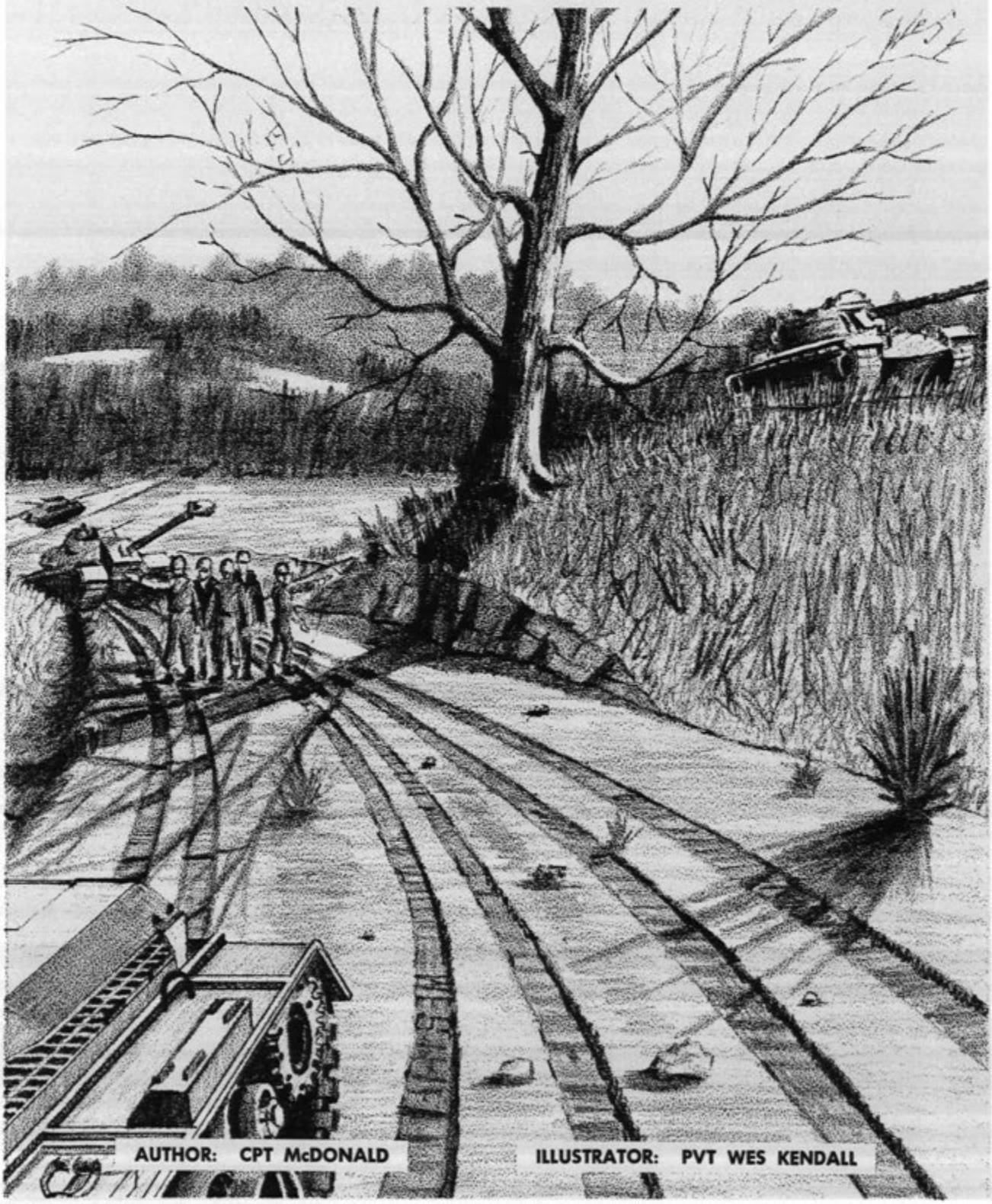
Today, perhaps for the first time in history, the necessary technology is available to make these concepts a reality. Certainly it was not at the time of Mr. Tapp's attempt to make it so. Nevertheless the product of his genius and dedication should serve to encourage others to try.

AUTHOR'S NOTE

Mr. Tapp, now in his eighties, remains to this day active in the affairs of his firm, County Commercial Cars, Limited, Fleet. He is the holder of more than 40 patents on a variety of devices, including a six-wheeled prime mover which was extensively employed by the RAF and Barrage Balloon forces during the war.

How Would You Do It?

U. S. ARMY ARMOR SCHOOL PRESENTATION



AUTHOR: CPT McDONALD

ILLUSTRATOR: PVT WES KENDALL

SITUATION

It is 1300 hours, and your tank battalion's attack has been held up since early morning by stubborn enemy resistance. You are a tank commander in a tank platoon and have just been informed by your platoon leader of a pending night attack. He emphasized that the attack might well be conducted under infrared conditions, and will require precise planning and particular attention to your tank-mounted xenon searchlight and infrared periscopes.

During an earlier engagement, the infrared body assembly in your gunner's M32 periscope became inoperable. In view of the possible infrared use of the xenon searchlight you replace the infrared body assembly of the M32 periscope with the infrared body assembly from your M36 tank commander's periscope, which is in working order (fig. 2). Although your gunner once again has an operable periscope, the nonballistic reticle housed in the infrared body assembly is not zeroed, and this reticle must be zeroed for effective fire. How can you or your gunner zero this reticle in daylight, prior to the planned night operation?

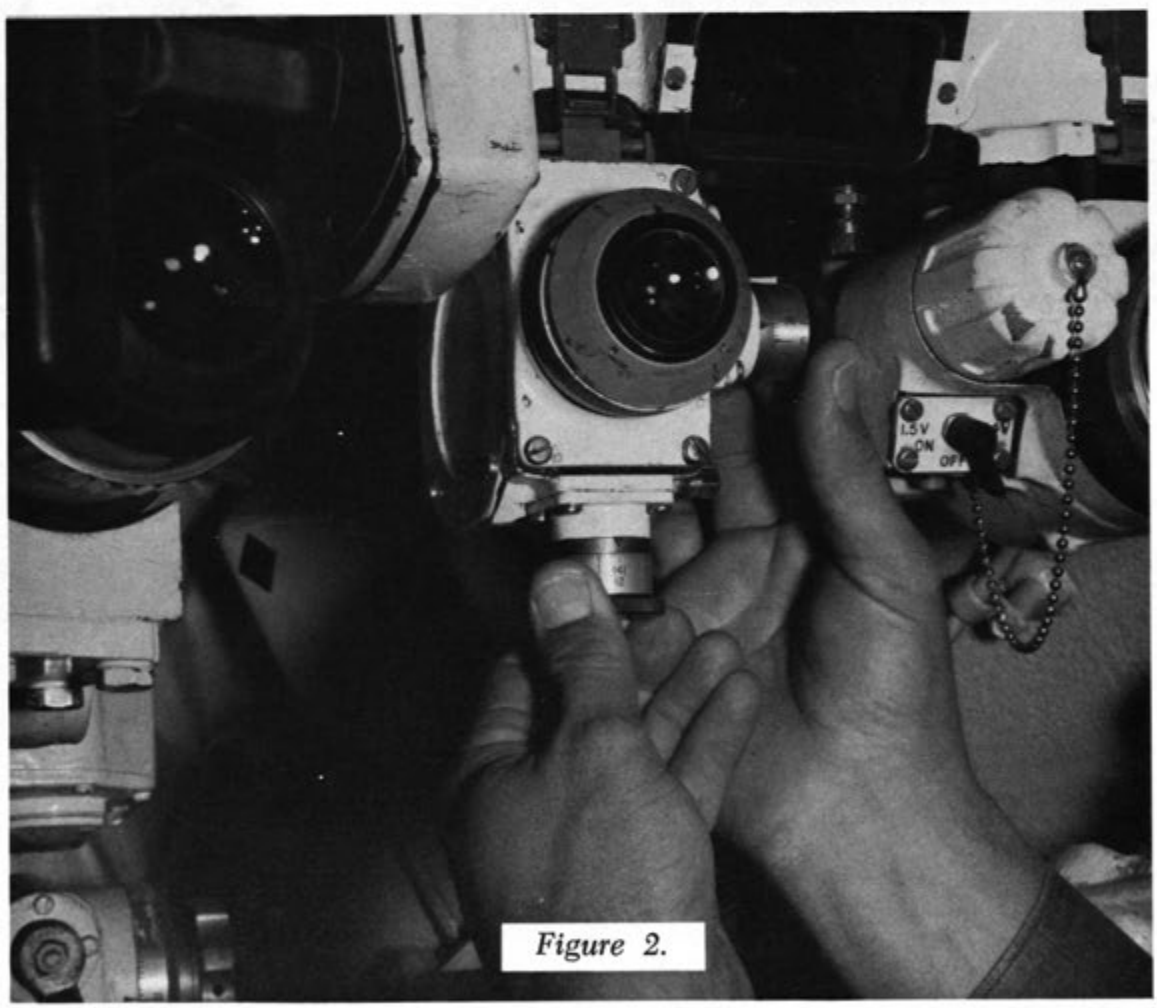
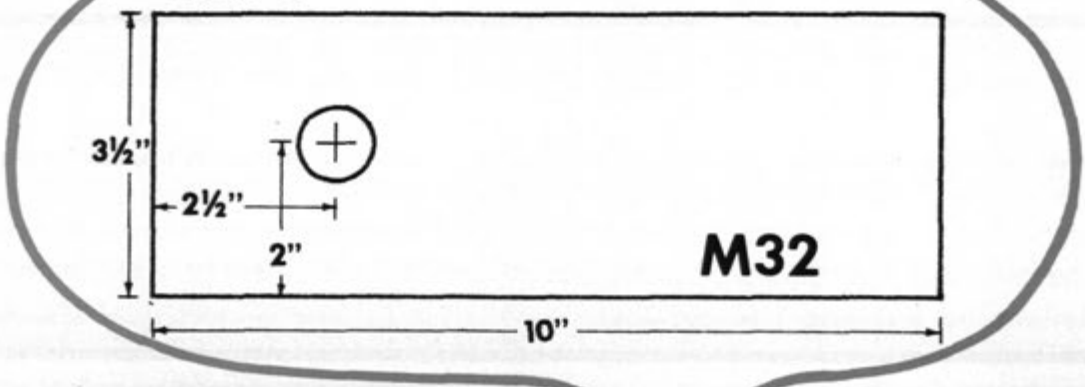


Figure 2.

Figure 3.



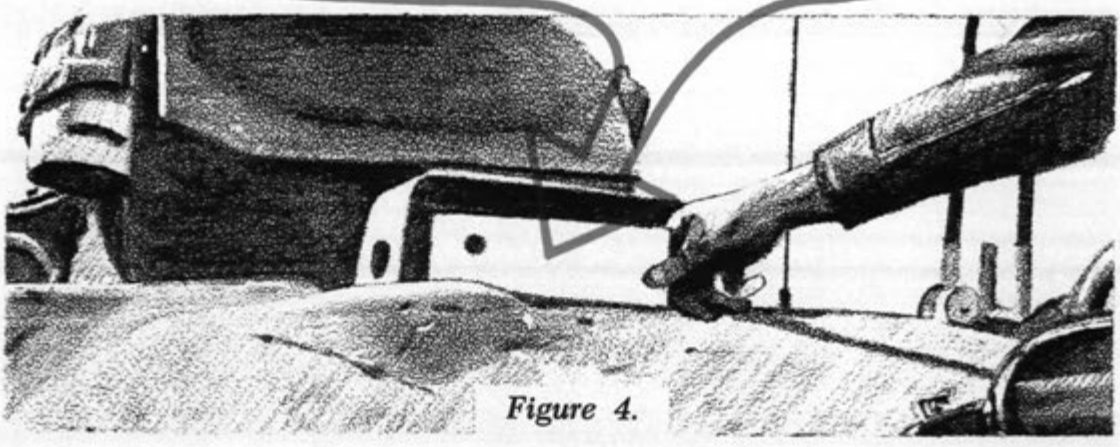


Figure 4.

SOLUTION

Index the same type of ammunition into the ballistic computer that was used when the *gun* was zeroed. Using the gun controls, lay the aiming cross of the reticle found in your visible body assembly on a target that is as near as possible to the range used when the main gun was zeroed.

Take a piece of cardboard from a C ration box or similar carton, and cut it evenly so that you have a rectangle 10 by 3½ inches. Cut a ¾-inch hole (the approximate diameter of a penny) in the cardboard so the hole is on line with, and centered on, the objective lens of the periscope head. This will prevent the reticle from being "blacked out" by normal daylight and possible damage to the converter tube from infrared rays emitted by the sun.

Turn on the infrared body assembly. The ¾-inch hole in the cardboard will allow enough light to enter the infrared body assembly so that you can see your sight reticle and the target (fig. 4). Use the boresight knobs and refer this reticle to the same aiming point you selected with the visible body sight reticle. Slip the numbered scales to the same readings found on the visible body boresight knobs. Your infrared body assembly is now zeroed.

DSC IS AWARDED TO ARMOR OFFICER

First Lieutenant John R. Johnston, Armor, has been awarded the Distinguished Service Cross for extraordinary heroism. The presentation was made by General William C. Westmoreland.

Lieutenant Johnston earned the award for actions on 25 and 26 August 1966 while he was a member of Troop C, 1st Squadron, 4th Cavalry, 1st Infantry Division. While commanding his armored cavalry platoon during a search and destroy mission near Lai Khe, he was ordered to reinforce another cavalry platoon which was engaged with and vastly outnumbered by a Viet Cong unit. Lieutenant Johnston led his vehicles through dense rain forest to the besieged unit and immediately deployed to bring maximum fire on the enemy. As he maneuvered the platoon, his own armored vehicle was shattered by two recoilless rifle hits that wounded several crew members. He quickly administered first aid and directed their evacuation.

Finding that his radio did not work, Lieutenant Johnston ran through heavy fire to another armored vehicle. He found that the radio in this vehicle did not work either. Ignoring the enemy fire he leaped from this vehicle to direct the defense. With men being hit all around him, Lieutenant Johnston darted among the tracks giving orders and shouting encouragement.

After the enemy briefly broke contact, Lieutenant Johnston organized both platoons into a tenable perimeter. While under sniper fire, he supervised the withdrawal of the wounded and he redistributed supplies. For 18 hours his leadership guided his men in resisting every hostile attack until the Viet Cong were forced to retreat into the jungle.

CAVALRY AIRS AVAILABLE

"Gary Owen," "Hit The Leather and Ride," "The Yellow Ribbon," and "Sabre and Spurs," are included on a new 45 r.p.m. record produced by the Patton Museum, Ft. Knox, Ky. 40121, $1.00 postpaid.

CHEYENNE OUT TO SCALP ENEMY

The U. S. Army recently unveiled a radically new armed combat aircraft which can take off and land like a helicopter, but fly forward with the speed, ease, and maneuverability of a fixed-wing plane.

Officially designated the AH-56A, and nicknamed the "Cheyenne," this compound aircraft is intended to escort troop-carrying helicopters in airmobile operations and to provide suppressive fire in combat landing zones. The AH-56A is called a compound aircraft because it has fixed wings and helicopter rotor blades along with a gas turbine engine.

The AH-56A can carry wire-guided anti-tank missiles, rockets, a grenade launcher, and a belly machine gun that gives the gunner a 360-degree field of fire. Armor plate protects the two-man crew from ground fire.

With day and night target detection capability, the aircraft was conceived and designed exclusively as a weapons ship.

Aided by a computer and other instruments, the gunner sits on a full-circle, swivel-seat, so that he can search and track targets during flyby. Once spotted, targets can be engaged quickly without requiring the pilot to veer from his course. The pilot is also able to fire the weapons.

Designed for quick "turnaround" capability, the Cheyenne can be serviced and back in action 10 minutes after landing. A complete engine change takes 30 minutes.

A rigid-rotor system gives the control and stability required for effective firing. The rotor blades are fixed rigidly to the mast instead of being hinged or teetered as on most helicopters.

Powered by a 3400 horsepower gas turbine engine, the Cheyenne is 55 feet long and weighs approximately 17,000 pounds. The main rotor blades have a diameter of 50 feet. The fixed wing has a 27-foot span. It has a top speed of more than 250 miles per hour.

NEWS NOTES

TRAINING STARTS ON NEW COMBAT VEHICLE

Units of the 1st Armored Division are being trained on the Army's newest addition to the combat engineer arsenal—the M-728 Combat Engineer Vehicle (CEV).

The CEV is an adaptation of the M-60 Main Battle Tank and is equipped with a bulldozer and hoist. It is distinguished by a large A-frame and its short gun tube.

The stubby 165mm gun fires a 65 pound shaped-charge of high explosive plastic. This gun is accurate up to 1,000 meters and is designed to breach obstacles such as roadblocks, bunkers, and tank traps.

The 165mm round is similar to the 155mm artillery round and has explosive power equivalent to the eight-inch howitzer. The CEV was first tested at Fort Knox, Kentucky last spring.

THE COMPLEAT GOURMET

Phaisan en Plumage wherever you are! Well not quite. However, the Charlie Ration Cookbook has a lot of fine pointers on how individuals and small groups can turn out some good chow in the field using C rations as the starting point. Featured are such well-known menus as, *Breast of Chicken Under Bullets, Cease Fire Casserole,* or *Guard Relief Eggs Benedict*. This amusing and practical booklet is available free from McIlhenny Company, Dept. CRB, Avery Island, La. 70513.

SHILLELAGH UNDERGOES ARCTIC TESTS

The U. S. Army's first guided missile to be launched from a tank cannon—the Shillelagh—has just been run through engineering and service tests in the snow, ice and bitter cold of Fort Greely, Alaska.

In the Arctic tests, the Shillelagh was fired from the General Sheridan armored reconnaissance/airborne assault vehicle.

The tests were designed to demonstrate capabilities of the Shillelagh missile system and the Sheridan vehicle under extreme weather conditions, and to determine how effectively soldiers can operate the equipment in sub-zero temperatures. Tests included firings at both moving and stationary targets.

WASHINGTON CEREMONY TO HONOR ARMOR ASSOCIATION

At 1600 hours on 23 July 1967, the Military District of Washington will honor the United States Armor Association with a Sunday Retreat Review at Fort Myer, Virginia. Present on the reviewing stand will be the President and other distinguished members of the Association. All members and friends of the Association, and their families, are invited to attend this colorful ceremony to pay tribute to those Cavalry and Armor people who have bonded together since 1885 to advance the knowledge of mounted combat.

NEW GATLING GUN PACKS PUNCH

The latest of the Gatling-type guns is the lightweight, three-barrel, 30mm weapon designed to fire the XM-552, 30mm high-explosive dual purpose round. Design of the gun's rotary action firing mechanism is similar to the six-barrel 20mm Vulcan aircraft cannon which has proven so reliable and effective in Vietnam.

The weapon is light and fast. Weighing only 150 pounds it can deliver fire at a rate of 2000 rounds-per-minute. A slower rate of 500 rounds-per-minute is also available. A de-clutching feeder in the weapon prevents the danger of "cook-offs" by placing all three bolt assemblies in hold-back position at the end of each burst.

The gun was developed by General Electric.

FLIGHT TRAINING REGULATION REVISED

The Chief, Armor Branch, announces that a recent revision of Army Regulations 611-110, *Selection and Training of Army Aviation Officers,* permits entry of captains into flight training provided the applicant has not exceeded 42 months total commissioned service and if application was made while he is in the grade of lieutenant. Previously, captains with less than 24 months in grade could enter flight training only after completion of a Vietnam tour.

A second change to the regulation allows applications for flight training to be made by lieutenants at any time. If the applicant is overseas, he *may* be returned upon completion of only one year in the overseas area. Previously, an officer overseas could not apply for flight training until he was within ten months of rotation to CONUS. Furthermore, completion of the full overseas tour was required.

Officers, who have been previously disqualified because of grade or overseas limitations and who still desire to apply for flight training, should notify Armor Branch as soon as possible.

NEW ARMOR ASSOCIATION DECALS NOW AVAILABLE

Each member will receive a new full-color Armor Association decal at the time he sends in his dues. Additional decals are available from the Association Book Department at 25 cents each postpaid.

Help your Association by displaying your decal on your car or some other prominent place.

NEW VEHICLE HAS UNIQUE FEATURES

A new ground-hugging vehicle called the "Twister," is off and running. The five-ton, eight-wheel drive vehicle has two main body segments joined by a pivotal yoke. This enables the Twister to make a U-turn in less road width than a jeep. Independently suspended wheels up front, and a rear walking-beam suspension, allow the Twister to move at high speed over extremely rough terrain, while keeping all eight driving wheels on the ground.

It can accelerate from a standstill to 45 miles-per-hour in 18 seconds and can obtain a top speed of over 65 miles-per-hour.

A prototype testbed model of Twister has been under extensive development and evaluation for two years. During this time it has been over and through everything from rice paddies to sand dunes.

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 ☐ NAT GD ☐ USMA
   (Grade) (Service) (Branch)
   (Service Number) (Unit)

2. **OTHER MILITARY MEMBER**
   ☐ REGULAR ☐ RESERVE ☐ NAT GD ☐ ROTC ☐ RETIRED ☐ DISCHARGED
   (Grade) (Service) (Branch)
   (Service Number) (Unit) (If Veteran or Retired Indicate Former Unit)

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

FROM THE BOOKSHELF

FAINT THE TRUMPET SOUNDS

By John Upton Terrell and Colonel George Walton **$6.95**

The events that took place at Little Big Horn on 25 June 1876 and their sequels still capture the interest of historians, the military, and the general public.

Marcus Albert Reno, sometime Cavalry Major and Brevet Brigadier General, has once again become the subject of legal proceedings. Recently, the Army Board for the Correction of Military Records conducted hearings on a petition to have Reno's 1880 dismissal from the service reversed. Marcus Reno was the center of controversy from his cadet days at West Point until he was buried in an unmarked grave in Washington, D. C. in 1889.

Historian-journalist Terrell and soldier-lawyer Walton have teamed up to show *"that no American officer had been so unjustly treated, so greatly maligned and unfairly discredited as Major Reno."* The result is a well-written, carefully documented biography of a brave and eccentric officer who might have passed unnoticed had fate not placed him with Custer's command.

The verbatim citations of testimony before the Board of Inquiry convened to investigate Reno's conduct at Little Big Horn and two subsequent court-martials allow the reader to weigh the evidence for himself. There is also a wealth of material upon which to base conclusions as to the objectivity of the court members, the propriety and legal sufficiency of the convening and reviewing authorities' actions and the influence of politics on the review process.

Faint The Trumpet Sounds **is good history made all the more interesting by the fact that the issues it raises are not dead. It goes beyond a mere recital of events to include excellent character studies of the protagonists.**

Those who advocate, either seriously or lightly, a return to a simpler system of military justice with less exquisite concern for the rights of accused persons may find much here to give them pause. O. W. M., Jr.

HO CHI MINH ON REVOLUTION

Selected Writings, 1920-66

By Bernard B. Fall **$6.95**

Bernard B. Fall's last book before he was killed is his selection of Ho Chi Minh's writings ranging from 1920 to 1966. Probably no western author was able to understand and interpret both North Vietnam and its leader to the westerner as Bernard Fall could.

Fall points out that Ho Chi Minh is not a philosopher, nor is he interested in debating political theories, but that Ho is a man interested in achieving clearly defined political goals. For most of his early years, Ho Chi Minh worked as a cabin boy and as kitchen help. Therein, he was unlike many other political leaders of today who had the leisure to codify their thoughts.

Bernard Fall's selection ranges from lines of Ho's 1920 address to the French Socialist Party and his fierce invectives against the French colonialists to his reaction to the growing American confrontation.

This selection reveals many of the emotions and ideas that move Ho Chi Minh today. His thoughts and ideas influence strongly the present North Vietnamese political reasoning. This book is essential for an understanding of that reasoning.

WARRIOR

By the Editors of ARMY TIMES **$5.95**

Most discussions of military leadership will include the name of George S. Patton, Jr. Although Patton is already a widely chronicled subject, no less of an authority then the editors of ARMY TIMES have decided to add their contribution to the list. **The result is a very significant book which will contribute to the discussions which arise over one of the most dramatic personalities found in the pages of military history.**

WARRIOR is not an atlas of tank tactics and land battles, but a sharply focused picture of Patton in the midst of the fray, commanding, charging, and full of ideas on how it should be done. It is the story of Patton as a cadet, as a leader, and as a soldier. More than that, it searches out Patton, the emotional and sometimes passionate man.

The quotes are well chosen and the everyday dialogue is natural, full of meaning and genuinely revealing. We see a Patton few people ever saw. We meet the realistic fighter, a man who recognized immediately, that once Germany was beaten, there were others still spoiling for a fight.

Over seventy photographs enable us to glimpse Patton in a spectrum which ranges from the mischievous West Point cadet to the serious four-star general, caught in a moment of reflection after watching the final review of the 103d Division. They help tell the story of a proud warrior.

BATTLES IN THE MONSOON

By S. L. A. Marshall **$6.95**

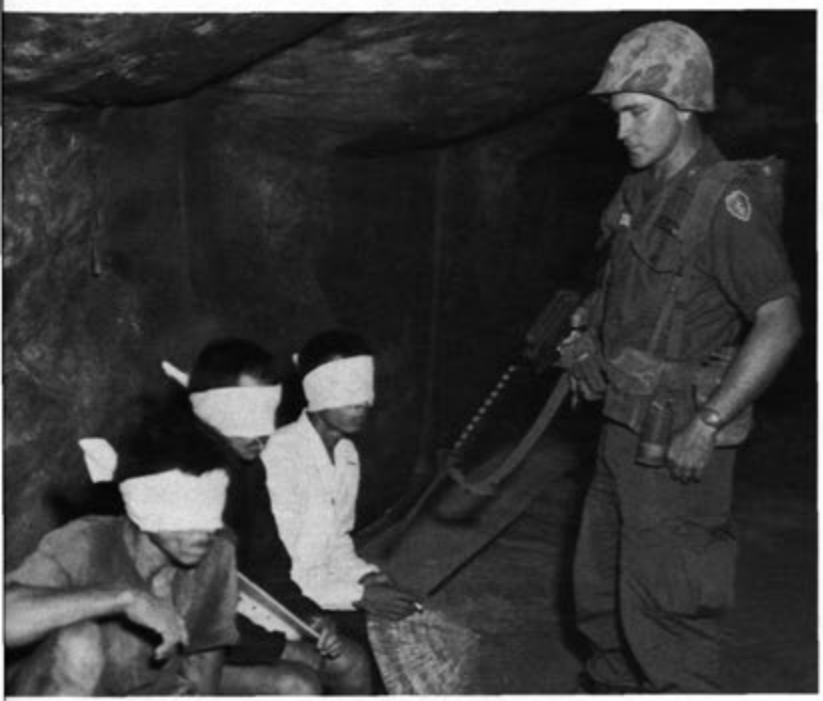
"Battles in the Monsoon" is destined to become one of the most authoritative and literate accounts on the controversial war in Vietnam. Long recognized as one of the most qualified military writers in the world today, S. L. A. Marshall has forged the details of three major operations of the war into a singularly impressive combat journal. It is highly reminiscent of his classic books on the Korean War.

More conscious of battle "unknowns" than any other military writer, General Marshall catches the shock, confusion, and bewilderment of a unit suddenly being hit or a soldier suddenly alone in the midst of battle. Yet General Marshall's unique talents enable him to give an analyst's clear description of what really happened.

Photographs of the participants taken against the backdrop of steaming jungles and rice paddies graphically bring to life the ugly and strained face of war and the telling marks of battle.

Marshall has that rare knack of capturing with the written word the true feeling of what occurred. He knows that a hero will describe the battle and what he did as though he were no different at all from the next man. Such accounts are often missed by the less experienced author and reporter.

Marshall gives the American soldier the admiration and credit he deserves. In so doing, he has written a tough, heart-breaking and yet strangely optimistic book. He places firmly in American military history such names as "Austin 6," "Hawthorne II", and "Crazy Horse." *Battles in the Monsoon* is must reading for those who want a full and accurate understanding of the American combat soldier in Vietnam.



VICTOR CHARLIE

The Face of War in Vietnam

By Kuno Knoebl **$5.95**

Here is a story of brutality and ruthlessness that is sometimes hard to imagine. Kuno Knoebl, an Austrian journalist, attempts to keep the view of an interested, but neutral observer. For this reason, he chose to live with the Viet Cong as well as with the Americans and South Vietnamese before committing his observations to writing. The result is a controversial book that will be challenged by many.

A preface by Bernard B. Fall conveys Knoebl's scope: *"What we have here is first hand testimony, from direct observation in both camps, by a European neutral who is more concerned with people and what war does to them than with grand strategy."*

Knoebl points out the torture, duplicity, mismanagement, and corruption which he states have become an integral part of the struggle in Vietnam.

> There are many who will disagree with Knoebl when he says: *"The civil population suffers far more from the bombs than the guerrillas do, for the Viet-Cong is trained and accustomed to living a spartan and dangerous existence. The Viet-Cong can retreat to hide-outs in the dense rain forests, but the peasants cannot escape the planes; their villages are easy targets and many American pilots prefer to unload their bombs on visible objectives than drop them somewhere in the jungle."*

Knoebl observed the action from a unique vantage point and he unhesitatingly describes the war in Vietnam the way he sees it.

THE GOTHIC LINE

By Douglas Orgill **$5.95**

"It is a truism in war that 'it is always the best who are killed first.' This may or may not be true in a moral sense, but it is certainly true in a professional military one. The infantry subaltern who first gets up from a safe position to run towards an enemy post; the first soldier to follow him out into the open; the tank commander who leaves safe ground to work round on a flank and surprise the enemy—these are the men who die first in battle."

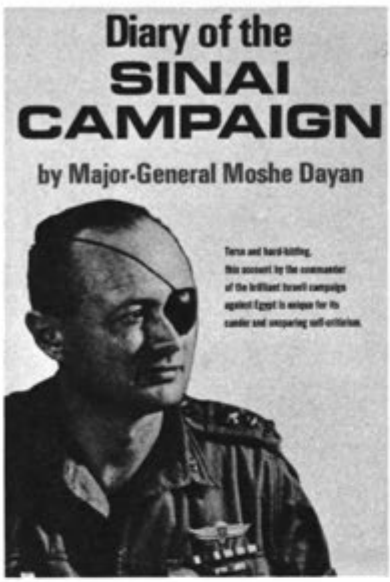
Douglas Orgill's account of the Italian Campaign in Autumn 1944, is a lucid account of a portion of the war that is often confused and more often ignored. There were no great sweeping advances and cut-offs of the enemy, and both the Germans and the Allies knew they were not playing the major role of the war.

Orgill served in the campaign as a commander of a troop of Sherman tanks, and he records the frustration of British tank commanders being ordered against 88s they know will decimate their tanks. At the same time, having since completed a degree in modern history, he can relate local actions to the big picture.

Orgill describes the battle from both sides. Both the Allied and German commanders are personalized. We come to know their problems. General Alexander, for example, had at one time no less than twenty-six nationalities serving under his command. The complexities of coordination seem almost beyond comprehension.

On the other side, Field Marshal Kesselring's troops can move only at night. Any supplies venturing out of hiding and on to the sunlit Italian roads faced immediate destruction by the massive Allied air power.

Orgill tells a story of massive proportions, but he never neglects the fact that it was a struggle of man against man.



DIARY OF THE SINAI CAMPAIGN

By Major General Moshe Dayan

HARDBOUND $5.95 **PAPERBACK $1.95**

On 1 June 1967 Major General Moshe Dayan became Israel's Defense Minister. On the heels of his appointment he was again called upon to lead his nation's armed forces in battle.

Published in English only last year, General Dayan's objective analysis of the 1956 Sinai Campaign is no empty paean of praise for Israel's actions in that conflict. His critical view of certain Israeli operations made him a controversial figure in his homeland but certainly added to his status as a soldier.

This book is the best available background for understanding recent military events in the Middle East. It deserves to be carefully read by everyone with a true interest in modern armor operations.

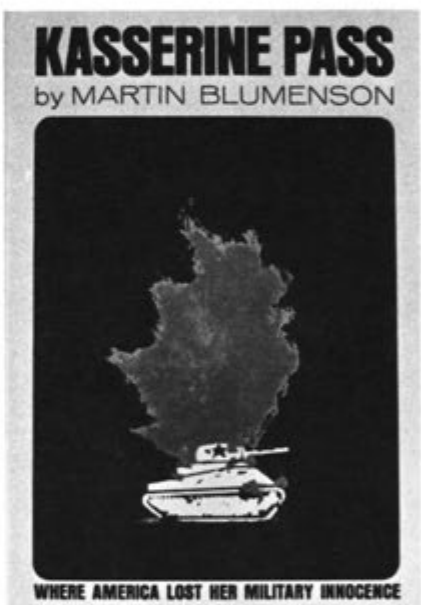
KASSERINE PASS **$5.95**

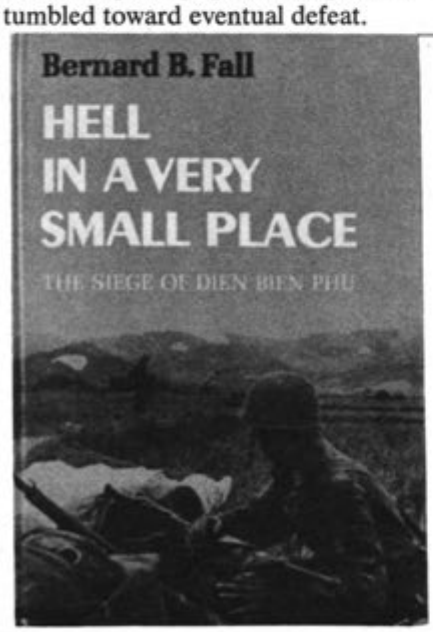
By Martin Blumenson

For a few weeks in 1943, a nondescript village near a mountain pass in North Africa held the attention of the entire world. There, at Kasserine, developed the climactic battle for Tunisia and a turning point in World War II.

An Allied army composed of British, French, and Americans received an angry thrust delivered by an Italo-German army. At stake were not only the lives of men, but the answers to vital questions. **Would the Allies lose the war in Africa or would they generate a momentum that would carry them into Europe? Did the French, who had suffered defeat in 1940, deserve a second chance to fight? Could the inexperienced Americans stand up to the Germans?**

The outcome of the conflict at Kasserine settled these issues and revealed far more. Disclosing the tyranny of logistics, the importance of equipment, the influence of terrain, Kasserine brought together for the first time the commanders who would fight the war to the finish. It gave Eisenhower his opportunity to prove his generalship, Kesselring his chance to hold together a disintegrating partnership . . . at Kasserine, one rose and the other tumbled toward eventual defeat.





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