ARMOR

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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

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DEPARTMENTS

COVER

A PENCIL AND WASH DRAWING OF ARMOR IN THE 70S AS VISUALIZED BY STANLEY L. LEBORNE, CDC CIVILIAN ARTIST. MR. LEBORNE STUDIED AT THE CORCORAN SCHOOL OF ART IN WASHINGTON AND HAS BEEN IN THE GRAPHICS FIELD SINCE 1959.

STAFF

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LETTERS TO THE EDITOR

An Armor Dune Buggy?

Dear Sir:

I have been interested for some time in the military application of the dune buggy concept. It was while I was on leave in California during 1968 that I was really exposed to the unique aspects of the dune buggy configuration.

My thinking on the military application of the dune buggy is that it would not be so much a replacement for the jeep, but rather would fulfill the requirement for an inexpensive vehicle for troops who need highly mobile, dependable transportation, such as scouts.

I envision a vehicle which is complete as a unit—terra-tires, power package, fiberglass body, canvas top and seats, a small inexpensive radio, rations, water, weapons, ammo, etc. Such a configuration would be packed in a shock-proof, weather-proof fiberglass or aluminum container which could be stored, prepositioned or air dropped. I contemplate a cost of $1000 to $1500 per vehicle without the additional storage gear. This is a difficult objective to achieve I know, but the cost is important in selling this sort of concept.

Vietnam, and now the Middle East, have shown the need for an inexpensive high speed, highly mobile, reconnaissance and patrol wheeled vehicle. I am convinced this concept has merit and deserves study. I intend to address the subject for ARMOR Magazine when I can get more data.

BURTON S. BOUDINOT
Lieutenant Colonel, Armor
Fort Knox, Kentucky

FMC Corporation also believes the concept has merit. At this year's AUSA meeting that firm introduced the 5600lb loaded, 200hp, 80mph, 160in long, 61½in high, 2-man crew XR-311 *high-mobility wheeled vehicle. Other features included four independently suspended driving wheels, a tubular safety cage, 30in fording capability and an optional lightweight armor kit. Frequent ARMOR author Boudinot has been asked to evaluate this concept as well as others in his forthcoming article.* THE EDITOR.

14th Cavalry Museum

Dear Sir:

This is to enlist ARMOR readers to help in a much needed project.

The 14th Cavalry has a colorful history which deserves commemoration. The regiment's heritage includes distinguished service in the Philippines, along the Southwestern Border and in Europe during and after World War II. In fact, the 14th Cavalry is unique in Armor for having been stationed continuously in Germany since 1945.

We intend to establish a museum at the headquarters in Fulda, Germany, where pictures, documents, equipment and so on describing the regimental history will be displayed. Donations of historical items are badly needed and will be greatly appreciated.

MARTIN D. HOWELL
Colonel, Armor
33d Commander
14th Armored Cavalry Regiment
APO New York 09146

More On Badges

Dear Sir:

I am appalled at the lack of interest generated thus far by the various articles and letters printed in ARMOR concerning the creation of a Combat Armorman's Badge. Though I do not think there is much I could add to what has been said, I would like to go on record as being strongly in favor of the creation of such a badge. I would like to point out to the "silent majority" that the Combat Infantryman's Badge is not the only combat badge in existence. The other one is, of course, the Combat Medics Badge!

I feel that many readers of ARMOR are a little gunshy when it comes to writing letters to the magazine. If it is possible, I suggest a ballot type reader survey be conducted by *ARMOR*. Nothing elaborate. Just a simple for or against and possibly space for a short explanation why. Maybe this approach would generate more interest and give us all something more concrete to go on.

It appears to me that as Armor leaders our silence is not golden and unless we make our views known we will continue to be overlooked officially as fighting combat soldiers. The basic problem is who is doing the fighting on today's battlefield? If the Infantryman is accorded special recognition, then the Armorman deserves to be equally recognized.

CHARLES F. MOLER
Captain, Armor
Fort Knox, Kentucky

Dear Sir:

With all due respect to the Infantrymen who have earned the Combat Infantryman's Badge, here, for what it's worth, is my stand on the subject. I proudly wear the CIB (two awards). But I would not hesitate to forfeit them for one Combat Armorman's Badge.

Yes, I too, by virtue of job assignments in Korea (Tk Co, 23d RCT, 2d Inf Div) and Vietnam (Vietnamese Armored Personnel Carrier Troop Advisor) was awarded the CIB. I assure you that the actions in which I participated in 1950-51 on the Naktong River, Junu-Ri, and Chip-Yong-Ni did not always take place from within the confines of the organic *M4A3E8* tank. The foxhole or rice paddy dike was often the order of the day by choice and necessity. In Vietnam (1965-66) I'll be the first to admit that my actual combat action was limited to smaller type actions, but I can assure you, there was no hesitancy on my part in accepting my second award of the CIB; I earned it.

A regular reader of *ARMOR*, I have noted this CIB/CAB subject addressed time and time again, and we have always lost. I propose that Armor people everywhere lobby for what we want through all available channels. I recommend that a board of officers, all ranks and combat branches, assemble and intelligently discuss this subject thoroughly.

I firmly support the Infantryman and his blue badge of courage, but I just as strongly believe the Armor soldier has waited too long.

MERLE F. LYNCH
Major, Armor
Fort Knox, Kentucky

Dear Sir:

May I enter my opinion on the Combat Armorman's Badge proposed by a few?

Armormen do not need it. We have a very proud heritage and a dash and flair unrivaled by any group of men at arms in history.

The CIB is a superb award as is the Combat Medical Badge. But more are neither needed nor appropriate. Think, if you will, of a Combat Artists Badge, Combat Convoy Badge, Minesweeper Team Badge and so on ad infinitum.

I have my Armor branch insignia and this is plenty for me.

CAPTAIN ICONOCLAST

On Military Ideals

Dear Sir:

Captain Jack S. Chase's article on standards of conduct for military men (ARMOR, July-August 1970) is certainly timely. And he makes some telling points about the character of war, human nature, leadership responsibility, and individual values and ideals. But in using the Battle of Wounded Knee in juxtaposition with misconduct in Vietnam, he has attained literary effect at the expense of historical accuracy and perspective. It is probable that he has been led astray by his sources.

There have been, as the author notes, behavioral lapses in all our wars. The alledged atrocities in Vietman have created a thirst, especially in the commercial press, for comparisons with other defaults in our military past. Surface similarities have inspired judgments which ignore the ingredients that qualify all such misadventures and nullify attempts to fit them into a common mold. How does one bring into line such diverse considerations as fear, inexperience, justification, revenge, intention, bias, chance, motivation, premeditation, misunderstanding, and even madness? Ready attempts to see My Lai as a carbon copy of Sand Creek, the Marias, or Wounded Knee only distort history and, in some cases, reflect unfairly, upon other generations of soldiers.

The Sioux Nation was the white man's name for the Teton Sioux, a loose confederation of seven tribes. Pushed out of the lake and forest region around the Mississippi River's headwaters, they moved onto the upper plains, acquired the horse, hitched their economy and livelihood to the buffalo, and roamed the vast region north of the Arkansas River and west from the Missouri River to the mountains. As the white man moved west the Sioux were pressured into a series of deals that whittled away their territory, their freedom and their way of life. If their impending downfall was not apparent earlier, the decade of the 1880s brought the story home. Confined to the Great Sioux Reservation in South Dakota, they saw their political, social, economic, and religious customs and traditions so abridged and their territory so inexorably compressed that their life style was shattered. In their dispair they were highly susceptible to the preachings of an Indian Messiah who offered a new religion that promised a return to the old way of life. The central feature of the new faith was a Ghost Dance that disciples were to perform at specified intervals.

Many of the Sioux fell under the spell of the Ghost Dance religion and plunged into the ceremonial dancing with wild abandon. As the infection spread during the summer and fall of 1890, the problems of the agents who administered the tribal reservations became increasingly acute. The more able and experienced maintained control, but several of them were replaced at a critical period because of the change of national administrations. The Pine Ridge agent, for example, newly appointed through political patronage and a prime example of the spoils system, by November had lost the respect of his charges along with whatever degree of authority he might have had. Here and at several other locations the Indians defied orders to stop dancing, and emotions reached such a pitch that the lives of government employees were clearly endangered. Despite a traditional rivalry between the Indian Bureau and the War Department over which was better qualified to administer the red man, the Acting Commissioner of Indian Affairs recommended that the Secretary of Interior ask for troops. The President directed the Secretary of War to supply them, and on November 17, 1890, units were dispatched from various locations in General Miles' Division of the Missouri to the Pine Ridge and Rosebud agencies and to positions along the rail and telegraph lines south and west of the reservations. There days later, columns arrived simultaneously at dawn at the two agencies, and the complex and controversial chain of events began that would lead to the clash on Wounded Knee Creek five weeks later.

What are the essential facts of the Battle of Wounded Knee?

Major Samuel M. Whitside (not Whiteside) and four troops of the 7th Cavalry intercepted Chief Big Foot and 350 Miniconjou Sioux on the Pine Ridge Reservation on December 28th and escorted them to Wounded Knee Creek where they were camped adjacent to the military bivouac area. A tent was erected for Big Foot, who had pneumonia. He was attended by the military surgeon. Meanwhile, the officer of the day set up 20 sentinel posts around the Indian village, with patrols to connect them (in open fashion at sunset, not by stealth at dawn). The squadron commander also posted his two Hotchkiss guns on a hill above camp (the command had no machine—Gatling? —guns), and two more that arrived in the evening hours with the remainder of the regiment were also posted there to form a battery of four guns.

On the morning of the 29th, the soldiers and the Indians went about their normal day-starting activities cheek-by-jowl. Colonel James W. Forsyth, the 7th Cavalry's commanding officer, positioned his units around the area as he prepared to carry out his orders to disarm the Indians. His officers were experienced and able professionals; six had been with the outfit since Custer's day, and five had fought at Little Bighorn. About 20 percent of the enlisted men were recruits, some in the regiment only two weeks (not long enough to have heard a shot fired in anger much less to have amassed pent-up frustrations from years of combat and campaigning; indeed, the regiment had seen no combat in a dozen years and few could have been present who knew much more than the privations of frontier service). The Indians did not plan armed resistance, and to the army officers it was such a remote possibility as to be no threat at all.

Around eight o'clock the troop units took up their positions, and Forsyth designated the area in front of Big Foot's tent as a council site. The Indian men were assembled there to hear him say that they must surrender their arms (this was not in the village and there were no sleepy insurgents). When the Indians relinquished only some old weapons. Forsyth and Whitside detailed two groups of fifteen soldiers under several officers to search the Indian tepees (not squalid huts but highly utilitarian conical dwellings made of skins stretched over poles and as desirable and practical to the red man as a split level is to today's white suburbanite). Officers only (not troopers) entered the tepees and, in a gentle but firm manner searched carefully for arms that the squaws were trying their best to conceal (they and the children were not pushed out nor were their belongings dumped about; indeed, Captain Wallace chucked the children under the chin and Lieutenant Mann, writing on his deathbed a few days later, stated that "The squaws were sitting on bundles concealing guns and other arms. . . . Had they been the most refined ladies in the land, they could not have been treated with more consideration."). As the search proceeded, it became apparent that many rifles had not been found, and they could only be under the warriors' blankets. An individual search was begun.

As these proceedings went along, a medicine man named Yellow Bird, who was wearing a Ghost Dance shirt and apparently believed in the new faith and was determined to spread the word, circulated among the young men, reassuring them of their invulnerability to the white man's bullets. His incitement added to the natural agitation of the moment.

The final spark came when two soldiers approached a young Indian named Black Coyote, who held a rifle above his head and vowed not to surrender it unless he was paid for it. A slight tussle ensued, and the weapon was fired into the air. At the sound of the shot, half a dozen warriors pulled rifles from under their blankets, levelled them at K Troop standing in ranks to the side, and fired a volley into the unit. By instinct the troopers of K and B returned the fire (and this was certainly not the opportunity they had been waiting for).

A wild melee followed. Indian fire that failed to find a K Troop target laced into the Indian village, and women and children

scattered in all directions. The warriors broke in all directions, and the fight spread over the area, with Indian men, women, and children intermixed and partially indistinguishable in the smoke, dust, and heat of battle. Some of the squaws were armed and did as much damage as their men. Fighting warriors invited destruction upon women and children. Unwanted and unnecessary killing there was, but little if any cold-blooded and premeditated killing of noncombatants occurred.

Captain Chase in his article fails to note that the 7th Cavalry lost 1 officer, 6 noncoms, and 18 privates killed, and had 4 officers, 11 noncoms, and 22 privates wounded, many seriously.

There have been many unfortunate incidents in American military history, and there will undoubtedly be more. None exactly duplicates another, and there are no pat answers as to why they happen. The reasons are never clear and precise, identifiable or fully correctable. They are as complex, diverse, obscure, and debatable as the circumstances and human failures that foster them. Education, instruction and training, rules and regulations, punishment, leadership—these are the stronger preventive measures.

Above all, we need to be clear as to facts and balanced in our judgments and perspectives when we seek answers in historical examples. The Battle of Wounded Knee was certainly not something to be proud of; yet neither was it a premeditated massacre of defenseless women and children. Robert M. Utley, in his book *The Last Days of the Sioux Nation* (New Haven, 1963), puts the event in historical perspective: "It is time that Wounded Knee be viewed for what it was—a regrettable, tragic accident of war that neither side intended, and that called forth behavior for which some individuals on both sides, in unemotional retrospect, may be judged culpable, but for which neither side as a whole may be properly condemned."

Let's accept that as we move on to higher goals.

WILLIAM GARDNER BELL
Lieutenant Colonel, AUS-Retired
Arlington, Virginia

Colonel Bell, a distinguished former editor of ARMOR, is a historian in the Office of the Chief of Military History, Department of the Army. A noted authority on the subject, he is the author of the chapter on the Indian Wars in the Army's official text American Military History, *as well as a host of published articles.* THE EDITOR

BE A COMPLEAT MAN OF ARMOR

These musings are not to be read by archers, bombardiers, hoplites, sappers or other such. In the first place the subject is not of interest to them, and in the second we expose candidly a few facets of our own characters which might best be kept in the family.

In 1967, our journal *ARMOR* had an average paid subscription total (to include members' subscriptions) of 6079. By dint of good support by many men of Armor, this rose to an all-time high of 9837 for the March-April 1970 issue. But by the September-October number a gradual decline over three issues brought the figure down to 8994.

This need not be! Potential subscribers abound. In recent years, never more than one-quarter of the Armor officers on active duty have been Association members, active Army senior NCO membership has never exceeded 300, never more than one-half of the Army National Guardsmen eligible for active membership have joined, and Army Reserve membership has not gone above 200.

If our journal is to continue to stimulate our thinking, to increase our knowledge, to enhance a proper pride in our achievements—in short to make us better men of Armor—it must be supported.

If you are now an Armor Association member, and a faithful reader of *ARMOR*, you have good reasons for so being. Thus you can serve well other Armor people who are not members by letting them know why you believe they should join, derive the benefits of, and support their branch professional association. And you can get unit funds, libraries and so on to subscribe to *ARMOR*. To help you, we will gladly send a sample copy to those whose addresses you send us. If each member reading this recruits only one new member or subscriber, paid circulation will soar.

If you are not now a member, you are missing something that has been part and parcel of being an Armor or Cavalry leader since 1885. So send in your dues for a trial year membership. At the end of the year you will have various interesting alternatives: (1) renew your membership, (2) write an article for *ARMOR* which when published will earn your next year's dues, (3) lead a movement to impeach the Secretary-Treasurer and Editor and get a good one, or (4) drop your membership and transfer to the other ground gaining arm (they have no association but their professional magazine is superb and it is less costly than ours).

If you choose to be a man of Armor, be a compleat one! Support, and convince others to support, your branch Association and professional journal.

The Editor

Notes from the ARVN Advisor

SPONSOR AN ARVN ARMOR UNIT

In 1967, a program was started to assist ARVN Armor's dependent families—and thereby to raise the morale and efficiency of the fighting Armor troopers—by having interested US Armor units of the Active Army, Army National Guard or Army Reserve sponsor a particular ARVN unit. The program got off to a good start with the squadrons of ARVN armored cavalry which existed at that time. Unfortunately, all pertinent correspondence and records were destroyed in the 1968 Tet Offensive.

The only sponsor relationship surviving today is that of the 107th Armored Cavalry Regiment, Ohio Army National Guard with the ARVN 7th Cavalry (See "Unbounded Courage and Compassion Joined"—ARMOR, July-August 1969.) There are now 17 ARVN squadrons and three brigades.

The basic need is for self-help materials—yard goods, sewing materials, hand tools and school supplies. Specific details should be worked out with the American advisor with the unit sponsored. If your unit is interested in helping these gallant Allies to improve the lot of their families, please write to the Senior Advisor, Armor Command (ATTN: G5), Training Directorate, USMACV, APO San Francisco 96222.

ARVN ARMOR BADGE

The ARVN Armor Badge is authorized for all who served at any time as advisors to the ARVN Armor Command, Armor School, or any deployed ARVN Armor unit for a minimum of 90 days. A number of persons, particularly in the early years, either did not receive the award or did not get the necessary documentation to have the award recorded in their official records. If you are one of these, please send a certified extract of your Form 20 or 66, verifying the assignment together with your current address to the Senior Advisor Armor Command (ATTN: G1), Training Directorate, USMACV, APO San Francisco 96222. The requisite bilingual orders will be returned to you within 60 days.

ADVISOR TEAMS

GRADE AND SKILL AUTHORIZATIONS FOR ADVISOR TEAMS

	03	04	05	06		E6	E7	E8	E9
G1203	•	•	•	•	11D4H		•		•
G1204	•	•	•	•	11D5H			•	•
G1210	•				11E4H		•		
G2162		•			11E5H			•	•
G4010	•				11G5H				•
G9301	•				63C4H	•	•		

If you have one of these MOSs, are on orders to USMACV (not to USARV), and desire active rewarding field service, send a copy of your orders, port call date, and a brief summary of your experience and qualifications to the Senior Advisor Armor Command (ATTN: G 1) Training Directorate, USMACV, APO San Francisco 96222.

Follow this up immediately upon arrival in Saigon by telephoning 99-31706/31719.

We cannot, of course, make any promises. An appropriate vacancy must actually exist at the time of your arrival. But we certainly cannot even attempt to help you unless we know you are coming and want this type of assignment. We are interested in everyone, but particularly those with a previous tour advising ARVN Armor or with a US Armor unit in Vietnam.

ARMOR in the 70s

by Lieutenant General George I. Forsythe

Those who have been privileged to hear General Forsythe speak about the Army to come, the future roles of its combat and combat support elements and the part that Armor will play in the years ahead, have never failed to understand more fully the many factors involved. For these reasons, we asked General Forsythe to put forth his stimulating views in an article especially for ARMOR, emphasizing how Armor fits into the future as he sees it. This he did; this article is the result. The manuscript was no more than in hand when General Forsythe was transferred from one important assignment, command of the US Army Combat Developments Command, to another—the newly created position of Volunteer Army Project Manager. Thus he will continue to have a major influence on the shape of the US Army in this decade. THE EDITOR

During the first few days of 1971 it seems fitting that we in the military stop and look closely at where we are, have been, and, of more importance, are going. We are now one full year into this decade which, in the opinion of many, may prove to be one of the most trying for the US Army of any in history. It certainly will be one that will present the Army—and within the Army, certain key segments—with the greatest of challenges. One of those segments is Armor.

It is patently obvious that a substantial shifting of national priorities has taken place in the past year and this, in turn, has had a great impact on the defense establishment.

Our total defense expenditures for FY 71 will constitute only seven percent of the gross national product. Measured either as a fraction of the gross national product or as a fraction of the Federal budget, this is the lowest expenditure for defense since 1951. Moreover, this comes at a time when direct expenditures for the war in Vietnam are still large, representing more than 20 percent of the total defense expenditures in the current fiscal year.

Additionally, only the incurable optimist can see

other than a continuation of this downward trend in defense spending—at least during the first half of this crucial decade.

Another trend that affects the Army, and one which was spelled out quite clearly in the Nixon Doctrine, is the reduction of this nation's involvement in Southeast Asia. Our commitments in other areas of the world are also under continuous evaluation.

Another factor to be considered is the threat—real or potential—facing the United States in the decade ahead. It is formidable and we should be fortunate indeed if it remains as it is today. The Warsaw Pact Nations are continually modernizing their forces which, at present, constitute a massive, sophisticated, armor-mechanized threat. In Asia, under the general leadership of the Chinese Communists, we face a less sophisticated threat, but the sheer numbers involved—the very mass—cause thoughtful contemplation.

Wrapping all these factors together leads to the inescapable conclusion that we—The United States Army—must do more with less. This is the challenge of the 70s. It is about how we might proceed to meet this challenge that I will address some of my personal ideas.

To begin with, and this is fundamental, in order to meet this enormous challenge we must be prepared to accept change. We simply cannot do the job in the same way we did it before. Certainly we must build the future on the lessons learned from history, but these lessons must be sound. There are, of course, certain inexorable and immutable military truths that are not altered by the course of time, and the great captains of history invariably have used these to their advantage.

Nevertheless we cannot transfer recorded experience wholesale from past conflicts. Not Napoleon's victory at Ulm, nor the breakthrough at Nancy, nor the precursory airmobile battle in the Valley of the Ia Drang can be transferred wholesale. We can, however, distill and translate the lessons learned in those battles and project them into the future.

Down through history the basic types of combat forces can be classified by their roles and tasks—infantry, light cavalry, heavy cavalry and fire support (artillery and, more recently, air support).

The mobility of combat forces down through history has evolved in a discernible pattern. At first, mobility was made possible by walking or running legs. Infantry walked on its own legs. Cavalry moved on horses' legs. Fire support forces moved by leg power. The wheel was used, to be sure, but the motive power was the leg.

Then the ancient wheel was combined with the modern internal combustion engine and we find that the walking infantry became motorized infantry. The light cavalry went to the powered wheel, the famous jeep of World War II and the light, agile, mechanized reconnaissance vehicles.

What about the tank? Well, the tank is nothing but heavy cavalry on the powered wheel, except, of course, that it happens to lay its own road and pick it up as it goes along. And, fire support artillery, both selfpropelled and towed, adopted the powered wheel.

In the few years just past, we have seen the rotating airfoil become a new means of giving these types of forces a greater mobility differential over our opponents. We have airmobile infantry, which is infantry with the same traditional tasks and roles, obtaining its mobility from the rotating airfoil. Light cavalry, which is represented by our air cavalry squadrons, is the logical marriage of the rotating airfoil to the classic cavalry organization.

Artillery has taken to the air, both with its aerial rocket artillery and with the use of the medium and heavy lift helicopters as the prime movers of conventional tubes.

So now the question is: What about the rotating airfoil and heavy cavalry? Obviously, the tank is here to stay. Moreover, the tank in the 1970s is going to be very much like the tank we have known in the past. Most of us hope that the US Army tank is going to be the *XM803*. This is a marvelous machine which, pound for pound, bids fair to be the meanest ground fighting vehicle in the world.

But there is another weapons system on the horizon that, in my opinion, belongs in the heavy cavalry classification. This is the Advanced Aerial Fire Support System, the AAFSS. If one carefully analyzes the qualities of a weapon system like the AAFSS (in its missile-firing configuration), one finds that in terms of mission, it is a lot like the *Jagdpanzer* or tank destroyer of World War II, or the track-mounted assault guns being employed by several armies today.

This is a vehicle that uses the rotating airfoil as a means of providing tremendous mobility. In addition, technology has provided an improved antitank weapon in the shoot-and-leave missile. So the AAFSS in reality is a heavy cavalry mount with its rider armed with a weapon substantially more lethal than a saber or carbine.

It gets its protection from agility, the inherent means to dash in and out with great speed, and from the cap-

". . . pound for pound . . . the meanest ground fighting vehicle in the world."

ability to stand off and destroy—with first round hits—hard, point targets.

Our current armor doctrine calls for one main battle tank. But it was not too long ago when the best possible answer was thought to be plentiful medium tanks for engaging close-in targets, and fewer heavy, larger-gunned tanks for long-range kills. And before that, production economies forced the early tank destroyers into our armored division TOE. An examination of the armies of other powers today, both free world and bloc, reveals the presence of the assault gun in some form or other. The point here is that doctrine has changed in the past and most assuredly, will change again in the future.

The translatable portion of our Vietnam experience, particularly that of the 1st Air Cavalry Division working with the 11th Armored Cavalry Regiment over an extended period of time and in an extended area of operations, shows that when you have armor-protected firepower on the ground working with mobility-protected firepower in the air deriving from the rotating airfoil, you really have a powerful shock force.

It seems to me that the AAFSS should be viewed as mobile firepower—a companion to the tank—and not as close air support, which it certainly is not. Even when configured with aerial rockets and performing the role of aerial rocket artillery against soft, area targets, this weapons platform must always be considered an integral part of the inventory of shock-producing firepower owned and committed by the ground commander.

We are in the age of the "shock" army. For our purposes here, shock can be defined (insofar as the recipient is concerned) as the loss of the ability to continue (a physical manifestation), or the loss of the will to continue (a psychological effect) or the loss of freedom of action to select a less costly course, or the loss of hope for an acceptable outcome.

The Warsaw Pact nations, for example, have a strategy that is "shock" oriented. They rely on mass as the compelling force: massive armored and mechanized forces, backed by massive artillery support and tactical air support. They mass large forces on a narrow front and employ tactics of deep penetration with swift thrusts and multiple echelons to continue the pressure on the opposing forces.

On the other side of the world, the Chinese Communists also employ mass, not in sophisticated weaponry, but in manpower; yet none-the-less capable of producing shock.

These countries have indicated a perfect willingness to pay whatever price is required to sustain the mass required to produce shock.

The measure of the price a nation is willing to accept to meet its national objectives can be termed "cost tolerance," a phrase coined by a very perceptive ROTC student last year. "Cost tolerance" is the willingness of a social system and/or its leadership to pay whatever price is necessary to achieve stated goals or objectives. If this price is a reduced standard of living because of diversion of national human and material assets into goal achievement, and this social system is willing to accept this price, it can be said that it has a very high cost tolerance.

The same can be said if that social system is willing

to pay a high price in lives—North Vietnam's aggression in the south is an example.

On the other hand, if a social system has multiple priorities; if it places an exceptionally high value on human life (as ours always has, and properly so); if it is unwilling to pay the price to match chips with the totalitarian society during the preliminary betting; then it can be said that this society, or nation, has a low cost tolerance.

So what can the army of a nation with a lower cost tolerance do when confronted with the potential shock of mass generated by a nation of high cost tolerance.

It seems to me that shock, as we have defined it here, also can be created by agility, effectiveness and timeliness.

It is with these qualities that I see the US Army of the 70s made capable of restraining, and then defeating, any threat generated through mass.

Agility will reduce our own vulnerability. It gives us the potential to strike the enemy decisively. It will, at the same time, deny the enemy lucrative targets for his mass.

Effectiveness insures that every shot has an extremely high probability of a kill; that no enemy move is undetected or unopposed; and that when we engage, it is against key components of the enemy's power apparatus. Or, put in plainer words, we must hit the enemy precisely where it hurts him most!

Timeliness is the ability to deliver this knockout punch at exactly the right time.

Before any pair of combatants get to the knuckle-to-knuckle stage of *contention,* a vast amount of preparation must be undertaken. I call this the *comprehension* phase of land combat. We must obtain hard intelligence about the intentions, strength and mission of the enemy and we must obtain and evaluate this intelligence infinitely more quickly than we ever have had to in the past.

One of the great possibilities to achieve greater effectiveness in this area is with the STANO program. When you sweep away all the technological phrases and definitions you are left with the one question that STANO will answer: Where is the enemy—now? If we know in real-time where the enemy is and what he is doing, we then can derive far greater effectiveness from our units. For example, our fires would be more precise and effective. And maneuver, keyed on timely information about vulnerable enemy targets, would be far more decisive. Both, in concert, would produce shock.

Another area that has great promise for the Army of the 1970s is what we call IBCS, the integrated

battlefield control system. Again, a basic definition is simply all those measures we can take to bring the commander and his staff up to speed. Our units' high speed capability in movement to and into combat has long since outstripped Von Steuben's command and staff system which must control them.

By using automatic data processing techniques, we have an opportunity to get a real jump forward in the command capabilities of acquiring information, assessing that information, making decisions, issuing instructions, and then, recycling the entire process as the operation progresses and is assessed.

In the *contention* phase of land combat the winner will be the combatant that can create the proper apparatus to generate the exact amount of force to *compel* the opposing side to behave as he wishes, or to pay an unacceptable price in casualties, time, or loss of purpose.

The concept of a battlefield on which every unit can be employed in the right strength, in the right time and in the right place is utopian. No one ever will get to that. But we can—we must—get much, much closer to that "right place at the right time" idea. With IBCS we have a great opportunity to approach that objective; to get greater effectiveness with fewer forces.

Although all great boxers hope for a first-round knockout, they train for the eventuality of a 15-round grind. So, too, we must be prepared to maintain continuous pressure on the enemy, confounding his capabilities and blunting his initiatives. This will take great staying power, and the key to the consolidation phase is support.

Support—logistics—is truly the area of the big rethink. No longer can the Army assume that it can operate in the same manner as it does now. To match our new tactical system we must have a logistical scheme with similar speed and effectiveness. Using giant aircraft, fast logistical ships and heavy lift helicopters, we will have to institute a new concept of a

mobile logistical pipeline with a flexible delivery hose capable of squirting logistics directly to the user.

For Armor this concept means a whole new approach to the conventional trains system. On the porous and dispersed battlefield of the 70s, the ground commander simply cannot afford to devote a single moment of his time worrying about the safety, location and efficiency of ground-bound trains.

Another aspect of what I call the nature of land combat is the need to conserve our power sources, our freedom of choice and, above all, our fighting spirit. This latter factor is less easy to define because it is the intangible that can't be programmed into computerized war games or assessed in intelligence estimates. This is the mental, physical and spiritual state of the individual within each unit. Call it morale, spirit, conviction, esprit or whatever, but it must be present to win.

All the arms and services in the US Army possess this to a greater or lesser extent, but it seems to me that the Cavalry possesses an unparalleled spirit and élan. Perhaps I am somewhat like any new convert to a religion or, on the other hand, maybe I am just rediscovering the wheel. But I certainly can say that the time I was privileged to serve with the 1st Air Cavalry Division altered my concept of Cavalry and probably has had a greater impact on my military thinking than any other single thing I can identify.

As one leaves an outfit like that and makes the rounds to say goodbye to the troopers with whom he has had the privilege to serve in combat, he cannot help but try to identify the quality that made him feel so proud to have served with the "First Team." I found that the key to my deep-seated feeling could best be described as "the spirit of the Cavalry."

A lot of people give lip service to this spirit, while others may scorn its existence. But I discovered that it really prevails and it basically is three things.

First is the spirit of teamwork. Armor, in the organization of armored cavalry squadrons, has recognized that Infantry, Armor and Field Artillery are inseparable on the battlefield. And what is forged on the field of battle cannot easily be split asunder. This is a recognition of the facts of combat life which has been carried into the fundamental structure of Cavalry—the combined arms team!

Closely related is the spirit of self-sacrifice. When anyone made contact with the enemy in the 1st Cav, one of the biggest and most immediate problems was sorting out the traffic jam that resulted because everyone wanted to get into the act and help out. This spirit does not have to be molded and nurtured—it is inherent in the very concept.

The final ingredient, I think, is that part of the Cavalry spirit which manifests itself with a *dash* and a *daring* which is solidly based on *professional competence.*

This spirit does not relate to any single piece of equipment. When I see the crossed sabers, they signify to me the teamwork, the dash, the élan, the sacrifice and the professional competence of Cavalry.

What I am really saying here, and I am not for a moment suggesting that this is an original thought, is that people in Armor should base Armor on the spirit of the Cavalry rather than on a piece of equipment. So take the tank off your crossed sabers. You would be correct in laying claim to the AAFSS. But for goodness sake, don't take the tank off your insignia and then put an AAFSS on it instead. Just take the tank off and don't put anything on those sabers. Let the spirit of the Cavalry show through!

Its going to be a long, hard ride through the 70s. The army needs in the vanguard the spirit of Cavalry—the spirit of Armor, if you will—with its imagination, ingenuity, flexibility, flair and, above all, its professional competence and conviction.

LIEUTENANT GENERAL GEORGE I. FORSYTHE, who was recently selected to head the Army's effort to achieve the Modern Volunteer Army by 1973, began his military career in 1940, after receiving a bachelor's degree and ROTC training from the University of Montana in 1939. During World War II, he served in Alaska, and later in England, as a planner of the invasion of Europe in 1944. He later served as an instructor at the Command and General Staff College. In 1953, after graduation from the Armed Forces Staff College, he was assigned to Washington, D.C., as Military Assistant to the Assistant Secretary of the Army, as the White House Liaison Officer for the Chief of Staff of the Army, and as a member of the Doctrine Section of the Coordination Group in the Office of the Army Chief of Staff. He served a tour in Vietnam in 1958 as Deputy Chief of the Combat Arms Training Organization and later as first Senior Advisor to the Field Command of the Vietnamese Army. In 1968, he assumed command of the 1st Cavalry Division (Airmobile) there, then spent a year as Commanding General of the US Army Infantry Center at Fort Benning before going to the Combat Developments Command at Fort Belvoir.

Will You Wait for It? Or Will You . . .

GO GET IT

by General Bruce C. Clarke

There is more than one school of thought concerning how a commander can acquire reliable information upon which to base his actions. One school contends that the commander should analyze reports that come to him from his subordinate units and his staff. Another advocates that the commander go see for himself. Yet another endorses a combination of these methods.

As a commander from company to army group, and as an observer of others holding such positions in three wars, I have come to certain conclusions myself. Moreover, since my retirement from the Army, I have worked as a consultant to research organizations making studies of command, control and communications problems for the Army. The results of this active and retired experience might be helpful to students and practitioners who would like to excel in the art and techniques of commandership and generalship.

During World War II, it was my privilege and good fortune to command combat commands (brigades) in two armored divisions engaged in European combat. Looking back, it seems to me more than ever that my best information, on both our own forces and the enemy's, was obtained by visiting or observing subordinate commanders. This was done either by jeep or by an *L4* fixed wing airplane borrowed from the artillery. Small radios in each were adequate. While I tried hard to avoid getting in the way of the units, it seemed that my presence was generally known and felt on the battlefield.

Once during that period I observed a division commander who put together a fancy war room in his headquarters. A prominent feature was a telephone line to each and every unit. This general constantly talked on the telephone to some unit as he rotated his attention throughout the division. Apparently he seldom left his telephone terminal. One can only speculate what impact a modern visual display device, if available then, would have had on him.

As a corps commander in Korea with five divisions on the line, I often left my headquarters by chopper after the morning staff briefing and visited the five division headquarters in turn from left to right. The divisions knew when I was coming. The division commanders were told that they need not wait for me, and that I would talk to the chiefs of staff.

Over a cup of coffee, we discussed the latest situations. Then we discussed the problems which had been presented by them on a previous day. Then I noted what they wanted my corps headquarters to do to help them. I told them of the situation in the Eighth Army and in the I Corps as I knew it.

Returning to headquarters shortly after noon, I briefed my staff, gave them the divisions' problems, the solutions to which were expected the next morning, and spent the remainder of the day in my office or visiting corps troops. Generally, the next day I repeated this. As a result I was not only the corps commander, but the corps liaison officer, and to a large extent, the corps communicator with the lower units.

I always felt that I had a grasp of the real situation in the corps and that the division commanders were never at a loss for information or unaware of the desires of the corps and higher commanders. Command and staff inertia in I Corps was hard to find. Furthermore, there were no security leaks.

This was in a static situation, but such command techniques are not unusual in mobile warfare.

History is full of instances where the commander being at the critical point at the critical time turned the tide of battle to victory. Or conversely, the commander not being on the scene, his force was defeated.

Few such examples have been related so dramatically as in the poem "Sheridan's Ride" by Thomas Buchanan Read.

One will recall that early in the morning Sheridan was at Winchester, Virginia, 20 miles away from his command when news of a new battle arrived. He mounted his horse and took off at full speed for the field of combat. Read's stirring verse traces Sheridan's progress through five stanzas, giving equal credit to both him and his horse. The sixth stanza shows what happens when the commander arrives at the critical point of battle and at the critical time:

> The first the general saw were the groups
> Of stragglers, and then the retreating troops;
> What was done? What to do? A glance told him both,
> Then striking his spurs with a terrible oath,
> He dashed down the line 'mid a storm of huzzas,
> And the wave of retreat checked its course there because
> The sight of the master compelled it to pause.

It is inconceivable that the same result could have been attained on an automated battlefield. Nor could Sheridan have brought order out of chaos while seated before a display panel 20 miles away.

From my associations with various research firms, I find that they are unduly oriented to automation techniques and "the systems approach" to combat command and control. They seek a steady flow of detailed data and reports from front to rear, tied to a computer if possible. They do not understand movement or how to cope with it and still maintain command, control and communications. They seek and prescribe logical processes leading to quantified solutions. These are fine until the disorderly and confusing conditions that occur so often on the battlefield materialize. They do not realize the roles of the judgment and experience factors which must be used in handling tactical battle reports. Inevitably, these lead to a working principle, such as, "Discount by 50 percent all very favorable or unfavorable operational reports which come into your headquarters from your subordinate units—and then question the remainder."

Routine personnel, logistical and intelligence data should flow back to the staff. The chief of staff should be available to answer calls from the rear and to run the headquarters staff.

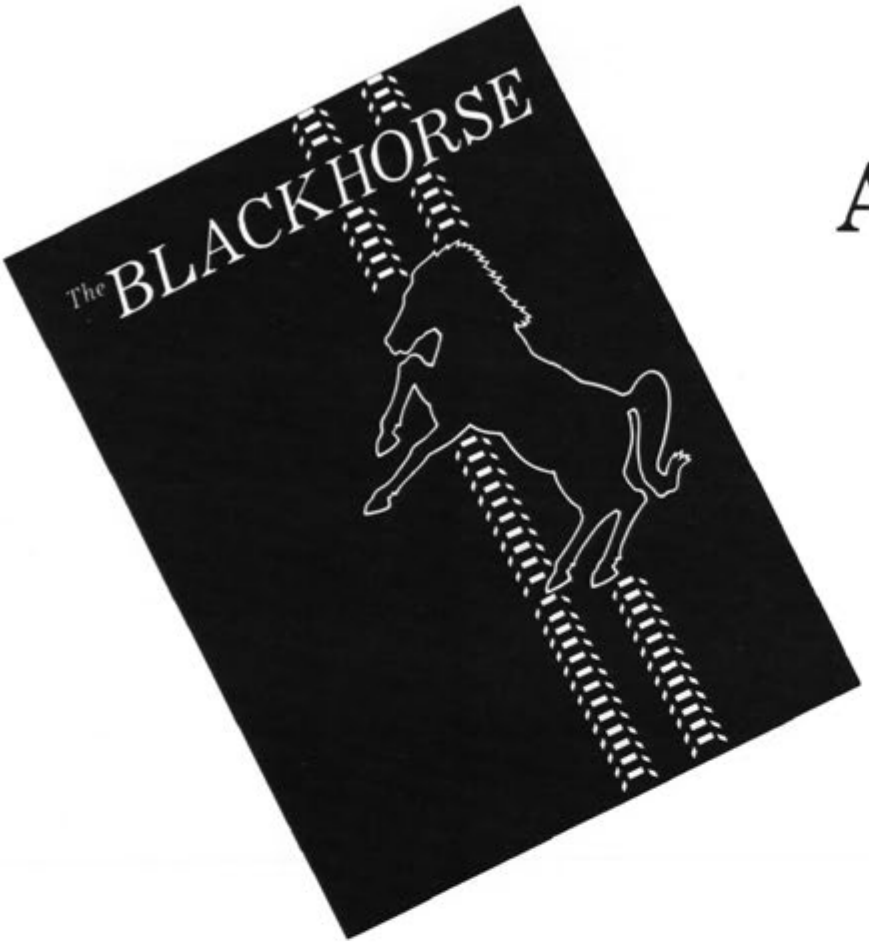
The commander should be forward as much as possible to detect early the critical situations in all fields and to render help quickly to his units when it is needed. He must give personal attention to morale and disciplinary matters as well as to things operational. He should tie in with his chief of staff as frequently as he can to give, and to receive, critical current information and directions.

The command helicopter which combines mobility and communications so well is an admirable vehicle for allowing the commander to go see for himself, and to keep in touch. If he does this, his next higher commander will never know more of his business than he knows. And his subordinate commanders will never lack for assistance and guidance. Hopefully, then, nothing that happens in his command will ever surprise him or the people above him.

GENERAL BRUCE C. CLARKE, USA-Retired, is well known to *ARMOR* readers for his commonsense observations on command. A soldier's soldier, General Clarke had a notable career characterized by a preponderance of command duty, most of it with troops. General Clarke commanded combat commands (brigades) in two armored divisions in World War II, two armored divisions, two corps during the Korean War, Seventh Army in Germany and finally US Army Europe. A former President of The United States Armor Association, he maintains a lively interest in service and Armor affairs.

O TEMPORA! O MORES!

The April 1908 *Cavalry Journal* reported that 71.1 percent of all Cavalry officers on active duty on 31 December 1908 were paid-up members of the Cavalry Association. Of the Cavalry officers not assigned to regiments, 94 percent were members. Regimental officer membership varied from the 7th Cavalry's low of 53 percent to the 8th Cavalry's leading 80.4 percent.



A Report on in

by Colonel Donn A. Starry

ARMOR has recorded much of the chronicle of the Blackhorse in Vietnam, both in broad reports by Regimental commanders, and in articles by other members of the Regiment describing small unit actions. General (then Colonel) Cobb reported in March-April 1967 on early Blackhorse operations in Vietnam. In March-April 1968 Colonel Farley continued the coverage from the Regimental commander's viewpoint. General (then Colonel) George Patton described Regimental operations from summer 1968 to spring 1969 in the "Pile On" articles in January-February and March-April 1970.

Somewhere between the Regimental message center and the editor's "IN" box, Colonel Jimmie Leach's report on 1969 operations under his command was ambushed, and is still carried MIA. Therefore, the present report will sketch in major events during Colonel Leach's tenure—April through November 1969, as a prelude to describing winter and spring activities 1969-70, culminating in the entry into Cambodia in May-June 1970. This will preserve at least some of the continuity of *ARMOR's* coverage of the Blackhorse in Vietnam.

Shortly after Colonel Leach assumed command in April 1969, the Regiment moved to northern III Corps, working first with the 1st Infantry Division and later with the 1st Cavalry Division (AM). From May 1969 to mid-June 1970, the Regiment was OPCON to the 1st Cavalry Division—it was in effect that division's fourth brigade. In conjunction with the shift in operating locale, Colonel Leach moved the Regimental command post to Quan Loi in central Binh Long Province, intending to stay a few weeks; it was instead a PCS of more than a year. During that year the Regiment ranged through the northern tier of III Corps provinces—Phuoc Long, Binh Long, and Tay Ninh. Blackhorse Base Camp at Long Giao became the home of the 18th ARVN Division in fall 1969 and the Regimental Rear took up temporary residence at Bien Hoa Army Base. Later, as 1st Infantry Division units redeployed, the Regimental Rear took over the 1st Division Di An base, closing out of Bien Hoa in April 1970.

War Zone "C" in northern Tay Ninh Province, and most of Binh Long and northern Phuoc Long Provinces have long been camping grounds for regular North Vietnamese Army units. Throughout 1969 and early 1970 the Blackhorse encountered

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most of the 7th NVA as well as the 5th and 9th VC Divisions. Local forces in South Vietnam itself declined in strength until, by summer 1970, they were capable of no more than harrassment and occasional attacks by fire.

Allied operations in that area (through September 1969) could be called the Battle for Binh Long. Once one of the rich rubber producing areas of the world, Binh Long Province had long been infested with large local and regular NVA forces. At least twice in 1969 the enemy attempted to gain control of the province, attacking the population centers—especially the province capital at An Loc. In the process he sustained heavy casualties, and consumed most of his supplies cached along the border in Cambodia.

By late fall 1969, the NVA units had been driven into Cambodia where they remained in the sanctuary to refit, receive replacement personnel from North Vietnam, and to prestock supplies for operations in the spring and summer of 1970. By early December, when Colonel Leach left command, he and the Blackhorse had participated in a highly successful campaign to rid Binh Long and northern Phuoc Long of regular NVA units.

Winter-spring operations in 1969-70 were aimed at holding the NVA units across the border, interdicting their lines of supply and infiltration into South Vietnam, helping train a strong Regional and Popular Force structure in the south, and continuing to aid the Vietnamese in eliminating the infrastructure.

Then, on 1 May 1970, the Blackhorse led the attack into Cambodia, and for two months destroyed enemy cache and base systems, and dispersed or eliminated enemy units in the trans-border bases.

Four operational features characterized Blackhorse activities from December 1969 through April 1970:

- They were mostly border operations, conducted on extended frontages to reduce infiltration of enemy personnel and supplies from Cambodia into South Vietnam.
- Most of these operations encountered regular NVA units; since enemy local forces were heavily eroded in strength. As RVN Regional and Popular forces gained in strength and proficiency, gradually they were able to assume most of the burden of population security and keep the few area Viet Cong tied up.

• They made extensive use of land clearing operations as a means of opening base areas, cutting across infiltration trail networks and providing areas of lateral access for rapid movement of cavalry through the jungle.

• They made extensive use of integrated intelligence-reconnaissance-surveillance operations, augmented by manned and unmanned trail ambush systems, to gather information, interdict enemy movement, and to defeat the enemy land mine threat—his most effective weapon against armor.

In May-June 1970 the Regiment entered Cambodia with other allied forces to search out and destroy enemy units and base areas.

During the Autumn of 1969, the 5th VC and 7th NVA Divisions began a prolonged harrassment of Bo Duc, capital of the northern district of Phuoc Long Province. Against the possibility of another Duc Lap, two troops of the Blackhorse were airlifted by *C130* into nearby Bu Dop in late November. In early December, the 2d Squadron began operations along Highway 14A from Loc Ninh in northern Binh Long to Bo Duc, to link up with the two airlifted troops and other US and ARVN units defending the area. In addition the 2d Squadron was to interdict the Serges Jungle Highway, a main NVA supply route from Cambodia south to the Song Be River. Squadron operations included extensive land clearing of an access corridor for quick relief of the Bo Duc garrison by armored cavalry.

In addition to his squadron, from which F troop had been airlifted into Bu Dop, Lieutenant Colonel Grail Brookshire's 2d Squadron had attached to it an engineer land-clearing company, two rifle companies from battalions of the 1st Cavalry Division (AM) and two platoons and company headquarters of the 919th Engineers—the Blackhorse's own engineer company. With cavalry and infantry protection, the engineers pushed the Rome Plows through the jungle, opening a 400-meter-wide cut, generally along the trace of Highway 14A, to permit rapid movement of mechanized forces and to facilitate airlanding of infantry. At the same time, the 2d Squadron began to interdict the Serges Jungle Highway. For about a week the enemy rear service group operating the Serges defended their line of communications, then withdrew, leaving the trails dry, and concentrated on an extensive anti-vehicular mine program against the 2d Squadron.

The mine campaign represented an insidious and difficult threat. The Rome Plow cut generally paralled the border, hence mining parties, under cover of darkness, could easily cross the border, plant their mines and be gone in a few hours. Extraordinary countermine measures were called for. Additional mine detectors were procured and put into service, enabling the 2d Squadron to find about four out of every five mines encountered. Recognizing that the best way to defeat mining is to eliminate either the source of the mines or those who plant the mines, Brookshire's troops began an intensive intelligence and surveillance program to detect the mine laying parties and eliminate the mine layers. Gradually these efforts bore fruit in reduced mining incidents. But it was not until May 1970 that it was possible to get at the source of the mines. In that month Col Ma Sanh Nhon's 9th ARVN Regiment entered Cambodia and at the head of the Serges Jungle Highway, captured more than 200 cached mines—the source of Colonel Brookshire's troubles six months before, and a continuing problem in the intervening months.

At the beginning of 1970 with his lines of communication shut off, his trail systems heavily interdicted, his mine laying parties under constant attack, the enemy began to cross the border in battalion strength to ambush friendly units, hoping to destroy a small unit in an ambush before help could arrive. The Battle of the Crescent was typical of these efforts, and is worth recounting briefly since it highlights many characteristics of both antagonists.

Early morning on 20 January 1970, NVA gunners opened fire on the 2d Squadron command post near Bo Duc. By mid-morning more than 100 rounds of mixted mortar fire up to 122mm in caliber had fallen in and around Colonel Brookshire's command post, howitzer battery and tank company laager. The first rounds brought immediate and violent counterbattery fire from the 2d Squadron. A *Cobra*-LOH team already on station swung over to find the mortars, while H Company and one cavalry troop started toward the position. Within minutes the LOH's observer located the mortars. Major Fred Franks, the squadron S3, now airborne, began to work the position over with artillery. Tactical air and aerial rocket artillery were both on the way.

While fire support poured in on the mortar positions, the LOH was shot down in a crescent-shaped open area in the jungle near the Cambodian border. This disclosed the main enemy fighting position—a classic landing zone ambush with six .51 caliber antiaircraft guns, mortars, rocket launcher teams and an estimated two battalions of infantry.

Major Franks shifted artillery into the area immediately and diverted a light fire team to cover a daring rescue of the downed LOH pilot by his

covering *Cobra*, piloted by Captain Carl Marshall. Captain Marshall landed his *Cobra* amid intense enemy fire, after working over the enemy gun positions with his own ordnance, picked up the injured LOH pilot by dragging him in the front cockpit of the *Cobra* so that he lay across the gunner's lap, half in and half out of the open canopy, and took off again in a hail of hostile fire.

Then, the 2d Squadron bore down on the enemy. H Company moved north and west to get between the dug-in NVA and the border. Two troops of cavalry moved through the jungle to close with the enemy from the south and east. While the ground troops maneuvered, Colonel Brookshire kept fire on the enemy positions. Sixteen air strikes, more than 20 *Cobra* loads of ordnance and more than 600 rounds of 155mm artillery were delivered before the fight was over. Two troops of cavalry broke into the open on the south side of the crescent and charged the enemy positions to their north with all guns blazing. By this time it was late afternoon and the fight had been knocked out of the 209th NVA Regiment in the crescent. Survivors broke and fled into the jungle towards Cambodia, covered by the lowering darkness.

Several features of this action characterize Blackhorse border operations during this period:

- The enemy generally consisted of regular NVA forces which fought as units, and enjoyed the same problems with fire support and maneuver coordination as any regular force. Their positions were always dug in, weapons were well sited and communications, including field wire, were in place before they attempted to fight. In the Crescent battle, field wire was even found in front of enemy positions along the north edge of the crescent.
- NVA commanders were creatures of habit who frequently returned to the scene of a previous fight and set up to fight again—even to the extent of using old bunkers and trench lines.
- Fighting this type enemy called for techniques modified from those used in fighting smaller, more widely dispersed local guerrillas. The Patton "Pile On" dictum still applied. But initial reconnaissance operations had to be conducted in at least platoon strength, lest a small unit take unnecessary losses at the hands of a superior force in a well organized position before help could arrive.
- Proximity to the border made it imperative that the cavalry close with and hold on to the enemy lest he escape into the sanctuary. The organic firepower of armored cavalry makes it an ideal force for this type action.

• Supporting fires had to be applied in the appropriate volume at the proper places, then maneuvered about to pace the battle. The ideal situation is to turn everything on when the fight starts—artillery, air, gunships and maneuver forces—and never turn anything off, but control the battle by varying intensity and place of application of all the resources brought to bear.

So successful was the 2d Squadron Bo Duc operation that it was decided to carve up War Zone "C" with an extensive series of Rome Plow cuts using two squadrons of cavalry and two Rome Plow companies. In February the 1st Squadron (Lieutenant Colonel Jim Reed) moved to Tay Ninh, picked up an engineer-land clearing company and commenced operations north toward the Cambodian border. Once along the border, Colonel Reed turned his forces east and moved to link up with the 2d Squadron which had begun to cut west out of Binh Long Province along the trace of Hghway 246. By mid-March both squadrons had made extensive cuts into enemy trail networks in northern War Zone "C"; the 1st Squadron across the Mustang Trail, the 2d Squadron across the trail systems leading from Cambodia onto the Saigon River Corridor.

Based on 2d Squadron experience in the Bo Duc operation, tactics and techniques for border interdiction had been fully developed. It was apparent that to defeat the NVA at their own game, one had to make systematic and imaginative use of all resources—especially reconnaissance, intelligence and surveillance means—and that all these had to be tied into an integrated plan. On the Bo Duc road Brookshire's troops had developed an effective ambush system using claymores and other devices in manned and unmanned ambushes (ARMOR, Nov.-Dec. 1970). The system continued to develop and saw full utilization for the first time in War Zone "C" in March and April.

Rome Plow operations in War Zone "C" included major east-west cuts along the general trace of Highway 246, and along major north-south secondary roads. Tactical cuts 100-200 meters in width were made along and across enemy trail networks. In addition, base areas were thoroughly plowed out, forcing the enemy to abandon the base. In March the 165th NVA Regiment was interrupted in the construction of their new "Kennedy Base" in northern War Zone "C" and driven back into Cambodia.

From his command post at Fort Defiance, the highest peak (95 meters) in War Zone "C", Colonel Brookshire directed 2d Squadron border interdiction operations, while on his left Colonel Jim Reed's 1st Squadron extended the system to the west. By the end of April these two squadrons had accounted for more than 200 enemy killed in the ambush systems along the trails. During the same period several hundred other enemy soldiers were killed in fire fights in the area as the 7th NVA Division fought to reestablish its infiltration system. So great was the enemy concern over the presence of the 1st and 2d Squadrons in War Zone "C" that he eventually moved two regiments, the 165th and 209th NVA, around the flanks of the ambush system to attack Colonels Brookshire and Reed from the rear.

In April these units were joined by an antiaircraft regiment whose mission it was to force up off the trails the intensive reconnaissance effort of the

Blackhorse air cavalry troop. Ground-to-air firing incidents increased to several per day in April. Major Don Smart, the Air Cavalry Troop commander, found himself inadvertently on the ground more than half a dozen times during the month. In addition troop laagers, and more especially command post laagers, were heavily targeted. Fort Defiance, the 2d Squadron command post was the objective of several violent attacks. Fortunately it had become the practice in the Blackhorse to dig in, not a popular procedure with armored cavalry, but a requisite to survival in this environment. Ammunition, aid stations and personnel shelters were all bunkered in, a perimeter berm added shelter, and individual vehicles were dug in as time permitted. The practice paid off. Fort Defiance, on one occasion, survived a 100-round mortar-rocket attack coordinated with a ground attack by a battalion of the 165th Regiment with but two friendly casualties.

While all indicators lead to a conclusion that the interdiction effort was a success, the full measure of success was not apparent until the Cambodian operation. In May when the Blackhorse uncovered the cache systems in the Fishhook, extensive stores of food and ammunition were found above ground in temporary storage. Prisoners related that the supplies had not been stored underground because they were scheduled for immediate movement to the south, and that they (the supplies) had not been moved due to the tight control the 1st and 2d Squadrons exercised over the trail system south of the border.

The lessons of these operations confirmed those alluded to before, and added to the conviction that armored cavalry could master the enemy infiltration system with intense use of an integrated intelligence-surveillance-reconnaissance effort to develop fully the trail system, and imaginative use of an extensive ambush system as the basis around which other operations might be conducted.

While the 1st and 2d Squadrons were working over the 7th NVA Division in War Zone "C", the 3d Squadron, with elements of the 1st Cavalry Division (AM), was in Binh Long Province, providing convoy security and escort, and operating along the northern province border in locations vacated by the other two squadrons. The 7th NVA Division continued to try to move elements into the populated areas of Binh Long, despite the fact that most of the division was fully occupied in War Zone "C". Typical of these actions was a fight between L Troop and a battalion of the 209th NVA Regiment on 10 March.

Binh Long's rubber plantations are nowhere more than a night's march from the Cambodian border. Hence when he chose to do so, the enemy could move at dusk, avoiding the last light air cavalry visual reconnaissance and be in position in the rubber before the first light visual reconnaissance. From there he could attack towns and villages in the rubber plantations, including the district and province capitals of Loc Ninh and An Loc.

On the afternoon of 9 March, Captain John Caldwell's L Troop set out unmanned automatic ambushes across the trail systems to their west and laagered near the edge of the rubber west of Loc Ninh. During the night an unmanned ambush detonated. Troop L responded with mortars and artillery. A first light check of the area yielded several enemy bodies and considerable equipment, indicating that a larger party had been involved. Captain Caldwell, with one platoon, backtracked the enemy trail leading into the ambush. A second platoon which had dismounted to search the ambush area returned to its ACAVs herringboned along the edge of the rubber. Before mounting up, the platoon began a search of the nearby rubber to determine if survivors of the ambush had taken up positions there. As the dismount party entered the rubber the enemy opened fire from positions in an old bunker-trench line. The dismounted party hit the ground and returned fire from a drainage ditch, while the platoon ACAVs returned fire over their heads.

The third platoon, hearing the firing, came on the run, closed on a small knoll behind the enemy and cut down would be escapees as they ran over the knoll to the rear. The Squadron commander, Lieutenant Colonel George Hoffmaster, brought in artillery and gunships as Captain Caldwell returned the fire, and L Troop in a coordinated attack finished off the boxed in enemy. The 209th NVA Regiment left over 50 dead on the field, along with some wounded. Several rubber workers whom the NVA had forced into the bunker line to avoid their alerting L Troop were freed and their wounds treated.

Enemy behavior here underscored his propensity for coming back to the same place to fight over and over again. Also of note is the fact that in this area he habitually chose to fight armored cavalry in the rubber, where his losses were enormous (about 40 to 1) compared to fights in the jungle where he had the advantage of being more a creature of the environment than the cavalry.

One other feature of this battle which deserves emphasis is the fact that no one in the dismount party was injured by friendly fire, although a heavy volume of automatic weapons fire was directed at the enemy over their heads. For months the 3d Squadron had concentrated on training in battle drill, to include aimed fire and fire discipline. Developed by the then squadron commander Lieutenant Commander David Doyle in the fall of 1969, these important features of cavalry operations were continued by his successor Colonel Hoffmaster. In this fight they more than paid their way, driving home the fact that even in combat, units must have some training programs designed to sharpen up the basic combat skills.

The actions described typify regimental operations from late 1969 to the end of April 1970. The combination of armored cavalry and Rome Plows had kept main enemy forces at bay in the sanctuary. All that remained to be done was to enter the sanctuary and destroy bases, supplies, rear service elements and the main units stationed there. Until about 28 April the idea of an attack into Cambodia was just that—a good idea.

However, by nightfall of 1 May it was no longer a matter of wishful thinking. Two squadrons were there, in the midst of the most extensive collection of rice and equipment anyone could remember, and after a day of continual fighting, in contact with large enemy forces. The Fishook was to the NVA 7th Division what any large logistics complex is to US forces. In it were supplies of all kinds waiting transshipment to the south—hospitals (with X-ray equipment), laundries, clothing and equipment repair facilities, bicycle assembly and repair shops. North of the Fishook were division size training and rest areas to house NVA units moving in and out of South Vietnam. Except for some dependent housing (with TV), the North Vietnamese lived in Cambodia much as they did in South Vietnam—underground, and hidden away in the jungle. Hence there was still the problem of following the trails, finding the base areas and rooting defenders or survivors out of hiding.

By the afternoon of D+2, the 2d and 3d Squadrons had linked up with ARVN Airborne Division elements which had conducted airmobile assaults into positions about 20 kilometers deep into the Fishook to secure key points to the enemy rear. On D+3 the order went out to continue the attack to seize Snuol, the center of a large rubber plantation about 40 kilometers north of the Fishook. Enroute, Blackhorse squadrons linked up with two battalions of US airmobile infantry which were in the process of searching out large cache sites.

On D+5 the lead squadron negotiated three blown bridges left by the enemy. By the afternoon of D+5 Colonel Brookshire was on the outskirts of Snuol with lead elements of the 2d Squadron, followed closely by Lieutenant Colonel Bob Griffin's 3d Squadron. After several days of fighting around Snuol, Brookshire and Griffin were joined by Lieutenant Colonel Jim Reed and his 1st Squadron. Then the Regiment concentrated on detailed search of enemy base areas, cache sites and elimination of enemy units remaining in the area. Details of the entire operation are being prepared by the regimental historian, and should appear in these pages in the near future. However, one comment is in order here.

It has been said that the Vietnam war has made standard military operational methods obsolete, that new planning methods and new tactics are required. While this may be true to some extent, it is instructive to note that in the first seven days of May the Blackhorse attacked (from an attack position), crossed a line of departure, proceeded on an axis of advance, linked up with ARVN airmobile infantry, conducted a passage of lines, continued to attack on axes, linked up with US airmobile infantry, conducted another passage of lines, seized a heavily defended objective, and exploited the success by mopping up in the enemy rear. It was noted with considerable relief that no one had forgotten the fundamentals.

The Blackhorse Regiment is a unique institution—it does everything well. From vehicle maintenance to operations, it exceeds every expectation. Professionalism in all ranks is its hallmark. Its soldiers bear our country's arms with honor and dignity, despite the difficult tenor of the times. Its fighting record is well known. Strong ties of friendship and professional allegiance bind it to our gallant Vietnamese allies. In all these endeavors the Blackhorse record is unblemished, unexcelled and unequalled—it reflects the sacrifice of all those of all ranks who have served, who have, whatever the difficulties, done their duty well. No country in history has ever been served so ably by such gallant and dedicated men.

COLONEL DONN A. STARRY, 41st commander of the 11th Armored Cavalry Regiment, has been writing for *ARMOR* for more than 15 years. He is currently assigned as the Deputy Director of the Operations Directorate in the Office of the Deputy Chief of Staff for Military Operations, Department of the Army.

CAMBODIAN BLITZ

BY MAJOR MEL JONES

At dawn on 1 May 1970, two columns of tanks and armored personnel carriers of the 11th Armored Cavalry Regiment crunched toward the Cambodian border. The operation was a spearhead like any World War II European Theater operation. Its success, however, should put to rest forever any doubts that armor can adapt to the Asian battlefield.

Overhead the Air Cavalry Troop of the 11th Cavalry and units of the 1st Cavalry Division Squadron 9th Cavalry buzzed the treetops in a systematic search for enemy sanctuaries in the Fishhook region.

Pre-dawn airstrikes and artillery fires softened up the sanctuary areas while APCs, *Sheridan* reconnaissance vehicles and *M48* Patton tanks plowed through the jungle from Tay Ninh Province to the Cambodian border.

Skytroopers of the 2d battalion, 7th Cavalry followed the armored vehicles into the Fishhook region—so named because of the way it juts into Vietnam between Katum and Quan Loi.

One senior US officer told a newsman, "This Cambodian operation is pure blitzkrieg, like something from a World War II Panzer Division's book of tactics."

The shadiest place in Cambodia was under a bridge. Any bridge. Anywhere.

The enemy scattered under the onslaught of air cavalry and rumbling tanks. The shock of being pursued by armor on the ground and air cavalry overhead forced him to abandon huge stores of supplies.

So surprised were the enemy forces, that it was the afternoon of D-day before the 11th ACR met its first resistance. The armored vehicles received small arms and rocket propelled grenade (RPG) fire shortly after passing the two-mile point in Cambodia. Blackhorse troopers engaged the foe with machineguns and tank cannon, while tactical fighter bombers pounded enemy positions from the air. When the smoke cleared, a half a hundred enemy soldiers were reported killed in the action.

The two armored columns then continued north on a drive to linkup with ARVN airborne elements and to block and cut Cambodian Highway 7, a main artery in the enemy resupply system. By D-plus two, tankers from the 2d Squadron had cut Highway 7 in the southern portion of the Fishhook using armored vehicles to overrun the countless enemy bunkers as they methodically destroyed them.

"The enemy troops we've encountered here have been heavily entrenched in some of the best bunkers we've seen," said Colonel Donn A. Starry, commander of the 11th Cavalry, describing the day's actions.

Other officers pointed out that enemy forces used bunkers for tanks. "Moving from bunker to bunker in the jungle gives them a certain amount of mobility while protecting them from air and ground fire," one officer explained.

Near the Cambodian village of Phu Dong, the 11th unearthed its first cache, containing some 12 tons of rice, 4 tons of salt and 20 rifles.

Meanwhile, an alert air cavalry light observation helicopter pilot spotted the campaign's first big cache in the thick jungle near Highway 7.

"We found the building complex almost by accident, 12 kilometers west and 25 north of the Cambodian border," said Warrant Officer James Cyrus, Troop B, 1st Squadron, 9th Cavalry. "We were looking for something in the area, but didn't see anything at first. Then I spotted one hootch well camouflaged. Unless you were at tree top level, it would be almost invisible. I just followed the bamboo walks from hootch to hootch, by the street signs, bridges with walkways and ropes; I could see what looked like a motor pool and lumber yard."

When Company C, 1st Battalion, 5th Cavalry, reached the jungle complex on the ground, they found a lot more.

In an area three kilometers long and 1½ wide, the enemy had established more than 150 bunkers which yielded 171 tons of munitions, weapons, explosives and medical supplies. The Cavalry troopers named this "The City" for it also contained elaborate living quarters and what appeared to be an NVA R&R center, complete with swimming pool.

Later, armored elements of the 11th Cavalry joined the Skytroopers in providing security for the captured site, while Army engineers cut a road from The City to a highway leading to the Vietnamese border. Captured materials were expediously backhauled over this route with armored vehicles escorting the convoys.

At the same time, the main armored column raced up Highway 7 to Snuol where several thousand enemy troops were reported holding the town. Colonel Starry had intended to by-pass the city to cut off the enemy's escape route if possible, but the enemy had other ideas. While moving through a giant rubber plantation in an effort to outflank the town, the column came under heavy fire. Colonel Starry was wounded by an enemy grenade and medically evacuated. Lieutenant Colonel Grail Brookshire, commanding the 2d Squadron, sent a recon troop of armored cavalry assault vehicles and *Sheridans* into the southern edge of Snuol. They encountered a hail of small arms and automatic weapons fire. Passing through the reconnaissance elements, *M48* Medium Tanks plunged into the action, blasting through the Communist stronghold. Civilians had evacuated the city earlier but the NVA forces remained behind to engage the tankers.

Snuol was quickly cleared of enemy forces and the armor column resumed the pattern established in the Fishhook—wherever the tanks could be brought in to secure the area or cut roads. Skytroopers were freed to seek enemy caches. "Rock Island East," "Shakey's Hill," and "Picatinny East" were some other cache sites exploited in this manner.

Meantime, northwest of Tay Ninh in the border area of Cambodia called the "Dog's Face," 25th Division "Tropic Lightning" troopers of two mechanized units reported sporadic contact with the enemy as they searched the jungle for supplies and ammunition caches.

"The most amazing thing about this whole operation," said one Tropic Lightning trooper, "is that the enemy still seems to be unaware of the fact that we are looking for him."

By mid-May action in Cambodia tapered off as it became more apparent that tactical surprise had been achieved with the enemy fighting to protect

Skytroopers from the 1st Cavalry Division return from an assault in Cambodia.

1st Cav members inspect a classroom in "The City."

cache sites, but then abandoning them when pressured by air cavalry, armor and infantry.

There was some pretense of a counterattack by the enemy when he struck two firebases in Cambodia in late May. In both contacts, he was repelled with tremendous casualty losses.

Field reports showed the NVA forces to be scattered and disorganized by the end of the month.

Major Thomas M. Kilpatrick, commander of the 336th Assault Company, described the action near the Cambodian town of Kampong Trach, nine miles from the Vietnamese border. "They weren't ready to face any kind of overhead fire," he said. "One .51 caliber machinegun was all they had for fighting helicopters, and that didn't last long."

Seventy enemy soldiers were killed by Kilpatrick's Cobra pilots in that one action alone.

As Kilpatrick noted, the Reds did not have much to fight with as the Cambodian operation swung into June. An estimated 70 percent of the enemy's supplies from his sanctuary depots had been captured or destroyed by the Allies.

When the last armored vehicle churned down the muddy road back toward the Vietnamese border on 28 June, ahead of the monsoon, it left behind a near empty larder for the enemy.

Barney Seibert, veteran Saigon UPI correspondent, offered this comment on the use of armor in Cambodia: "Almost every newsman in the world would like to know who planned the brilliant thrust into Cambodia. But one thing is certain—the planner knew when and how to successfully employ armor. This was the one new factor introduced in that phase of the war. Armor did magnificently well. It made the difference between success and failure on the ground."

MAJOR MELVIN R. JONES, Air Defense Artillery, wrote this article while serving as *Information Officer for the 1st Cavalry* (Airmobile) in Vietnam. He graduated from Florida Southern College in 1957 with a bachelor's degree in political science and was commissioned in the US Army Reserve. He came on active duty in January 1960 as a battery officer with the 59th Artillery at Fort Bliss, Texas. He is now assigned to the Office of the Chief of Information in Washington, D.C.

Take Care of the Troops and they will take care of you

by Major John L. Lorms

Today's leaders—officers and noncoms—are faced with a serious problem: deciding how to accomplish their mission with subordinates who have varying, and often conflicting, goals.

The soldier of today, strong-willed and well-educated, is primarily concerned with completing his tour and being assimilated back into civilian life. This is especially true of the men returning from a Vietnam tour and who come to a unit looking on the short side of their military career. But as the leader, you must know how to deal with such a situation if you hope to complete your mission. What's the answer? Probably there are many, but fundamental to all is taking care of these troopers. They, in turn, will take care of you.

To do this, there are several avenues open to you.

First, attempt to understand each soldier. Second, and most important, assist him when he feels he has a problem.

This does not mean peace by appeasement, but it does include compassion when necessary. You must positively demonstrate this attribute in all of your actions—from the first time you meet until you or he depart the unit.

In-processing provides the first opportunity. Many soldiers will arrive at your unit with considerable military experience. You are in competition with other posts because these soldiers have an idea of what to expect. If, on the other hand, this is a soldier's first assignment, your approach may be even more critical. Your first remark to each should recognize his degree of military experience.

Few units have adequate in-processing procedures. Those who do are immediately recognized as caring for the soldier. With inadequate orientation, you direct the soldier to step off on the wrong foot and force him to play catch-up. Once behind, he is more apt to make mistakes and cause problems. Proper in-processing provides him the tools to join the team as a regular member quickly.

The rate of personnel turnover, sometimes reaching 20-30 percent a month, provides another roadblock to effective troop care. Just keeping track of the men presents a significant problem. It's a challenge to get to know your men.

Severe personnel turnover demands increased personal attention. Each member of the chain of command should talk to the new man for a few minutes. Groups may be more desirable at battalion and higher headquarters. Individual discussions are necessary at company level.

Few leaders can remember the details associated with each man. At platoon level a small notebook containing a page for each man is invaluable.

A notebook is an invaluable aid.

Though it used to be a standard practice, many leaders don't use it today. Without such a record how can promotions, punishments, passes and leaves be appropriately handled?

A notebook is simply a management tool for a platoon leader's use when administering to his troops. It is neither a black book nor an excuse to invade the soldier's private lives. This is important to understand. It should be simply a reference for data contained in official military records with some additional information useful to you in making certain decisions. Effective use of the notebook causes the platoon leader to use it as a study reference much like a salesman would, not as something that is flashed about.

Keep it to yourself. As new information is obtained, remember it. Make entries when you are alone. Don't be obvious in your effort. If you rush your soldiers, you will lose the advantage.

The notebook can be used for reenlistment data, for elimination proceedings, and most of all to assist you in solving soldiers' problems. If dates and notes are maintained in it accurately, the notebook is a valuable document if an IG or Congressional complaint is received.

Finally, if used consistently, a notebook, even in its roughest form, is an invaluable aid to a leader who has a busy schedule.

Because of garrison additional duties, platoon leaders often slight unit responsibilities. Though the sergeant really runs the unit in garrison, the officer is not relieved of its leadership. When occupied with additional duties, you must find opportunities for brief but frequent unit appearances. Don't overlook responsibilities. Find ways to meet them.

Pay attention to your troops. Attend the reveille formation, stop by a class for a few minutes, meet the retreat formation, walk through the mess hall, or occasionally visit the barracks at night.

There are any number of ways a leader can demonstrate positively his real concern for his subordinates. Don't take undue advantage of privileges afforded your rank—especially when the going is roughest for the troops. They expect you to have some advantages, but they appreciate your sharing some of their discomforts occasionally.

Make proper use of awards and incentives. Too many leaders only comment when something is wrong. They see writing a short letter of commendation or appreciation as extra effort, though they do not consider an Article 15 or court-martial as extra work. They look at these tasks only as part of their job. Why not spend a little time with positive preventative measures?

A platoon leader really has few awards available for use, so he must take maximum advantage of them. He must ensure fatigue details are equally distributed and deserving individuals are provided passes, leaves and compensatory time. Have individual personnel records checked for correctness so when a favorable action is taken it will not be delayed administratively, but acted upon promptly.

Express your pleasure in any means convenient. Don't beat around the bush. Your troopers know you have few rewards at your command and expect only a verbal pat on the back when they do something right.

Be interested in your subordinates. Know about their families, girl friends or whatever the case. Let them know you are interested in them as persons as well as soldiers. Make them feel important by knowing them. These actions will help erase the feeling that the soldier is only a number.

Field exercises provide an excellent opportunity to display interest, particularly when your unit is in defense. Part of your job is to evaluate each soldier's fighting position. As you pass on a critique of their positions, stop for a few minutes and chat with unit members. If there is a lull, more time can be spent

with each man. The opportunity will provide you with key information for insertion in your notebook later. More information can be obtained during informal discussions than during formal interviews in your office. Listen to and evaluate their suggestions. The benefits will be that each man will know you are concerned with him, as a person, and that you value his thoughts.

When you know your men, you will be able to detect potential problems and provide solutions early. This in turn might reduce AWOLs, Congressionals or IG complaints, and courts-martial. Additionally, you will be able to detect those who need to be punished.

Occasionally, the best leader in the world will have to punish a subordinate. Protection of those who do wrong leads to contempt by those who do their best to support you. If you know your men, you can make intelligent recommendations regarding the type and severity of punishment.

An important part of any punishment is an explanation to the individual. The philosophy of an explanation is not new, and does not solely relate to punishments. It applies to every action.

Take time then, to explain your rationale. Your men will know you better and will be able to predict your reactions. When explanations cannot be given—for whatever the reason—your men will know you have thought through your decision, even if you don't explain it to them. Effective teamwork will result.

Some members of the Army do not cherish the time they serve, but do remember with favor their acquaintances. Leaders often forget it is the people who make the job enjoyable and not necessarily the job itself. Any job can be enjoyable when those who accomplish it are happy with their companions. Your job as a leader is to develop that rapport within your unit. This should make the experience rewarding, and in turn, will likely accomplish the mission you desire.

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An Advanced Fire Control System

by Richard M. Ogorkiewicz

Hitting targets has become an increasingly important problem in tank development. The main reason for this is the far greater ranges at which tanks are expected to engage hostile tanks. This, in turn, has been brought about by the development of ever more powerful tank weapons.

These more devastating weapons have, however, not only made it possible to destroy hostile tanks at constantly extended ranges, but they have also caused a reduction in the number of rounds which tanks can carry, because their ammunition is heavy and bulky. Consequently, it has become all the more important to have a high chance of scoring a hit with every round. Thus, the difficulty of hitting targets at longer ranges and the need to compensate for the decreasing number of rounds immediately available has combined to direct greater attention to the problem of first round hit probability. Several aspects of this have been explored but the principal approach to improving it has been through the development of fire control systems.

The main outcome, so far, has been a widespread adoption of range finders. Even before World War II ended, the Germans had developed an experimental turret with an optical, stereoscopic range finder for their highly successful *Panther* tank. This was never put into production, but soon after World War II stereoscopic range finders were incorporated in the design of US tanks. These were first put into service in the *M47* medium tank, which was introduced in the early fifties.

Since then the stereoscopic type of optical range finder has fallen out of favor because it necessitated rigid gunner selection and a considerable amount of training. Its place has been taken by the coincidence type which has been incorporated in most tanks produced during the sixties and currently in service. These include the US *M60*, the Swiss *Pz61*, the French *AMX30* and the Japanese *Type 61*. The German *Leopard* also has an optical range finder but this can still be operated in the stereoscopic mode, as well as the coincidence mode, to exploit the optical advantages of the former.

Whatever the type, the use of optical range finders has increased considerably the probability of hitting targets at longer ranges. These have, however, left considerable room for further improvement because they can only increase hit probability to the extent that it depends on information about the range of the target. In other words, the adoption of optical range finders has not improved other aspects of tank gunnery, to include such factors as ambient conditions, trunion cant and target motion. Moreover, the accuracy of the optical range finders themselves leaves something to be desired.

For these reasons, alternative methods of ranging have been explored and at least one is currently in service. This uses a 0.5in ranging machinegun which was first adopted on the British *Centurion* and which is now used in the *Chieftain* and the Indian *Vijayanta* designed in Britain by Vickers. Ranging by means of a machinegun offers the advantage of taking into

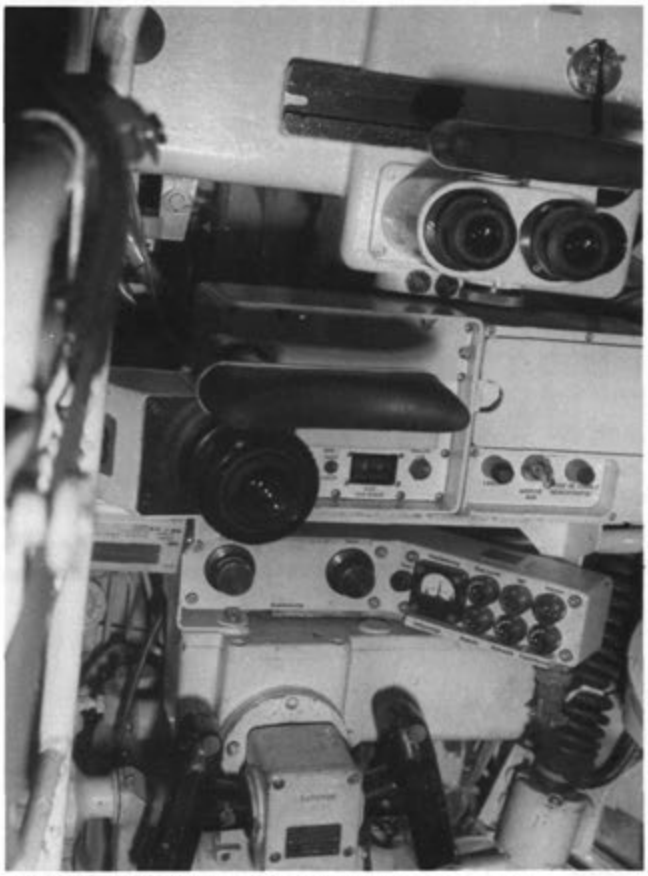
account factors such as trunion cant and cross wind which the optical range finder does not. The ranging machinegun is also more robust and easier to maintain. However, the range of a 0.5in machinegun is limited and considerably less than that of current tank guns. The caliber of the ranging weapon could, of course, be increased. The nearer it became to that of the main armament the more effective it would be. But at the same time it would become open to the same objections as those levelled against the use of the main armament for ranging. These are that only a limited number of rounds can be provided for the ranging gun, that it reveals the position of the tank, and that it is slow.

Kadar range finders have also been considered but so far none has been successfully developed for tanks. In addition, what might be described as a counsel of desperation has been followed. This is to give up trying to improve the hit probability of tank guns and to adopt instead guided missiles as tank armament. A good example of this radically different approach to high hit probability is provided by the *Shillelagh* system of the *M60A1E1* and *E2*, whose development dates from the late fifties.

When their development began, missile tank weapon systems offered the advantage over tank guns of a much greater hit probability at long range and against moving targets. But they have also proved to have their disadvantages. Moreover, the technological advances which made tank missile systems possible could also be exploited for the benefit of tank gun systems.

An important new development, which was hardly thought of when missile systems began to be developed as an alternative to tank guns, has appeared in the shape of laser range finders. These are a very accurate, rapid and silent method of ranging and on almost all counts are greatly superior to optical range finders and other means of ranging. As a result, laser range finders coupled with electronic computers have opened the way for a major advance in the effectiveness of tank guns.

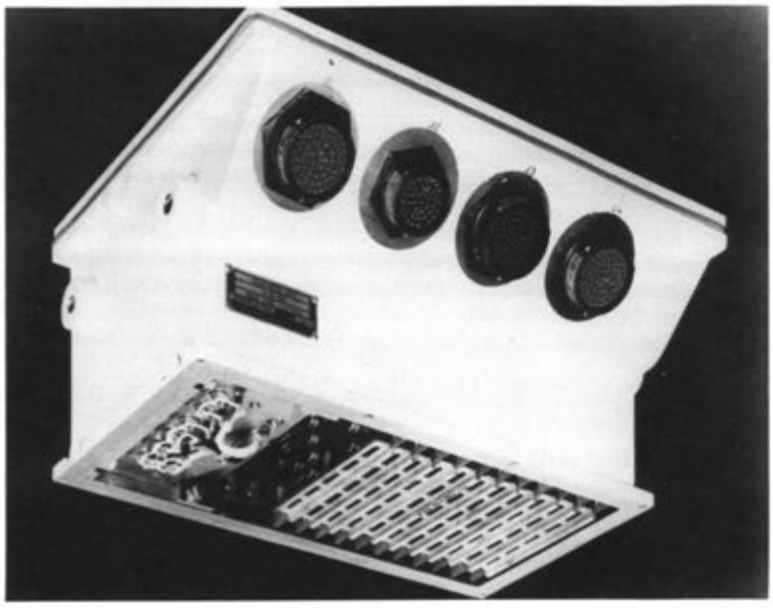
In consequence, increasing attention is being given to the development of new, laser-based tank fire control systems. An advanced example of them is the *Cobelda* system which the writer had the opportunity to examine during a recent visit to Belgium. This tank fire control system has been developed by the Société Anonyme Belge de Constructions Aeronautiques, of SABCA, in collaboration with the Belgian Army and the US Hughes Aircraft Company. Its development began in 1965, at which time the need was wisely foreseen in Belgium for further development of tank gun systems. By 1968 a prototype of the *Cobelda* system was experimentally installed in one of the US-built *M47s* which for many years have been the basic tanks of Belgian Armor. Extensive firing tests with this tank gave very promising results. These encouraged further development and led to a production version of the *Cobelda* system for the German-built *Leopard* which had been adopted by the Belgian Army as its main battle tank in 1967.



The system installed in a *Leopard* tank. Top, laser and sights; center, gunner's control units and emergency telescopic sight; bottom, gun elevation and turret traverse controls.

A pre-production installation in a *Leopard* was completed in December 1969, and since then has been undergoing extensive development trials. Although intended primarily for the tanks used by the Belgian Army, the *Cobelda* system is equally applicable to the *Leopard* tanks used by other armies. As a result, understandably, these armies are showing considerable interest in it. With little modification this system could also be installed in other type tanks.

The speed with which the *Cobelda* system has been developed does credit to those involved in it,



Ballistic computer with bottom cover plate removed.

particularly in view of the relatively modest resources made available. This is due largely to the very close collaboration between SABCA and the Belgian Army and the small number of men involved on both sides—engineers and Armor officers—which avoided dissipation of effort and helped to speed decisions. SABCA had no previous experience with tank fire control systems but took full advantage of its experience in developing aircraft fire control systems. This ingenious firm even adapted some components originally developed for, and proved in, strike aircraft.

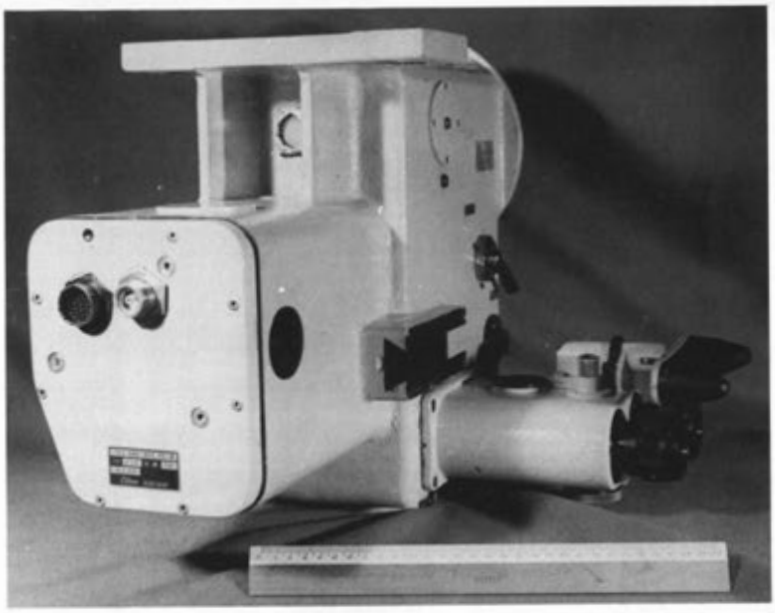
In essence, the *Cobelda* system consists of a laser range finder, a number of sensors and an electronic computer whose function is to determine the angles between the line of sight and the gun axis from the information it receives about the range of the target and other variables. The computer output is transformed, through a mirror system, into x displacement of cross hairs in the gunner's sight. When the cross hairs are brought on to the target the gun is laid with the correct superelevation and azimuth.

The most obvious feature of the *Cobelda* system is that its ruby laser eliminates the largest source of error in gun laying, which has been range finding. What is less obvious is that it also reduces several other sources of error and thereby increases still further the probability of hitting a target. This is done by incorporating in the system sensors which provide the computer with more accurate information about the parameters involved in the ballistic equations than would otherwise be possible. This enables the computer to predict more accurately the trajectory of a projectile and hence the elevation of the gun.

The sensors cover ambient temperature and pressure, which indicate changes in air density and hence in the ballistic coefficient of the projectiles, powder temperature and gun wear, which affect muzzle velocity, cross-wind and trunion cant or tilt. The computer also takes into account the offset between the line of sight and the gun tube axis and tube jump as well. Tube droop or bend are minimized by the installation of a thermal jacket around the tube—a practice first adopted several years ago on the British *Centurion* and more recently on the *Chieftain* and the French *AMX30*.

As a result of all this, the probability of hitting a target from a tank fitted with the *Cobelda* system is increased significantly. Or, what amounts to the same thing, the range at which a target can be hit with a given probability is greatly increased. In fact, for a probability of 0.5—that is a 50 percent chance of hitting the target—which corresponds to the minimum at which it is worth opening fire, the range with the *Cobelda* system against a stationary target is almost twice what it is with the current tank fire control systems based on optical range finders and simple ballistic computers. Therefore, tank guns coupled to fire control systems such as the *Cobelda* can successfully compete with missile systems to much longer ranges so far as hit probability is concerned. These guns are also greatly superior to competitive missile systems because they can fire high velocity armor piercing projectiles and consequently do not have to rely solely on shaped charges for defeating hostile armor.

The *Cobelda* system also increases the probability of hitting moving targets. In this respect too, missile systems have been claimed to be as superior to tank guns as in hit probability at long range. However, the difference has now been greatly narrowed by the ballistic computer being able to give the correct



Laser and optical sight unit. The ruler is about 12in long.

lead angle, which is derived from the rate of turret traverse during the tracking of a target.

A sophisticated tank fire control system such as the *Cobelda* might be expected to suffer from the same disadvantages of complexity and questionable reliability under battlefield conditions as the missile systems. It is certainly more complex than earlier gun systems but it is still less complex and costly than contemporary missile systems. What is more, if the worst comes, it does not prevent the gun being fired using a simple telescopic sight. This is in marked contrast to guided missiles which are entirely dependent on the correct functioning of their complex control systems.

Apart from strengthening the position of tank guns against competition from missile systems, the development of advanced tank fire control systems such as the *Cobelda* also alters the relative position of different types of tank gun ammunition. To be precise, it increases the probability of hitting targets with the lower velocity HEAT and HEP projectiles much more than it does with the very high velocity APDS, which has a very flat trajectory. Therefore the former rounds become relatively more effective. This is not to say that the APDS might be dispensed with since tanks will always need some such rounds to pose a two-fold—kinetic as well as chemical energy—threat to hostile tanks. But the HEAT and HEP types of ammunition will become much more attractive for engaging targets at long range.

In spite of its relative sophistication the *Cobelda* system is simple to operate. In fact, the only operations peculiar to it which the gunner has to accomplish when firing against a stationary target is to set a selector switch against the type of ammunition which is being fired and to press the laser switch. Otherwise he only has to center the cross hairs on the target using normal turret traverse and gun elevation controls. When engaging a moving target, the gunner has only one additional operation to perform. This is to depress the lead lock switch so that the turret traverse rate determined by the tracking of the target is fed from a tachometer into the computer.

The operation of the system is not only simple but quick, which greatly reduces reaction time. This, in turn, increases the chances of survival on the battlefield. Likewise, the simplicity of operation reduces gunner training time.

In addition to being simple to operate, the *Cobelda* system is also relatively simple to install. In fact, in the case of the *Leopard* it takes up less room than the optical system which it replaces. The optical sight, mirror drive and laser are combined into a single unit mounted on the turret roof and the sight head takes the place of the optical range finder head on the gunner's side of the turret.

To sum up, an advanced tank fire control system such as the *Cobelda* increases significantly the first round hit probability of tank guns and strengthens their position as the most effective type of tank armament. In view of the advantages which fire control systems of this type give to tanks, their development and production should be accorded very high priority. They certainly deserve higher priority than some other contemporary developments, such as tank gun stabilization which is currently so fashionable.

RICHARD M. OGORKIEWICZ, Senior Lecturer in Mechanical Engineering at the Imperial College of Science and Technology in London, is widely recognized as a leading authority on armored fighting vehicles. His books, *Armoured Forces* and the *Design and Development of Fighting Vehicles*, together form the basic English language library in the field. This is Mr. Ogorkiewicz's 53d article for ARMOR.

In the early morning, soldiers—hundreds and hundreds of them—in Air Force *C141s,* descended out of the German skies. They had departed from Fort Riley, Kansas, and other posts on Sunday, 4 October, and would eventually number nearly 11,000. The 1st Infantry Division and some supporting elements were part of the buildup for Reforger II, under the overall direction of General James K. Polk, Commander of US Army, Europe.

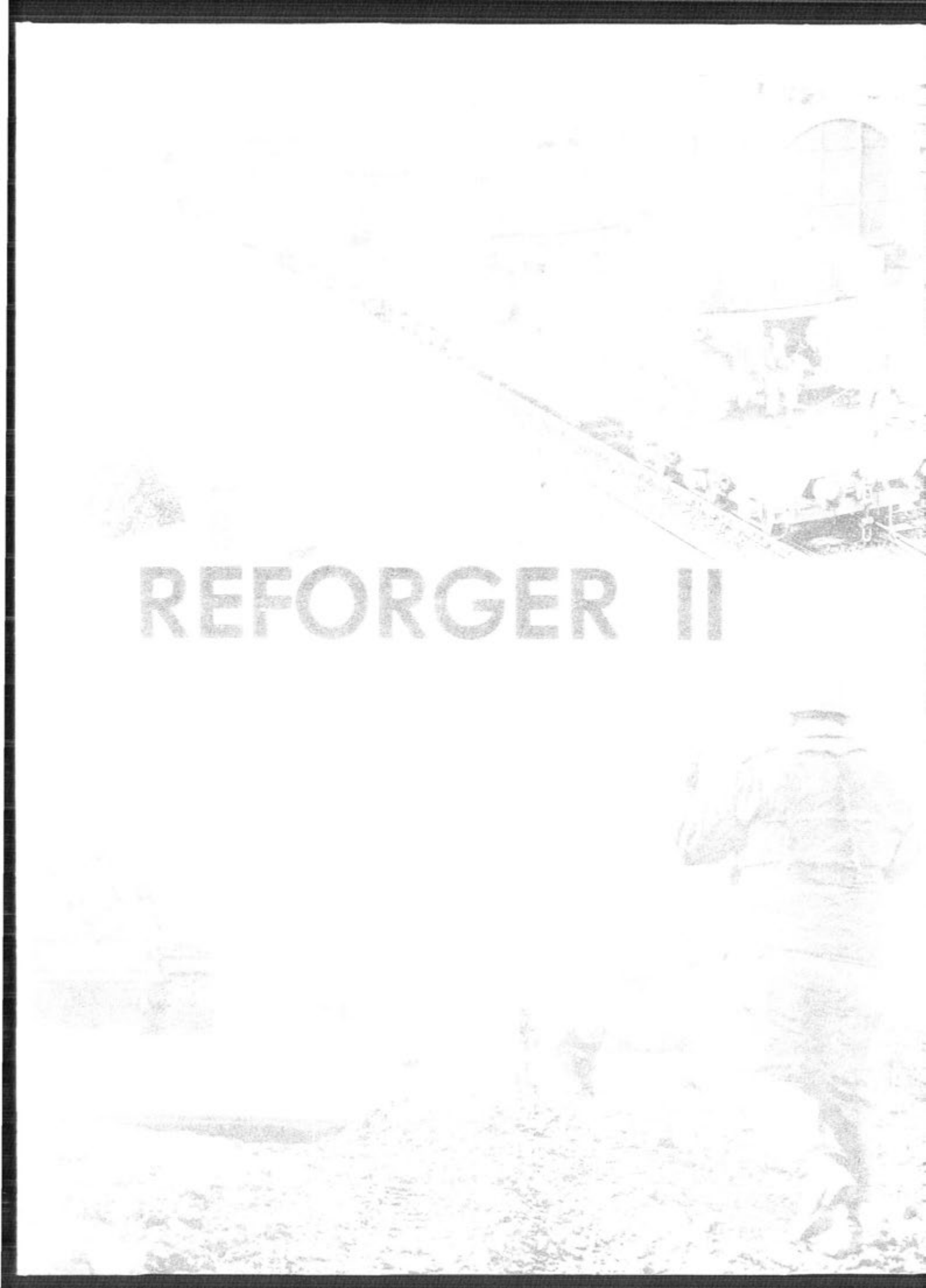
Reforger, a NATO exercise, resulted from a 1967 trilateral agreement between the United States, the United Kingdom and the Federal Republic of Germany. As part of that agreement, the United States withdrew two brigades of the 1st Infantry Division, the 3d Armored Cavalry Regiment and certain support elements from Europe stationing them in the United States. It was further agreed that most of these units redeployed would leave prepositioned equipment in Europe and would be earmarked for rapid NATO reinforcement. Reforger I, held in 1969 was the first of the annual exercise series, though the concept was similar to "Operation Big Lift" of 1964, which involved the 2d Armored Division.

On arrival the troops were briefed, heavy equipment was withdrawn from storage and units moved to initial positions, all in preparation for "Certain Thrust," a five-day field training exercise.

More than 30,000 soliders from the United States and West Germany combined during the exercise.

"Reforger II . . . was a test of not only the concept of quick reaction by the US Army, but a test of the men as well," said Lieutenant General G. G. O'Connor, VII Corps Commanding General and exercise director.

It was agreed that the test had been passed with high marks.



REFORGER II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U.S. AIR FORCE

'Just what is a semantics, anyway?'

Loose Language

and other hazards of the trade

by Major Thomas M. Johnson

Ask even a junior lieutenant to describe his present mission, objectives, strategy, tactics and policies, and you will probably receive an immediate, clear, concise answer to each question. Now ask his father, a prominent businessman or industrialist, the identical questions. You may find him quite pressed for any answers.

This isn't so startling if you consider the usage of certain terms in business and marketing literature: i.e. *goal, objective, policy,* and *strategy.* Are any or all of these words synonymous? If not, which are the more general terms? For example, do a firm's goals encompass its objectives or vice versa? Depending upon who the author is, goals may or may not be subordinated to objectives.

One might argue that this is merely semantics and not really pertinent to understanding. However, standardization of terminology is a major step toward effective communication and mutual understanding within any discipline. Effective communication and mutual understanding may be achieved by the consistent use of an accepted definition for a given term and by avoiding the use of different terms when the same meaning is intended. Webster defines semantics as "of or relating to differing connotations of words of similar denotative meaning." Semantics is the subject of this article.

Besides diverse and often rather vague definitions of many terms, another common weakness found throughout marketing literature is the assignment of too broad a meaning to a single word. Consider the modifiers associated with the term objective. Authors refer to a subordinate objective, limited objective, short-range objective, temporary objective, intervening objective, operating objective, broad objective, grand objective, ultimate objective, grand design objective, long-range objective, etc. If space permitted, this list could be expanded *ad infinitum.*

Dictionary Definitions

Perhaps a review of the definitions assigned to the words *goal, objective, policy,* and *strategy* by prominent lexicographers is in order. Webster defines *goal* as "the end toward which effort is directed," and lists as a synonym, *intention.* The Webster definition of *objective* is similar: "something toward which effort is directed; an aim or end of action; goal; object. A strategic position to be attained or purpose to be achieved by a military operation."

On the surface, one might surmise that according

to Webster, the words *goal* and *objective* are synonymous and intended to be used with identical connotations. However, the distinction between the two words is clear when one notices the synonym listed for *goal*, that is, *intention*. Separate definitions are listed for each synonym of *intention*—*objective* implies something tangible and immediately attainable, *goal* suggests something attained only by prolonged effort and hardship. Webster obviously suggests that the broader of the two terms is *goal*.

Webster defines *policy* as "a definite course or method of action selected from among alternatives and in light of given conditions to guide and determine present and future decisions. *Strategy* is defined as "a careful plan or method; a clever strategem (a contrived trick or scheme for gaining an end); the art of devising or employing plans or strategems toward a goal."

A rapid review of these same terms in an alternate source, *The Random House Dictionary of the English Language*, reveals the following definitions:

goal—"the result or achievement towards which effort is directed; aim, end."

objective—"something that one's efforts are intended to attain or accomplish; purpose, goal, target."

policy—"a definite course of action adopted for the sake of expediency, facility, etc."

strategy—"a plan, method, or series of maneuvers or strategems for obtaining a specific goal or result. In military usage, a distinction is made between 'strategy' and 'tactics.' Strategy is the utilization, during both peace and war, of all of a nation's forces, through large-scale, long-range planning and development to ensure security and victory. Tactics deals with the use and deployment of troops."

As mentioned in the beginning of this article, the terms under study have distinct meanings which do not overlap for members of the Armed Forces. Effective communications and mutual understanding are a must for a gigantic military organization which contains several million members.

Two of the four terms in question—*strategy* and *objective*—are considered to be military terms. A military term is defined in AR 310-25 as "a term consisting of one or more words which have a military significance." Army Regulation 310-25, *Dictionary of United States Army Terms*, is a comprehensive, up-to-date lexicon of all military terminology. If a word used by the military is not listed in that regulation, the military definition is assumed to be identical to the standard civilian dictionary definition.

Listed in alphabetical order are four applicable definitions from AR 310-25.

mission—"1. The task together with its purpose, thereby clearly indicating the action to be taken and the reason therefor. 2. In common usage, especially when applied to lower military units, a duty assigned to an individual or unit; a task."

objective—"1. The physical object of the action taken, e.g. a definite tactical feature, the seizure and/or holding of which is essential to the commander's plan. 2. An end in view to be attained by the employment of military force."

strategy—"The art and science of developing and using political, economic, psychological and military forces as necessary during peace and war, to afford the maximum support to policies, in order to increase the probabilities and favorable consequences of victory and to lessen the chances of defeat."

tactics—"1. The employment of units in combat. 2. The ordered arrangement and maneuver of units in relation to each other and/or to the enemy in order to utilize their full potentialities."

The military terminology listed above can be readily adapted to business just as many business concepts have been borrowed directly from military science. The management concept of line and staff offers one example. In his textbook, *Marketing Concepts and Strategy* (Houghton Mifflin Co., 1966), Martin L. Bell states, "The concept of strategy in business has been borrowed directly from military science. The term is also used in connection with gaming, hunting and exploration. The military concept, however, has been the most thoroughly developed and appears best to describe the deeper meaning of the term as used in modern marketing management."

Bell then gives the reader an excellent review of the concept of military strategy:

> Strategy is not the same as policy and is always subordinate to it. Military strategy, in the United States, is planned within the framework of national defense policy. This policy is established by the President of the United States in line with the basic foreign relations objectives of his administration.

> The President, with the help of the Cabinet and the National Security Council, formulates defense policy. Within the policy framework, the chiefs of staff are charged with the responsibility of developing appropriate military strategy. . . . Of special importance in developing strategy is the assignment of authority and responsibility to make tactical changes in the method of attack when conditions in the field require that this be done. Tactical decisions are made by field commanders in the light of changing developments. These decisions are always made within the framework of the overall military strategy. In the light of the changing military situation, the strategy may well be changed and the new tactics undertaken within a new overall plan. . . . Military strategy formulation and market planning are closely allied.

In an article in the July-August 1963 "Harvard Business Review" entitled "How To Evaluate Corporate Strategy," Seymour Tilles says, "No good military officer would undertake even a small-scale attack on a limited objective without a clear concept of his strategy. In the field of business management, however, we frequently find men deploying resources on a large scale without any clear notion of what their strategy is."

This common problem which plagues the business world will be overcome only after the acceptance of some universal marketing terminology.

A New Approach

As mentioned earlier, additional military terminology besides strategy can be just as readily adapted to a business environment. Consider each of the military terms listed below in its new business context:

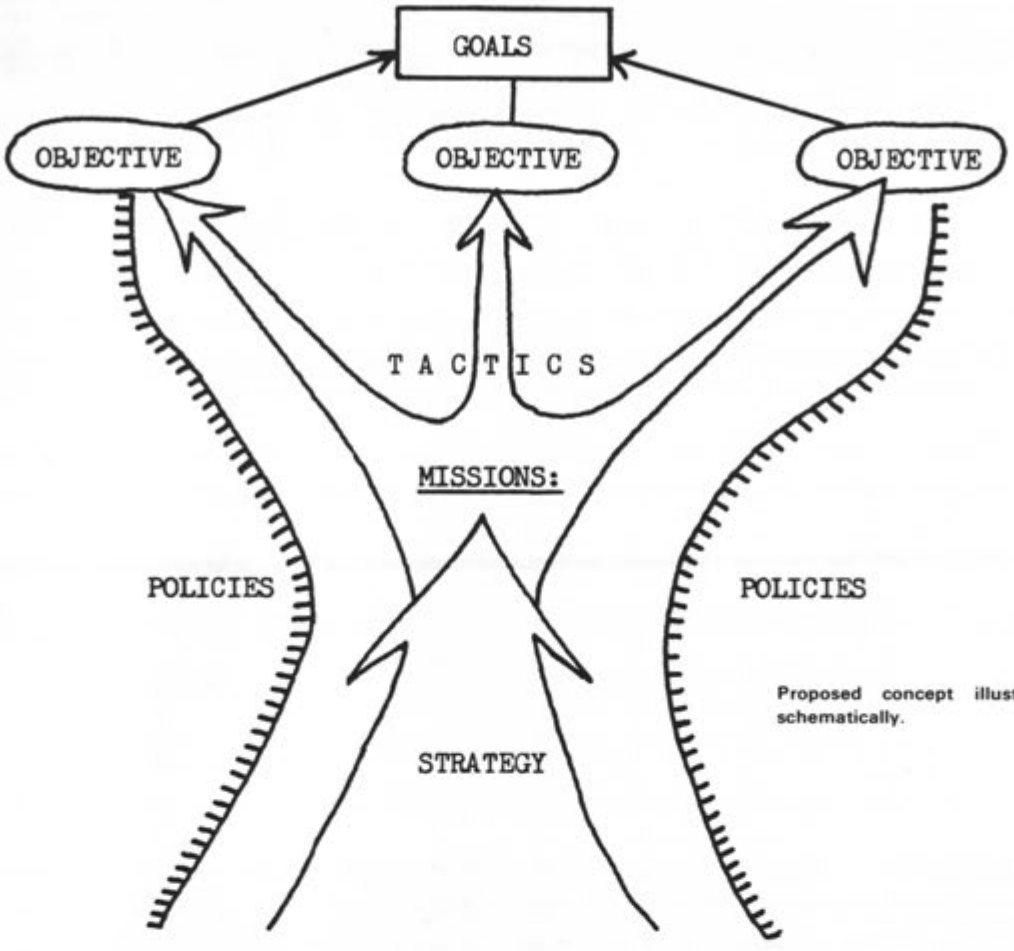
> *mission*—1. The task together with its purpose, thereby clearly indicating the action to be taken and the reason therefor. 2. When applied to lower echelons of the firm, a duty assigned to an individual or department; a task.
>
> *objective*—1. The physical target that one's efforts are intended to attain or accomplish; purpose. 2. An end in view to be attained by the employment of a business force.
>
> *strategy*—The art and science of developing and utilizing business assets as necessary in order to afford the maximum support to policies, in order to increase the probabilities and favorable consequences of success for the firm and to lessen the chances of failure.
>
> *tactics*—1. The ordered arrangement and maneuver of business elements in relation to each other and/or to competitors in order to utilize their full potentialities. 2. The mode of procedure for gaining advantage or success.

The business world was extremely wise to adopt the concept of strategy from the military. However, better communication and mutual understanding could be achieved through the related military terminology. This too is applicable to the business world. For example, borrowing the term strategy completely out of context created quite a problem.

Several of these terms are slowly finding their way into management literature. Philip Kotter writes of business "tactics" in his text, *Marketing Management: Analysis, Planning and Control* (Prentice-Hall, 1967) and sums up the relationship between objectives, strategy, and tactics by saying: "A firm operates in a competitive environment and must make a competitive adaptation to its opportunities. The specific moves, which may be called *tactics*, must be guided by overall strategy. *Strategy* concerns itself with the overall design for achieving the objectives, while *tactics* spell out the specific moves. . . . The *objectives* of a company indicate where it wants to be; the *strategy* indicates the intended route; the *tactics* indicates the particular vehicles it will use."

An important by-product of incorporating additional related military terminology such as *mission* and *tactics* into the business environment is the automatic elimination of the necessity of having to assign the present too-broad meaning to the terms *objective* and *strategy*.

The military lieutenant mentioned at the beginning of this article might have replied as follows: "Sir, I am the officer-in-charge of this live-firing rifle range. My *mission* is to teach the standard military rifle, the *M16A1* to officer and enlisted students at this service school and thus to familiarize them with the basic firearm of the Army. My *objectives* are two-fold: first, to ensure that each student has a working knowledge of the functioning, maintenance, characteristics and operation of this weapon, and second, to give each student the experience of firing 80 rounds of ball ammunition, using both the automatic and semiautomatic modes of fire. *Strategy* is never devised at my particular level in the Army. The *tactics* which I plan to employ in the accom-



Proposed concept illustrated schematically.

plishment of my mission include a lecture followed by a conference, and finally, a practical application stage where the students are moved to the firing line and fire the rifles."

With the acceptance of the material presented in this article, his businessman father could have just as readily replied: "I am employed as the executive in charge of marketing planning for the XYZ Oil Corporation. My *mission* is to provide my corporation with marketing programs which will lead to the attainment of the *goals* of our firm. My *objectives* are actually three-fold: (1) To formulate alternate courses of action; (2) To examine each of these alternatives; and, (3) To compare alternatives and select the one to be recommended as the annual corporation marketing program. *Strategy* for this corporation is devised by the XYZ Board of Directors and provides the broad principles by which we hope to secure an advantage over our competitors. Our XYZ marketing *strategy* consists of: (1) Developing the highest quality product possible; (2) Advertising more heavily than our competitors; (3) Charging a moderate price for our products; and (4) Using more salesmen than our competitors. *Strategy* is never devised within our own department, but comes to us from above. The *tactics* which I plan to employ in the accomplishment of my *mission* include analyzing the current situation, forecasting the future environment, developing internal *policies* and a system of control and assigning responsibilities to my subordinates."

While the foregoing examples are simple, the principles they illustrate are applicable at all levels of both civilian and military management. And once again, it would appear that we military people can contribute something of value to the civilian management sector. Thanks to precisely defined terms, widely taught and known, we generally understand each other very well when discussing mission accomplishment.

MAJOR THOMAS M. JOHNSON, Infantry, is now pursuing graduate studies at the University of Alabama. In 1960, he received his bachelor's degree in marketing and an ROTC commission from the University of Tennessee. His previous assignments include mechanized infantry company commander in Europe, weapons instructor at the Infantry School, and regimental senior advisor in Vietnam.

LAND NAVIGATION

Where Are You Going?

by Major J. Markham, Royal Artillery, Retired

As armies become more sophisticated their thoughts tend more and more to automatic navigation of their land vehicles. There does however tend to be a feeling that this is an "officers only" toy. Nothing could be further from the truth, so before we proceed, it is worth it to look at the future battlefield environment.

Because of the growing danger from nuclear attack, vastly improved surveillance techniques, deep enemy infiltration and so on, modern Armies composed of highly mobile flexible units will tend to make use of movement at night or under cover of bad visibility, while at the same time making maximum use of their flexibility to achieve maximum dispersion. It can be seen that this environment removes navigation equipment from the "toy" to the "essential" area and from the "officer" to the "sergeant" area.

Next to be considered are the characteristics required in a navigation system. Unfortunately some tend to forget that the user is the person who matters and as a result over-sophisticated and over-priced systems are produced. Sperry, however, has kept the user's requirements well to the fore and has adjusted the following guide lines:

Low cost: Navigation equipment is essentially for the low-level echelon user in the field. However cost-effective a system may be, military procurement funds are always limited. Thus a system that is so expensive that only a very limited quantity can be bought is not the answer. Such a limited quantity system will inevitably be reserved for and used at higher echelon levels, where it will not really be put to its optimum use.

Readiness time and environment. There is a danger in peacetime procurement to forget true operational requirements. A navigation system must be as nearly instantly ready as possible under all battlefield conditions. In battle the enemy will not be gentlemanly enough to stop shelling while the user starts up his navigation system. Therefore any navigation system must have a start-up time shorter than the mean "crash-action" start up time of the vehicle in which it is mounted.

Accuracy. This must be as high as cost-effectively possible. Generally speaking, navigational system accuracies are quoted in terms of percent of distance travelled. This is a false yardstick. First of all, the user of a navigation system wants the system to be able to place him at the end of his journey within reasonable distance of his objective in terms of meters, not within a percent of the distance travelled. Secondly, any navigation system is tied to a map and therefore there are inherent map and readout errors before one even takes the equipment accuracy into consideration.

Consider for example that there is a possible 65 meter start point map probable error (CEP) including reading error. The same error can be assumed for the finish point. To these can be added 10 meter read out resolution errors at both start and finish points. Thus, there is a possible total inherent error of 150 meters. It can be seen that so-called one percent

TESTS OF SPERRY DIRECTIONAL GYRO SYSTEM MOUNTED IN FOX

Run	Date	Distance (Kilometers)	Duration (hrs : mins)	Radial Error in meters	As percent of distance run
1	20.10.69	268.0 kms.	8 : 45	100	0.037
2	20.10.69	214.4 kms.	9 : 30	275	0.128
3	22.10.69	254.4 kms.	7 : 00	40	0.016
4	22.10.69	224.0 kms.	6 : 40	910	0.405
5	28.10.69	144.2 kms.	3 : 50	75	0.052
6	29.10.69	209.6 kms.	5 : 00	190	0.091
7	30.10.69	156.8 kms.	7 : 00	120	0.076
8	03.11.69	152.0 kms.	4 : 30	400	0.264
9	04.11.69	222.4 kms.	6 : 45	320	0.142
10	04.11.69	259.2 kms.	9 : 30	400	0.155
11	05.11.69	158.4 kms.	4 : 00	110	0.069

system has a potential inaccuracy of 150 meters (disregarding any inherent errors in the system) up to 14.99 kilometers. Only thereafter can one percent accuracy of the distance travelled validly be claimed.

Simplicity. The modern soldier has so many tasks occasioned by the vast range of electronic devices that it is important that any navigational equipment be a true *aid* which requires the minimum training and attention and can be operated by any soldier.

Robustness and reliability. By the same token the equipment must be capable of withstanding the roughest treatment, without requiring constant serviceability checks and possibly subsequent repair. The robust nature of the Sperry Navigator can be judged from the fact that it has passed the full British Army qualification tests, including vicious shock and impact tests. The ability to pass tests of this sort is essential if land navigation equipment is to withstand the battlefield environment. Unfortunately such tests are sometimes disregarded by people wanting to rush equipment into service.

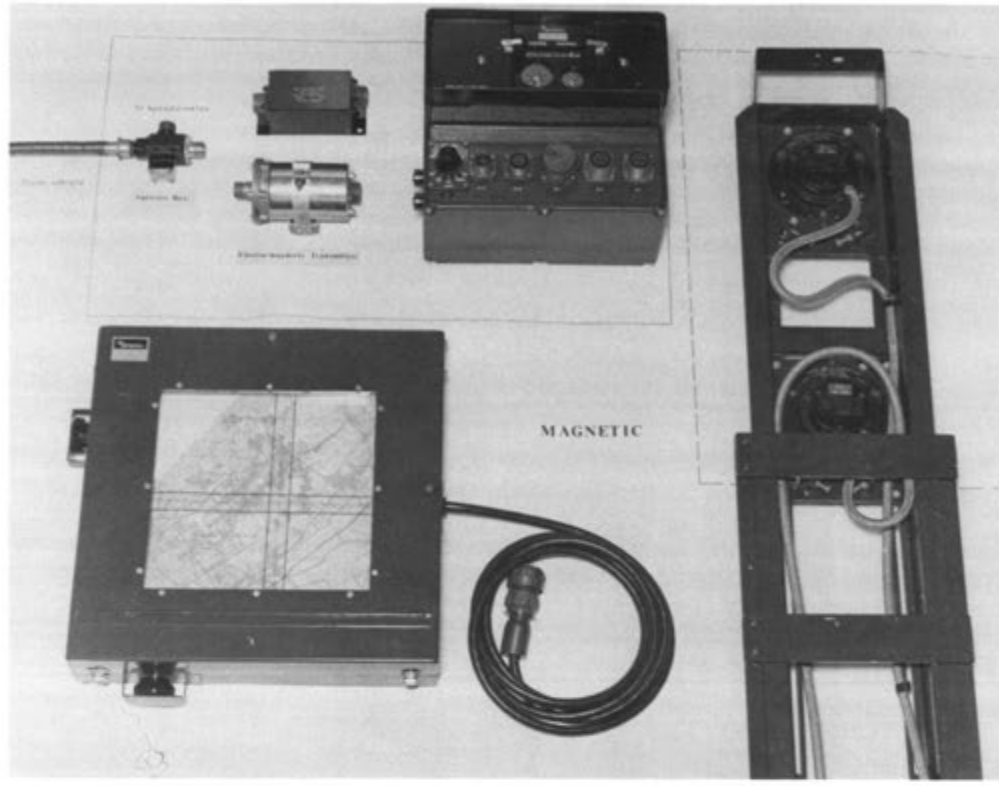
Flexibility and logistics. The objective of equipping any army with new equipment should be to find the optimum way of placing the maximum number of the units in the user's hands considering the prevailing financial background. Certain classes of vehicles and certain special uses demand the use of gyro navigators. Apart from these the rest of the vehicles can be equipped with far cheaper, but equally effective, magnetic navigators. Since all countries have an ever-increasing logistic problem, manufacturers must therefore aim to have a tremendous degree of commonality of parts to allow a reduction in the logistics problem of spares, and at the same time to give flexibility by interchangeability of parts. As an example of this, the Sperry Navigator has a common computer and distance input, regardless of whether a gyro or magnetic heading reference is being employed.

Immunity. The system must be capable of maintaining its accuracy regardless of visibility, terrain or enemy action.

The Sperry Navigator, which is in service with the British and Swedish Armies and is on trials throughout the world, is produced in two versions: the magnetic and the gyroscopic. Both systems use the same distance input and computer, which continuously displays the vehicle's grid coordinates and heading.

THE MAGNETIC SYSTEM

In the magnetic system Sperry uses the unique Chobham self-compensating twin flux detector array. This consists of two flux detectors mounted on a short horizontal boom, normally to the rear of the vehicle. In this system the inner detector senses the vehicle's field, which saturates the earth's field, and the outer detector senses the earth's field and a proportion of the vehicle's field. The two outputs are mixed in the correct ratio so as to leave a signal in which only the earth's field remains. Any normal random shift in the vehicle's field is felt in the same ratio and therefore automatically corrected, hence its high stability of accuracy capability. Sperry has



The Magnetic System

often been criticized because of the increased problems of calibration; however, trials have proven beyond any doubt that although a single flux valve system will work in ideal conditions, it may well not do so in a battlefield environment. Sperry feels their beliefs are fully justified by the very recent reports on successful trials of the Sperry magnetic navigator in Europe.

One such report states:

"The Sperry Navigator Chobham Mk.2, produced results both in the LKW 0.25 tons (Jeep) and also in the Troop Carrier vehicle M.113 within the tolerance of 1% of the distance run (CEP). These are the overall results:

(1) Navigational accuracy:

Jeep – East/West route 0.38% CEP
North/South route 0.73% CEP
M.113 – East/West route 0.53% CEP
North/South route 0.55% CEP

(2) Power cables and railways have no affect on the navigational accuracy. Other vehicles that are standing more than 10m from the installed vehicle do not interfere with the heading indication."

Another report stated:

"The loading of petrol cans, steel helmets and a tool box in both vehicles did not affect the navigation."

THE GYRO SYSTEM

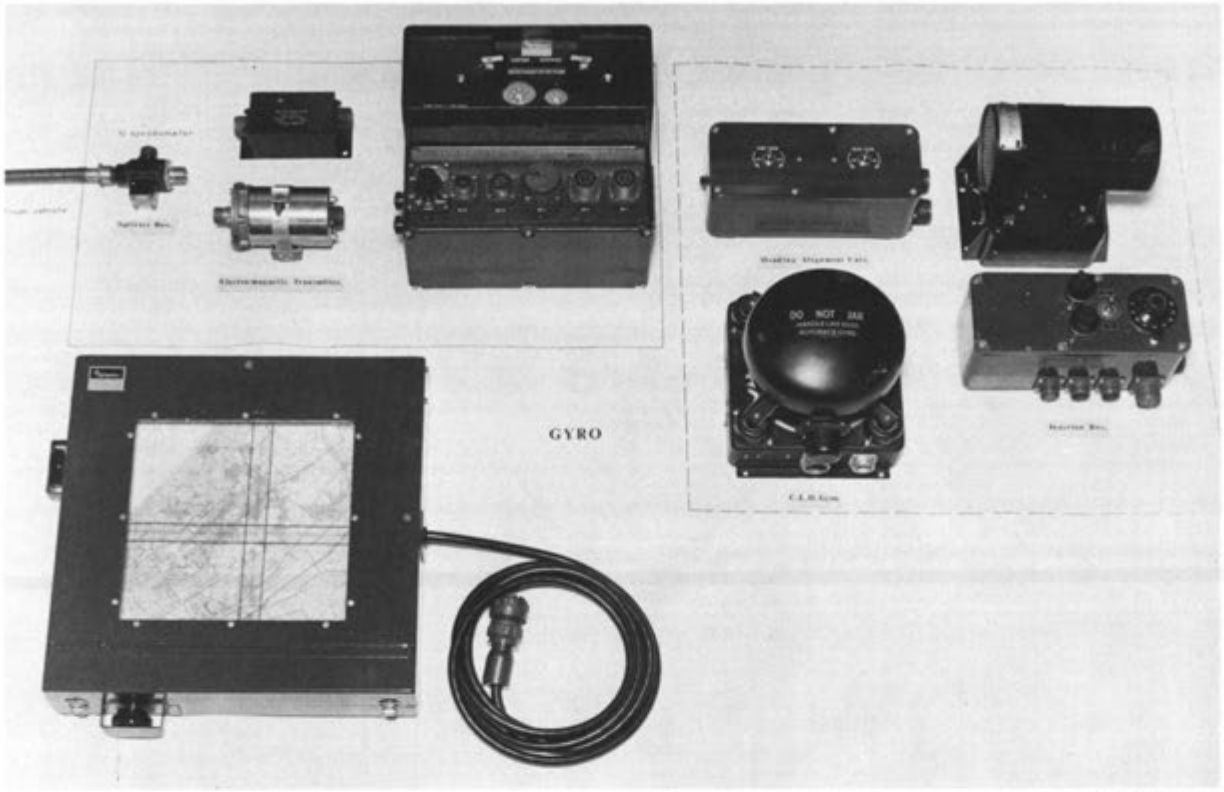
The Sperry Gyro system employs a well proven Sperry Rotorace, Directional Gyro. Why a Directional Gyro, which is not self-aligning? Apart from lack of self-alignment, which is an easily overcome problem, Sperry finds the following advantages in the use of a directional gyroscope. It is cheap, has small size (7 in by 9½ in by 7¼ in) and weight (9lb), has a very fast readiness time (one minute normally, 30 seconds in emergency) and yields very high accuracy.

The Sperry Rotorace Gyro and special drift correction techniques enable users to achieve a very high accuracy over long periods of time. The accompanying chart shows consecutive results achieved in the new British Army *Fox* reconnaissance vehicle in tests at Bovington during which the equipment has now run more than 7000 miles without a failure.

One notes that the average error is only 0.135 percent of the distance run. Similar results have been achieved time and again in other vehicles and at other places.

It is interesting to note that all other European land navigation systems have now adopted the directional gyro solution in preference to the gyro compass.

A lot of fancy extras are not required with these

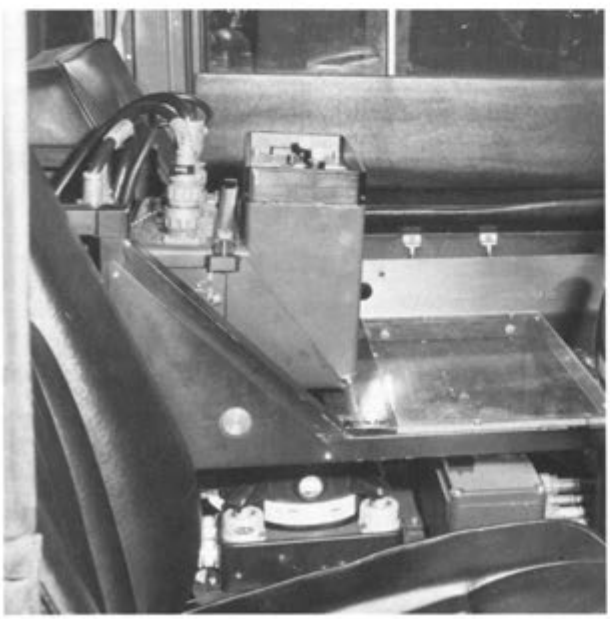


The Gyro System

systems. Therefore the only accessories are a heading repeater and a map display. The map display is unique inasmuch as no map preparation is required. The map can be rapidly slid in and out, when it is required to be taken on briefings or foot reconnaissance and to be marked up.

The Sperry gyro system is capable of far higher accuracy than mere navigation requires. In fact the British Army, following extensive trials, has accepted it for the survey and orientation of vehicle-mounted mortars it has been used to map air fields (a complete airfield was recently plotted to an accuracy of 20 meters in one morning). The system is now completing successful trials on the plotting of obstacles as they are laid and it is currently undergoing development as an autonomous on board artillery survey system with a CEP of 10 meters in 10 kilometers. The potential users of an accurate land navigation and location system built for hard use in the field are limited only by the imagination and the budget. These systems go far toward ensuring that troops arrive at the point of decision promptly and accurately, and that needed supplies are at the right place at the right time and that fires are placed on the enemy accurately, rather than on some empty scenery. With today's emphasis on battlefield cost effectiveness, they appear to fill a true military requirement.

A varient Sperry Land Navigation System mounted in a Land Rover.



MAJOR J. MARKHAM, Royal Artillery, retired, is assistant sales manager (military systems) of the Sperry Gyroscope Division of Sperry Rand Ltd.

POOR RIGOR'S ALMANAC

bill herman

original art by the author

Writing to wartime Army buddies, like chewing gum, eventually loses its flavor and becomes a chore. Not so, however, the contact that still exists between the former members of "Old Tent Six" (which, though it may sound like some fraternal order of lusty fellows, was actually Tent No. Six on a company street at Fort Knox).

Exchanging letters with this group can hardly become a chore because our letters consist of just six words once a year. Six words—that's all; not even a Christmas card. Sometimes a member of this low-key pen club might smuggle in a terse bit of information like his new address, the taking of a bride or the birth of a man-child, but this is not required, nor is it solicited. None of the members have met since doffing uniform, and "Old Tent Six" neither plans nor needs a reunion; the warmth and closeness of our association endures through those six simple words once per year.

Before the six members of "Tent Six" become suspect as some secret syndicate, they are identified as a research editor, a bus dispatcher, a professional hockey player, a writer, a restaurant owner and a card dealer at Las Vegas. We are all doing about the same thing today except for the hockey player. While he still had a few unbroken bones, he went into a safer trade—as a ski instructor at his own resort. So you see, we are a quite normal American group who met in a quite normal fashion, normal for 1941, courtesy of the greatest host and matchmaker of that time—the Selective Service Act.

Shortly after Pearl Harbor, the Army was bursting at the seams, and the six of us met while contemplating the seams of our pyramidal squad tent in a mechanized cavalry recon troop billeted on the sooty, smoke-shrouded fields known as Tent City.

"Billeted" is used here only as a word in vogue at the time; at Fort Knox during the winter of '41, it rhymed with "fighting for survival." If the sun shone bright on somebody's Ole Kentucky Home that winter, we were not in *that* part of Kentucky. Save for a few good dry blizzards, winter consisted of

about six months of Ohio River Valley Damp. With hundreds of tiny conical stoves (Fig. 1) belching soft coal smoke, soot and heat (in that diminishing order), we did see some extraordinary sunsets through the multicolored gaseous pall that hung over the sprawling canvas metropolis. Mornings when the ground was frozen or dusted with snow, it would in turn be decorated with whorls and wavelets of soot like an expressionist's painting. When the ground wasn't frozen, we stepped out of our tents into—what else?—black mud.

It took us weeks to adjust to the reveille formation each morning; not the ordeal of getting up (most of us slept in our clothes), but the shock of the Morning Chorus—thousands of men standing in the icy, coal gas (air) clearing their throats.

The first formation after breakfast was usually Canvas Call—the ritual of replacing the tents that

Fig. 1—
Conical Stove

burned during the night. Perhaps what brought the six of us so much closer together was the fact that we had never—burned—down—our—tent.

Perhaps that was because our fire was usually out.

Besides, none of us being adept at the frontier art of fire-making and tending, we preferred to do without the forlorn little smudge pot and enjoy what fresh air might have been trapped in the tent from the summer before. But there were many nights when the great white frost walked about that we stood in bundled camaraderie, in animated talk and free exchange of ideas, arguing viciously over whose turn it was to climb the rickety ladder (Fig. 2) to the ridgepole and unclog the spark arrestor pot (Fig. 3) atop the chimney.

Week followed week (or were they but days?), true to the sergeant's prophecy that "things get worse before they get better." Training was hard and exacting but it was mostly in the field of fresh, pure air where we rampaged as though on pure oxygen. We appeared to enjoy it so much, we were sometimes left out there indefinitely (perhaps to conserve soft coal).

Fig. 2—
Chimney Ladder

But the six of us endured because our hearts, if not our lungs, were pure.

It should not be inferred that the inmates of Tent Six were always completely congenial. We had some of the frayed nerve endings common to communal living. We had personalities clash and tempers flare over things like how long each should be allowed to embrace "Little Smokie," the shapeless but lovable stove. It was during one such temper-tossed evening that a seemingly banal conversation brought about the event that was to bind the Sooty Six together for life. That evening's Lights Out discussion centered around the relative merits of duty in Tent City as against fighting in Guadalcanal or North Africa.

"At least," philosophized one, "in the Pacific you can die outdoors and warm."

"How long can man endure," came a mumbling from a pile of blankets, "half-smoked, half-frozed."

Fig. 3—
Spark Arrestor

"Yeah," snarled another. "At least there a day has meaning. Today was nothing; just another day—a nothing day."

"Au contraire!" yelled the editor. "Today IS something. I bought an old Almanac in a junk store last Saturday and I looked up today. Today, Gentlemen, marked the opening of the Panama Canal."

"Happy - Opening - of - the - Panama - Canal - Day!" shrilled five voices in unison.

"Happy - Opening - of - the - Panama - Canal - Day!" they continued to shriek and laugh alternately until the first sergeant burst through the tent-flap and put a stop to it in the timeless manner of first sergeants (or firsts sergeant).

The next morning, before all six of Tent Six went on KP and Coal duty, the Almanac was consulted. They burst out into the half-mud, half-ice street chanting the greeting they would shout at each other all day:

"Happy-Invention-of-the-Sewing-Machine-Day!"

Thus was discovered the touchstone, the talisman, of the Great Friendship of Old Tent Six. Be it friendship or idiocy as many were to claim, its symbol was the Farmer's Almanac for 1922.

"Happy First Issue of Paper Money in the United States Day!" was the call for the following day, succeeded by "Happy First Horseless Carriage Goes Over 10 Miles-Per-Hour Day!"

Thus for the six of us, each 24 hours was not just another day in the Army; it became a "Something-Day," a something to savor and celebrate all day. Yes, it was educational—like the dates of the introduction of flax to this country and the Indian Massacre at Chown's Crossing. (The Almanac failed to identify the state, so that took us to the library that night. No luck.)

The something-days gleaned from the almanac each day cheered and sustained us during the long and often violent day's training. More important, the almanac now made getting up in the morning more bearable. The simplified rules of "Almanacing" stated that there would be no peeking ahead, not even by the Tent Librarian (the owner of the book); that each night the almanac would be put on the footlocker after Taps. The first one to get up in the morning would blow the soot off the book, turn to the day's day and—loud and clear—announce the significance of that day, such as "Happy-First-Breechloading-Rifle-Manufactured-in-the-US-Day!"

Such tidings would bring the rest of the tentmates up and exchanging the greeting until it became a chant and was picked up by the next tent, then the next. Later it was to be picked up by the platoon or company on the next street whose tents backed on ours. Then the next street until our whole area of the camp was a cacophony of something like "Happy-Discovery-of-Victoria-Falls-Day," give or take some losses in transmission.

This should not imply that the whole camp willy-nilly, or as gleefully, shared in the Almanac Game with us. There were many who scoffed and promptly dubbed our daily byplay as sheer idiocy and may, to this day, be talking about us. Some even took violent exception to the game, but this was during the early period when we were unable to contain our curiosity over what the next "something day" would be. We rose long before reveille to grab the almanac and announce it to the sleeping tentmates (who, in turn, thinking it was time to get up, would announce it to the whole tent row until calmer, less inspired heads put a stop to it).

The troop commander and the first sergeant at first viewed the Almanac Game with contained horror, half-convinced that we had finally gone tent happy. They soon noticed, however, that Tent Six was on a definite morale upswing which was noticeably affecting the whole troop. Any plans they might have entertained to stop or curtail the game were deflected one day during a full-pack,

25-mile forced march. Considerable wagering with other troops had taken place the day before as to which troop would finish first. The wagers involved little money but large amounts (quarts and fifths) of a popular potable known as "Soot Syrup." At the 20-mile checkpoint of the marathon hike, our troop was hardly in a position that threatened to win.

"Men, we've got to pick up 20 minutes fast," the troop commander rasped in his best remaining command-voice. "We're going into a two-mile run."

This was greeted by a long sustained groan from the strung-out ranks of the troop.

Then the Old Man said the magic phrase. Most of us are sure to this day that it was only a desperate stab-in-the-dark decision that would never appear in a leadership manual. Walking backwards, facing the stumbling, plumping, staggering, slogging jumble of men, he said:

"You can't let down today, men!! Don't you know what day this is?"

"Happy - Edison - Invents - the - Incandescent - Lamp - Day, Sir" roared 170 voices, whereupon the troop ran and stumbled and ran some more until they were first over the finish line where the regimental staff stood solemnly observing the condition of the men. It was reported that although our troop ap-

peared fit, some of the men were noted to be incoherently mumbling something about "Edison's candied lamb."

The ancient almanac in Tent Six also helped solve a serious technical problem with our environmental control and life support system (the Sibley conical stove). It also had emotional overtones because Big Bal, the hockey player, insisted on taking his turn going up the hump-backed, ridgepole ladder whenever the spark arrestor got plugged up and had to be removed and shaken out. However he was so huge he couldn't have gone past the second rung of the ladder without collapsing the whole tent. He was feeling particularly depressed one wintry night after his tentmates had made their third trip up the inverted-triangle of a ladder.

"And to think this is 'Happy-First-Use-of-Steam-Day', too," said one of them. Big Bal stared at him, spread a big happy grin over his face and dropped off to sleep.

The next few days we noticed him rummaging in the trash cans and bringing back empty "Soot Syrup" bottles, mostly fifths and quarts. These he carefully stored in an extra coal box he had under his bunk while fighting off our questions. That weekend in Louisville he was seen buying a sack of corks in a dime store, further adding to our confusion.

We were convinced he was now fully and all-out tent-happy.

Until the next time our spark arrestor got plugged up and we started to spill outside to get the ladder.

"Hol'it!" he barked. "Dis one's one me." He grappled in the coal box, grabbed a syrup bottle, poured about two inches of water in it, jammed a cork on it, opened the little hatch and threw it into the fire.

"Wait! Wait!," he yelled blocking the tent flap with his huge frame while we used up the last clean air in our troubled lungs.

Tha-BLAM!

The water in the bottle built up a head of steam and the explosion rocked the little stove—but the smokestack and spark-arrestor were now clear of soot and the stove smokeless!

No one in our troop ever climbed the funny ladder again.

Oh, now and then we'd have to take the stove apart and chop the melted glass from the grate. And when other troops noticed the explosions and

lack of traffic on the ridgepole ladders there was a momentary shortage of "syrup" bottles. However we all pitched in and kept the supply at a safe level. Nor is there any telling what we did for the cork industry. All thanks to the Old Almanac.

In this way our almanac found its way into the hearts of the whole troop. True, there were still some disbelievers and malcontents. It was then there appeared other almanacs and impromptu word being passed on the "something day," but ours contained a variety of events per day that was unmatched by any other publisher. Thus, despite rumors and disagreements, the only *official* "day" for the troop was the one emanating from the almanac in Tent Six.

Hence that fatal day was not "Opening-of-the-Oklahoma-Territory-Day." Nor was it "Doctor-Livingston-is-Found-Day."

It was "Invention-of-Movable-Type-Day." But, alas, it was not a happy day.

Because that was also the day our almanac disappeared!

No dawn was colder and blacker than that next day's. The men moved listlessly, zombie-like into ranks. The first sergeant stepped briskly in front of the troop and took the report from the platoon sergeants. He then performed the day's unmilitary, but essential ritual.

"What day is it?" he snapped.

He hadn't got the word.

Silence, except for the gasping of fires dying in soot-choked stoves.

Official and unofficial threats, cajolery and shakedown inspections failed to turn up the missing almanac. Morale began to slump. Those who only half-heartedly played at the Almanac Game were openly suspected and ostracized. Other almanacs were tried, but they did not contain the striking depth of choice found only in the Master Almanac of Tent Six.

Morale now began a sickening headlong slide.

Nerves got raw at the edges and tempers flared, especially at attempts to invent a "day" to live by. Friend suspected friend and even in Tent Six the cold erosion of suspicion was felt. Pressure was applied to the only tentmate who had never fully overcome the temptation to peek ahead in the

"Happy-Discovery-of-Victoria-Falls-Day? Who the Hell is Victoria Falls?"

almanac. The penalty for this breach of restraint was to have the next day's "day" whispered to all but the offender. He had been punished several times, but had never really enjoyed the game since the day we whispered "Happy-Arkansas-Admitted-to-the-Union-Day."

He was from Arkansas.

For weeks he was our prime suspect, but he finally convinced us of his innocence by offering to buy another almanac from the publisher—but no one recalled the name of the publisher. The bookstores in Louisville were ransacked, but a replacement could not be found.

Morale was about at bottom dead-center.

Desperate measures like lavish rewards of "Soot Syrup" were proffered for the return of the almanac, or a replacement in the event it had been rashly destroyed (some men would burn anything but coal in their stoves). One committee fruitlessly wrote to farm publications, farmer associations, even feed and grain companies describing the missing almanac and asking help in locating another.

But each day brought nothing but tired muscles, soot and coal-gas.

Each day was now a nothing-day.

The troop's executive officers tried to reason with us, to convince us that the game was no more than a passing whim. We convinced *them* that the almanac was needed as a desperate symbol of hope in our smoked, smudgy world. They offered to renew their efforts as our sagging spirits were also infecting the neighboring troops. Minute and diabolically planned shake-down inspections took place all through the regiment. The almanac was gone from this earth. Adding to our shattered morale, we were now marked as trouble-makers and crybabies by a regiment that did not fully understand the true meaning of the old almanac held for us. We continued our search and our shallow nothing-to-nothing existence.

Spring was not yet come to Kentucky when suddenly one morning Tent City was thrust into bright, golden Summer. Just after the last wheeze of the reveille bugle had sounded, a member of Old Tent Six rose eagerly out of bed—as high as his elbows would lift him—looked around, then pounded out and summarily ended our long trial and sorrow.

There on a footlocker, battered but serviceable, was our missing Almanac!

In ear-popping stentorian voice, he sounded the six words that the members of Old Tent Six still write to each other on the day-of-that-day or whenever they feel like it: "Happy-Capture-of-Fort-Ticonderoga-Day!"

BILL HERMAN, former heavy tank and recon troop commander and now a civilian information officer with Headquarters, CDC at Fort Belvoir, claims his Armor career spans the whole history of the armored divisions—from the 1st in 1940 to the inactivation of the 20th in 1945.

In between he served in the recon elements of the 5th, 8th and 12th Armored. In the late Forties and Fifties, he served as a rifle company commander in Korea and Hawaii, on ROTC duty at the Universities of Hawaii and Massachusetts, and at Middlebury College, Vermont, as Recruiting PIO, and had a tour in Military Intelligence in the Danube Valley. (His real front name is Reinhold-Wilhelm.) His last military assignment was with the 6th Armored Cavalry at Landshut, Germany.

A native of Connecticut, he attended the Universities of Wisconsin, Minnesota, Southern California and Maryland and Marshall College. ("No degree," he says. "I majored in electives.")

Concerning his military education, he claims he attended the Wheeled Vehicles Course at the Armored School in 1941, at which time it was necessary to *steal* the vehicles for training as was the case during a gunnery course in 1943. He admits things had improved by the time he was a student at the Advanced Course in 1954.

"Poor Rigors' Almanac" is a chapter from his forthcoming book *No Machineguns in the Living Room.*

A New Approach to Crew Armament

The Ingram LIW

by Thomas B. Nelson

A completely new and radical type small arm is being manufactured in the United States which could find ready acceptance for armored vehicle crewmen, aviation crewmen, crew-served weapons gunners and as on vehicle equipment on armored personnel carriers. The novel weapons family includes the Ingram *Model 10* Lightweight Individual Weapon (LIW) in .45 caliber and 9mm parabellum and the *Model 11* LIW in 9mm short. These guns are presently being manufactured in Georgia and are being purchased by several foreign armies. These lightweight, individual automatic weapons are "mini" machine pistols designed to be used with or without sound suppressors. They are the lightest, most compact weapons of this type to be offered on the world market to date.

Attention is first focused on the *Model 11* which, with its slightly larger mate, the *Model 10*, was designed by Gordon Ingram, a prominent figure in the small arms world. Military Armament Corporation (MAC) worked quietly and guardedly for four years to perfect their unique new line. The products of their research may well revolutionize the entire concept of individual armament in the armies and security forces of the Western World.

Of primary interest is the *Model 11*, which weighs only 3.5 lbs. (1.5 kg), fires the 9mm short (.380 ACP) cartridge and is no larger than the standard caliber .45 Colt automatic pistol.

In designing both the *Model 10* and *Model 11*, Ingram gave primary consideration to safety, ease of handling and low-cost construction. Both of these highly sophisticated weapons employ blowback operation.

The magazine feedway, conveniently located in the pistol grip, provides a firm support for the magazine and allows rapid magazine changing, even at night, according to the principle of "hand-finds-hand." The bolt and general design are unusual. A short, overall length was obtained by extending the barrel into the receiver and by machining the bolt to permit a recess for the barrel. This features permits the weapon to be extremely compact, and yet have a comparatively long six-inch barrel. This recessed bolt, with its "telescoping" feature surrounding the barrel on three sides helps to hold the weapon steady and prevents upward climb during automatic fire.

The rigid all-steel construction is the result of an extensive search for maximum strength and durability in miniature units. Bolt handle, magazine catch, fire-selector switch, safety catch and stock-release are all centrally located for operation by either hand. The flush sides offer no projections to snag fabric or vegetation, and with the bolt forward, all openings are closed against dirt and debris. The weapons' singular designs all but eliminate malfunctions.

These new hand-held weapons are not a modification nor copy of any existing pistol of the selective fire type, as are others which have appeared on the world market since the introduction of the Mauser *Modell 1932 Schnellfeuser* or the host of Spanish copies of standard pistols produced with selective-fire mechanisms. These old automatic pistols, capable of selective semi-automatic and full-automatic fire, have not been successful because of the heavy recoil from the powerful pistol cartridges being used in such comparatively light weapons, and because of the high rates of fire and poor balance. Most have failed to provide a controlled burst of fire because of the low attachment-point of the shoulder stock on the grip, resulting in excessive muzzle-climb. They

Model 11 LIW

US .45 M191141

are almost incapable of producing a hit with any but the first shot, and even then, only at very close range.

Thus, until recently, the Western World has not produced a successful selective-fire replacement for the standard pistol or revolver. The Communist World, on the other hand, has. Both the Czechs and Poles have recently come out with small "mini weapons" capable of delivering controllable automatic fire. The Czech weapon, designated *VZ 61* (Scorpion) fires the 7.65mm (.32 ACP) cartridge and has achieved some limited commercial success throughout the world. The Polish weapon, the *Wz 63*, utilizes the Soviet 9x18mm *Makarov* cartridge and is called the "mini-machine pistol." The Soviet 9mm cartridge creates much less recoil than does the Western World's standard 9mmx19 Parabellum (Luger) cartridge. The average weight of the Czech and Polish weapons is approximately 4½lbs. (2 kilos). kilos).

The Communist bloc countries have realized the potential of these new mini-machine pistols, and they have introduced a new concept in combat pistol shooting. Several authorities on automatic weapons have compared these new weapons with the one-hand shotgun. This shotgun effect is the best solution to a problem which has long plagued combat pistol shooters—to wit, scoring a hit when shooting a conventional pistol which fires semi-automatically. The new MAC weapons, with their low recoil impulse and controllable-burst fire, solve this long-outstanding problem and guarantee improved hit-probability.

Our previous wars, with fixed front lines, produced the efficient but cumbersome forerunners of the *Model 10* and *Model 11*. Today's unconventional warfare requires a handier, more versatile small arm designed for close combat. The vehicle driver, rear area technician, armor crewman, aviator and crew-served weapons gunner all must have made available to them a light, easily carried automatic weapon which can produce a heavy volume of fire effective at a reasonable range.

In addition, the compact size of the Ingram in

STATISTICS

	Model 10	Model 10	Model 11
Caliber	.45 ACP	9mm Parabellum	9mm Short (380 ACP)
Weight	6.25 lbs	6.25 lbs	3.5 lbs
Length with Stock Folded	11.5 in	11.5 in	9.75 in
Length with Stock Open	21 in	21 in	18 in
Magazine Capacity	30 rds	36 rds	16 & 32 rds
Rate of Fire	700 rpm	700 rpm	850 rpm
Sights	100 meters fixed	100 meters fixed	100 meters fixed
Type of Fire	Auto and Semi-Auto	Auto and Semi-Auto	Auto and Semi-Auto

Model 11 field stripped

Model 11 and
9mm UZI

Model 11 with suppressor
and spare magazine

any of the three calibers (.45, 9mm parabellum and 9mm short) coupled with the high rate of fire would appear to make it suitable for use as an on vehicle weapon for employment from the firing ports of a mechanized infantry combat vehicle. In this role the barrel could be manufactured to a length which would give accuracy out to ranges of 175 to 200 meters. To meet these needs, and to reflect the changing face of warfare, the *Models 10* and *11* were developed.

To increase the versatility of these weapons, the manufacturers offer a proven sound suppressor. Both the *Model 10* and *Model 11* have the end of the barrel threaded for the attachment of this sound suppressor. Thus muffled, the weapons can provide full automatic fire or single shots with next to no noise. This is particularly true of the *Model 10* in .45 caliber ACP, and of the Model 11 in 9mm short. The noise attachments for these two types reduce the sound of firing to the point where an ambush force, so armed, could eliminate the advance party of an enemy patrol without alerting the main body of troops only 75 yards away.

The *Models 10* and *11* Lightweight Individual Weapons were designed to fill a gap in the small arms conventional weapons line—a break between the intermediate automatic selective-fire Assault Rifle and the individual weapons such as standard pistols or revolvers, which are very limited in actual combat. No one today denies the need for an efficient security or counter insurgency weapon, with conflicts raging across Africa, South America and Southeast Asia. It is apparent the mini machine pistol has now evolved into a practical and effective weapon which will increase the capability of the individual soldier and help to solve the problem of properly arming those soldiers who, heretofore have been carrying pistols.

THOMAS B. NELSON has had a lifelong interest in small arms—especially automatic ones. After his studies at the Universities of Miami (Ohio) and Cincinnati, he toured Europe collecting data for books. He then served as a US Army Ordnance technical intelligence specialist. His first definitive work in the field, *The World's Submachine Guns* (Machine Pistols) was published in 1963. His latest authoritative volume is *The World's Assault Rifles and Automatic Carbines*.

SHORT, OVER, LOST or...TARGET

COMMAND

A Specialist Career Field?

by Captain James L. Hickman

That this is the age of specialization is a truism. One need only glance about to realize that the trend to specialization exists in practically every occupational field imaginable.

In keeping with the times, the Army too has expanded its specialist programs. But what has happened to the command? In a review of the specialist programs, one finds that none exists, or is being considered, for combat arms commander. I submit, however, that due to the increasing complexity of the equipment and tactics of combat arms units, due to the apparent eventuality of an all volunteer force, and considering the need for increased efficiency, arms command should be elevated to specialist career field status.

In but a few years, the equipment of combat arms units has advanced from a relatively primitive state to a highly complex one. Every indication is that this trend will continue unabated. The armored cavalry squadron is a prime example of this pervasive trend. Evolving from a unit equipped primarily with jeeps and armored cars, today's cavalry squadron is replete with many types of ultra-sophisticated equipment. Heading this list is the Armored Reconnaissance/Airborne Assault Vehicle. This requires the commander to learn new tactical techniques, since the *General Sheridan* cannot be employed in the same way as a main battle tank. The helicopters of the air cavalry troop, a unit which did not exist in the pre-Vietnam era, require the commander to reorient himself completely from the ground to a combination of air and ground environments. Complementing the helicopters and Sheridans we find scout tracks, radar, passive night viewing devices and even antiaircraft missiles. New equipment coupled with tactical changes make it difficult for today's officer to become and to remain technically and tactically proficient.

One could go on about equipment changes. However, the reader is well aware of most changes, as well as of others planned for the future. The point is, are we going to continue to entrust the employment of such units to what I call part-time commanders? To do so seems to be a very undesirable course of action.

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

"It has long been established that technical proficiency is one of the prerequisites to being a successful commander."

". . . it should be evident that our short duration command assignment policy makes it exceedingly difficult for officers to become true experts in the employment of combat units."

". . . we are fooling no one but ourselves if we continue to believe that all combat arms officers are qualified commanders."

"In reality, broadening one's horizons often results in an individual knowing a little about everything and a lot about nothing . . . . If a business corporation were to attempt to operate in this manner, the end result would be colossal failure."

"If we are to be victorious in battle, we must ensure that our soldiers are commanded by those who are fully qualified by aptitude, training and above all, experience."

It has long been established that technical proficiency is one of the prerequisites to being a successful commander. This proficiency comes from continuous association with the equipment. For instance, how many times has one of our units received a battalion or squadron commander who was assuming command after a five-year or more absence from troop duty. My experience with this sort of thing indicates that a major portion of the new commander's tour had to be devoted to his becoming familiar with the equipment. Unfortunately, by the time he was well versed with the equipment, his tour of duty was over and it was time to train a new commander. There is no doubt that in each such instance the performance of the unit was adversely affected by the commander's lack of intimate knowledge concerning the equipment.

Tactical proficiency is another prerequisite to being an effective commander. It has often been stated that equipment changes, but tactics do not. To a certain extent this is true. The principles of war have remained relatively constant since the time of Von Clausewitz. What has changed, however, are the characteristics of the battlefield and the speed required for successful maneuver of combat units. These two factors, coupled with nuclear warfare and counterinsurgency operations, have added new dimensions to tactics.

Nuclear warfare and counterinsurgency operations have drastically changed many of our previous tactical concepts. The relatively solid frontages of World War II and the Korean War cannot be permitted on the nuclear battlefield. The commander must accept exposed flanks, and he must deploy his forces to facilitate combat engagements from any direction. Semi-isolation and large gaps between units are a fact of life in a nuclear environment, since to concentrate forces invites an enemy nuclear strike. In such an environment, the breakthrough operation could well become just as commonplace as today's simple offensive and defensive maneuvers.

In counterinsurgency operations, tactics become even more complex because of the nature of the enemy and the detailed planning required to combat irregular forces successfully. In counterinsurgency operations, unlike other types of warfare, a large amount of time is devoted simply to locating enemy forces. Once they have been located, the tactical plan must be executed swiftly and flawlessly or the enemy force will evaporate into the darkness. Security is yet another major consideration in counterinsurgency operations, and this includes security of the so-called rear area as well as security of the forward forces.

Any lapse in security allows the enemy to seize the initiative.

Speed per se is not a principle of warfare, but perhaps it should be. At all levels of warfare, speed is an essential element. As a matter of fact, some are advocating that we concentrate on developing wheeled combat vehicles since they are capable of higher speeds than our present tracked vehicles. Vehicular speed, however, must be coupled with speed in planning, speed in decision making, and speed in execution. In other words, the commander must be able to formulate and execute his tactical plan rapidly. If this is not done a propitious opportunity could be lost. And, in some cases, a lack of speed could well lead to a disastrous defeat on the battlefield.

All of the varied aspects of tactics are too numerous to mention here. But is should be evident that our short duration command assignment policy makes it exceedingly difficult for officers to become true experts in the employment of combat units. In the past a lack of tactical proficiency was partially overcome by the knowledge and experience found at higher headquarters, and partially by an unlimited resupply capability. Today, however, the experience available at higher headquarters is being drastically reduced as a result of accelerated promotion. We must also be cognizant of the fact that a portion of our industry could be destroyed in any future conflict; therefore, it would be unwise to assume that equipment lost as a result of tactical blunders could be replaced quickly.

The Army is now turning its attention to developing an all-volunteer force. This force will be highly specialized from top to bottom. A low turnover rate will make this relatively easy to achieve. To a unit such as a tank battalion, this will mean that all the soldiers, from the first sergeant to the junior leader, are professionals and specialists as well. It seems logical that the command position should be filled by a specialist. In fact, command specialists would probably be a necessity. Obviously an all-volunteer force would resent being commanded by officers who had been away from command duty for several years, and were, as a result, less than fully proficient.

In rebuttal to the preceding argument, some would say that we already have an unofficial command specialist program. At first glance, this appears to be true since all combat arms officers are supposed to be fully qualified as commanders. Upon closer examination, however, the argument lacks substance. Out of thousands of officers, it is illogical to assume, or even to require, that each officer by fully qualified as a commander. Even my limited experience has confirmed that many officers who excelled in staff positions were unable to do the same when placed in command positions, and vice versa. If this relatively narrow experience can be applied Army-wide, and I think it can, it becomes obvious that we are fooling no one but ourselves if we continue to believe that all combat arms officers are qualified commanders.

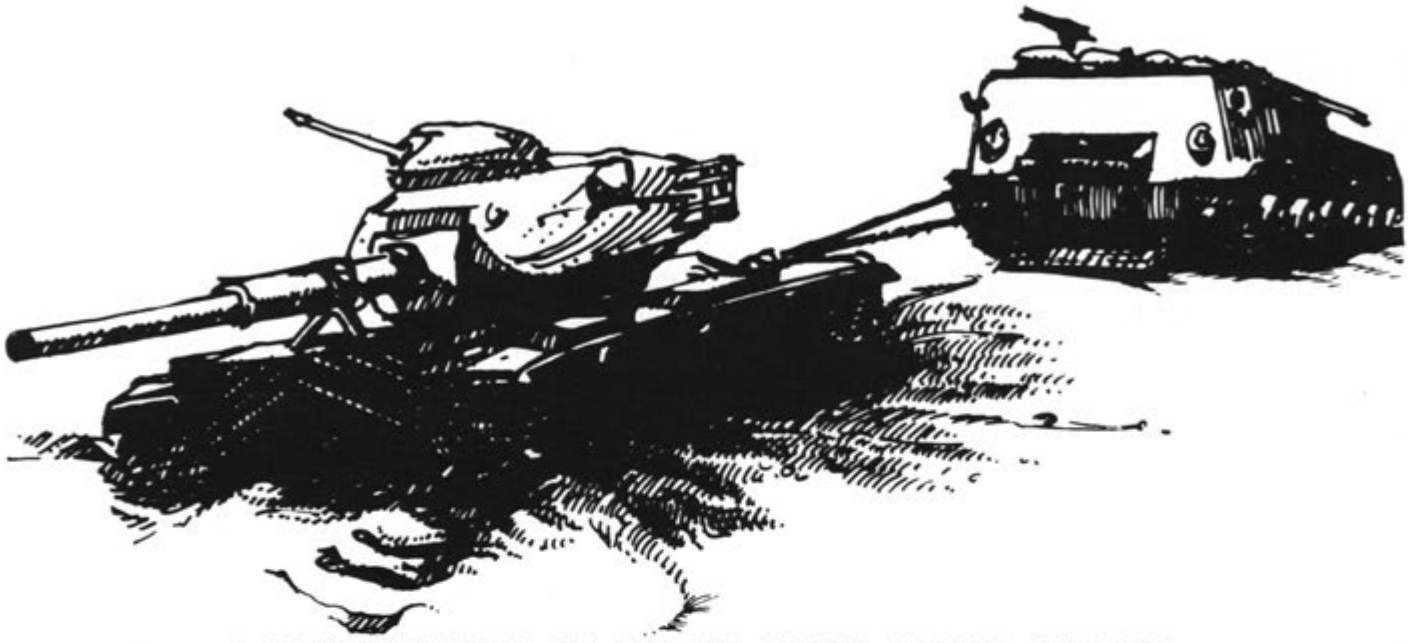
It has often been said that a career officer should broaden his horizons by branching out and performing a variety of duties, some branch oriented and others branch immaterial. However, this is not always the best way to attain a highly efficient organization. In reality, broadening one's horizons often results in an individual knowing a little about everything and a lot about nothing.

I can understand the requirement for officers to be cross-trained in other duties. But what I cannot understand is the excessive length of time devoted to cross-training, and this is especially true of those officers who have proven themselves to be effective commanders. In addtion to those who are members of official specialist programs, our present career management procedures frequently produce *unofficial* specialists in various fields. And it is generally understood that all these specialists, official and unofficial, must serve in command positions to be selected for promotion or senior schools. If a business corporation were to attempt to operate in this manner, the end result would be colossal failure.

Finally, and doubtless first in order of importance, the individual soldier is our most important asset. All of our complex equipment and intricate tactics are utterly worthless without well-trained, highly motivated and well-disciplined soldiers. Obviously, the commander is the key to developing such soldiers. With this in mind, it should be very clear that we must have competent professional commanders for our troops. The responsibility for their lives and well being is too great to delegate to part-time commanders. If for no other reason, command should definitely become a specialty career field. The individual soldier is the decisive element on the battlefield. If we are to be victorious in battle, we must ensure that our soldiers are commanded by those who are fully qualified by aptitude, training and above all, experience.

CAPTAIN JAMES L. HICKMAN, Armor, is a 1964 Fort Benning OCS graduate. With the 5th Battalion, 32d Armor in Germany he progressed from tank platoon leader to support platoon leader, battalion S4 and company commander. Following Jungle School in Panama, he commanded Company D, 16th Armor of the 173d Airborne Brigade in Vietnam. A graduate of Armor Officer Advanced Course 4-69, he is now a student at the US Army Aviation School.

HOW WOULD YOU DO IT?



A PRESENTATION OF THE US ARMY ARMOR SCHOOL

SITUATION You are the executive officer of a tank company engaged in a field training exercise. You are called by the 1st Platoon to assist in the recovery of a tank that is mired to road wheel depth on a hillside. Anticipating the need for the M88 recovery vehicle, you direct it to the recovery site. You assess the situation and determine that due to the terrain conditions, recovery must be made up the hillside in the tank's original direction of travel. The tank will not start and you immediately realize that the vehicle cannot assist in its own recovery. The remainder of the tank platoon is in the area and had attempted to recover the tank prior to your arrival.

Following the procedure outlined in FM 20-22, *Vehicle Recovery Operations,* you first estimate the slope of the hill to be approximately 5 degrees. Next you direct the recovery crew to erect a 2:1 winch rigging and attach it to the disabled tank (see figure 1). To ensure maximum winching power, you direct that the M88 recovery vehicle be positioned far enough from the disabled vehicle to require maximum cable be paid off the winch drum. The spade has been lowered and the recovery vehicle positioned on it. After removing the slack from the rigging, you signal the recovery operator to apply power to the winch and start recovery.

PROBLEM As power is applied to the winch, the M88 starts sliding downhill toward the disabled tank. Obviously further measures are needed. *What are your actions at this time?*

SOLUTION Use one of the other tanks in the platoon as an anchor, as shown in figure 2, to assist recovery.

Difficulty in recovery has occurred because the M88 serves as the only anchor in the 2:1 winch rigging described in the situation. The effort available with the 45-ton main winch on the M88 rigged for a 2:1 mechanical advantage is well in excess of that required to recover the disabled tank. This can be determined by computing the resistance offered by the tank. In this situation there are three factors to be considered:

1. The resistance of the disabled tank based on the depth of mire.

2. The additional resistance created by the angle of the slope.

3. The tackle resistance created by the block in the rigging.

The resistance of a tank mired at a road wheel depth is equal to vehicle weight—52 tons.

AUTHOR: EDWARD F. BASHAW

ILLUSTRATOR: SP5 EDMUND ENOMOTO

The amount of resistance created by the slope angle is determined by taking 1/60th of the vehicle weight and multiplying it by the number of degrees of angle of the slope:

$$1/60\text{th} \times 52 \times 5 = \frac{260}{60} = 4.3 \text{ tons}$$

This additional resistance because of slope angle must be added to the load resistance to obtain the total resistance. Fifty-two tons (weight of the tank) plus 4.3 tons (slope angle resistance) equals 56.3 tons estimated load resistance.

Tackle resistance, created by the winch cable bending around the sheave of the block, is rated as 10 percent of the load times (×) each sheave in the rigging. In our situation, we are using one block, so tackle resistance will be 10 percent of the load resistance.

$$.10 \times 56.3 = 5.6 \text{ tons}$$

Solution for the total resistance should be as follows:

Road wheel depth mire	52	tons
1/60th × 50 × 5° angle of slope	4.3	tons
Load resistance	56.3	tons
Tackle resistance	5.6	tons
Total resistance	61.9	tons

Once total resistance has been determined, the line forces must be computed and compared to winch capacity, and the first line force to be computed is the fall line force. The force exerted against the fall line must not exceed winch capacity.

Fall line force is computed as follows:

Total resistance 61.9 ÷ mechanical advantage —
30.95 tons fall line force
2/61.9

This is well within the 45-ton main winch capacity of the M88. The next line force to be computed is the dead line force. The dead lines are the lines that attach the rigging to the load. To find the dead line force, multiply the *fall line force* times (×) the number of winch lines the dead line supports.

Fall line force	30.95 tons
Number of winch lines dead line supports	×2
Dead line force	61.90 tons

With these figures, and referring to figure 3, the same amount of force will be exerted against both points A and B. If the disabled tank fails to move as in our present situation, it immediately acts as an anchor and the force is directed toward the M88.

In a situation such as this, another means of anchoring must be devised. Should the one tank being used as an anchor fail to support the effort applied against it, an additional tank could be used to assist as an anchor.

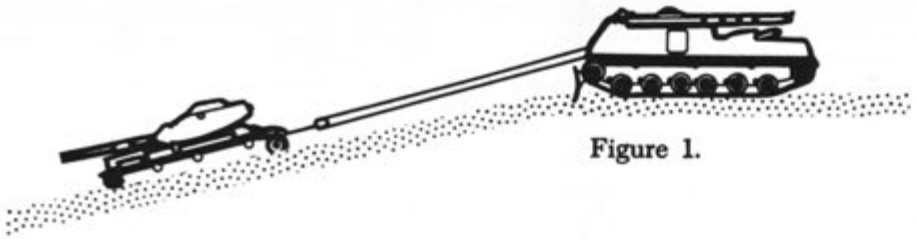


Figure 1.

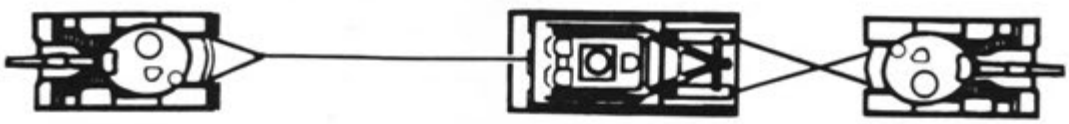
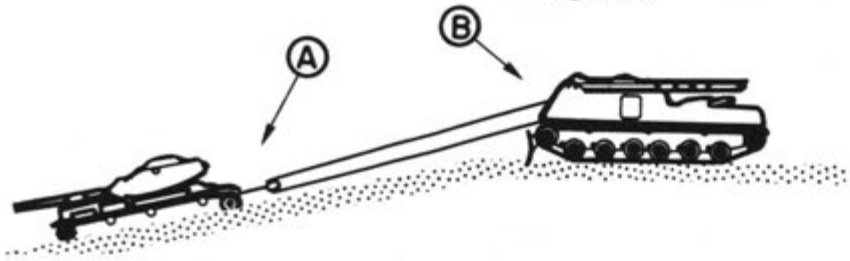


Figure 2.



Your Assignment

Field Grade Overseas

Overseas assignments are being made now for the 4th Quarter FY 71. Short tour turn-around time for non-aviator Armor lieutenant colonels is not expected to drop below 30 months through May 1971. Turn-around for non-aviator Armor majors will remain about 16 months through the same period. Beginning in June 1971, a number of non-aviator Armor lieutenant colonels and majors currently in stabilized assignments and overdue a short tour assignment, will become available. Consequently, if short tour requirements for the first half of FY 72 remain about the same as anticipated, short tour turn-around time for both grades will be more favorable beginning the summer of 1971.

Company Grade Overseas

Short tour turn-around time for non-aviator Armor captains has increased from 16 months to 24 months. Armor captains can generally expect MACV assignments, while the vast majority of Armor lieutenants (OBV II) can continue to expect assignments to USARV.

Army Aviators' Overseas

Third involuntary short tours for Armor aviators in the grade of major are anticipated in July 1971. Excluding company grade aviators with critical aviation qualifications, the normal short tour turn-around time is currently 27 months.

Importance of Staff Assignments

Officers frequently minimize the importance of staff assignments in their overall career development program. While command positions enjoy high prestige throughout the Army and being with the troops may be foremost in your mind, good management by you and your career branch dictates essential developmental assignments to various levels of the staff. Since periods of command are relatively brief with long intervals between command assignments, we spend the majority of our careers in staff assignments. Experience in a variety of staff positions from battalion to division, as well as service school and civilian component duty are essential to career development. It is such experience during the basic professional development phase (0-8 years), and the intermediate development phase (9-15 years), coupled with formal instruction at service schools, that will prepare you for positions of increased responsibility, to include battalion command. Selected officers will enter the advanced development period (16-23 years), while others will enter the period of maximum utilization of their talents. No matter what direction your career takes, you can expect staff assignments time and again.

Officers' Preference Statement

Although AR 614-100 prescribes when the Officers Assignment Preference Statement should be submitted, an officer may submit a preference statement at any time he desires. Your Preference Statement is one of the most important tools used by Armor Branch in developing your assignment. Check these items on your Preference Statement to better enable us to manage your career and get you that preferred assignment.

- Include your complete present duty assignment and station.
- Indicate whether your *duty* preferences or your *area* preferences have principal consideration.
- Make your preferences realistic and in keeping with your career needs (see DA Pamphlet 600-3).
- Under personal considerations, always list complete information regarding your dependents.
- Be specific when discussing other personal considerations. Use a continuation sheet if necessary.

Do not let a communications gap develop between you and Armor Branch. Keep your Assignment Preference Statement up to date. Can you think of a better way of putting the personal in personnel?

Retirement Tour

We would like to grant more officers the opportunity to "select a home," as retirement dates approach. However, exigencies of the service, effective utilization of people, and limited funds restrict the number of requests for such assignments that we can honor. If you are approaching a mandatory release date, consult Chapter 5, AR 614-100, which outlines the eligibility criteria for final active duty assignments. A statement of intent to retire *will not* establish eligibility. Special assignment of officers in view of extremely compassionate circumstances (see AR 614-6) is not affected by the final tour regulation.

PIOCC/DIOCC

MI officers will fill most requirements for Province and District Intelligence and Operations Coordinating Center Advisors. However, officers of other career branches, including Armor, will be considered on a case by case basis for this important program. DA Message 966193, dated 282015Z Aug 70, established the criteria for the program. The grade of major for PIOCC positions will not be waived. Promotable captains will not be considered unless their promotion sequence number assures promotion before arrival in Vietnam. The grade of captain for DIOCC positions will not be waived. This is a very competitive program. Qualified Armor officers may send applications to Office of Personnel Operations, Attn: OPD-OPAR, Headquarters, Department of the Army, Washington, D.C. 20315.

ARMOR INNOVATIONS CENTER

MORTAR TRAINING AID

Few training aids at the Armor School are more effective than the one Sergeant First Class Bennie Ketron has made from his wife's bamboo curtain, his son's baseball bat and a few pieces of scrap lumber.

SFC Ketron, an instructor in the Mortar Branch of the Weapons Department's Arms Division, noticed that several hard-to-answer questions were coming from Armor Officer Basic students during his class on the *M2* aiming circle. He soon realized that some of the students were having difficulty understanding the relationship between the other platoon elements and the aiming circle. He believed that if the student could see a model of a platoon showing how the aiming circle fits in, then the mystery could easily be solved.

The training aid he built to accomplish this is a model of the mortar platoon, complete with aiming circle, mortars, vehicles, deflection scales, aiming stakes and ammunition. There is an enlarged deflection scale under each mortar and an azimuth scale under the aiming circle. This arrangement shows how the aiming circle is oriented and how the mortars are laid parallel. Small arrows point out each angle needed to establish a line of sight and a direction of fire.

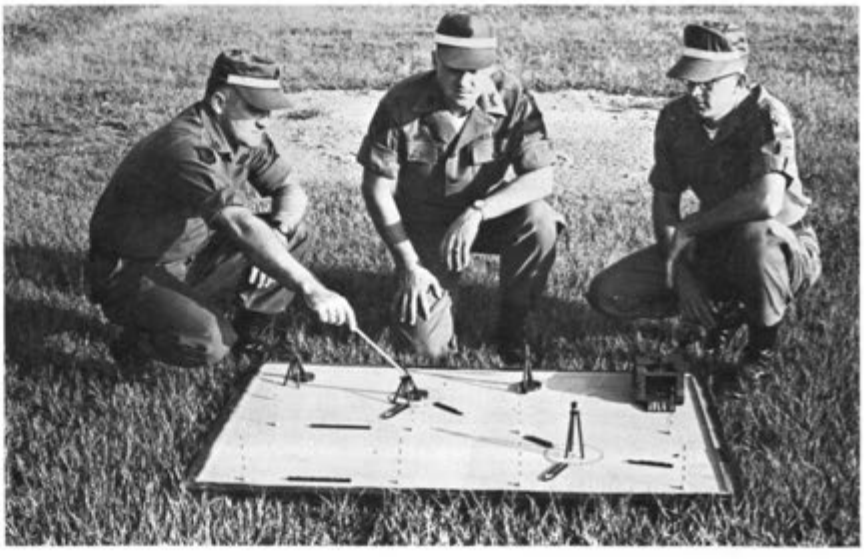
The advantage of this arrangement is that students will be able to see clearly how the mortar platoon is set up for firing. And, most important, they will be able to see graphically the role of the aiming circle in laying the mortars parallel.

ENLISTED AEROSCOUT OBSERVER COURSE

A new and long-needed formal course of instruction designed to train enlisted aeroscout observers for the air cavalry has been instituted at the Armor School. The course is the first of its kind to be conducted by any US Army service school.

Before the course's inception, students having only eight weeks of AIT and neither formal training in observer techniques nor flying experience were assigned as aeroscout observers. This meant that the newly assigned observer had to acquire the needed special skills the hard way, through on-the-job training. Numerous comments from units in Vietnam, Europe and CONUS indicated that this was highly unsatisfactory and that the formal school training of observers was essential. The Enlisted Aeroscout Observers Course will fill this requirement.

Instruction for the student aeroscout observer totals about 120 hours, including 33 hours of conference, or classroom, time; 33 hours of practical exercises; and 13 hours of flying time. Subjects covered include observer duties and techniques, reconnaissance and security operations, fire support,



SFC Ketron (left) explains the use of his demonstration board.

communications, aerial navigation, medical treatment, survival, aerial adjustment of artillery, marking and engaging targets, and LOH armament systems.

The Command and Staff Department has primary responsibility for the course. The General Subjects, Communications, and Weapons departments assist.

Prerequisites for entry into the course are qualification as armor reconnaissance specialist with a minimum of one year of active duty service remaining, passing a Class III flight physical and indicating satisfactory adaptation to aerial flight in an observation helicopter. Satisfactory completion of the course entitles the graduate to flight pay and to wear the coveted observers' wings.

It is anticipated that the Armor School will train 240 enlisted observers per year.

A second course, the Officer/Warrant Officer Qualification Course, which is essentially the officer counterpart of the enlisted Aeroscout Course, is planned. These two courses will make available to air cavalry units highly skilled persons, and thereby reduce the excessive previous requirements for small unit and on-the-job training programs which inevitably produced a less well-trained unit member at greater cost.

COMBAT VEHICLE CREWMAN'S HELMET

Although much of the US Army CDC Armor Agency's effort is devoted to major items of materiel development, such as the *XM803/MBT70*, constant progress is also sought in other areas. One such project, which has recently shown much promise, is the development of a new Combat Vehicle Crewman's (CVC) helmet. The present *T56* helmet has many drawbacks which have caused it to receive unsatisfactory ratings from its users. Its overall weight, combined with its bulk, lack of ventilation, poor attenuation protection and incompatibility with the fire control equipment of existing armored vehicles, prompted the Armor Agency to submit a letter requirement-quick reaction (LR-QR) for a new CVC helmet. This has been approved by Department of the Army.

A recent meeting was held at Fort Knox to discuss what is needed in a new CVC helmet. Attendees included representatives of the military developer, industry and user members from the armor family. The consensus was that the new helmet must be small and light, weighing two pounds or less, and have communications provision for both vehicular radio and intercommunications systems. At the same time, it must attenuate environmental noises to include the firing of the tank's main armament. The attenuation protection must meet the risk criterion specified by the Surgeon General. In addition, the helmet must be compatible with the fire control equipment of current and anticipated future armored combat vehicles, permit easy maintenance and be economical to manufacture. The new helmet must be comfortable for wear over a prolonged period of time (up to 24 hours). And, of course, it must provide adequate bump protection.

From the user's viewpoint, the areas of comfort and compatibility with modern armored vehicles are extremely important and are receiving top priority for development. One off-the-shelf helmet candidate is currently being evaluated on a limited basis by troops at Fort Knox to determine its user acceptability. For that reason it falls into the SDR, or small development requirement, category.

It is true that the CVC helmet is a relatively small, simple, low-cost item, when compared with major Armor systems. However, from the viewpoint of the individual crewmen who will one day wear the improved model on the battlefield, it will be a major morale and efficiency item.



NEWS NOTES

GEN. HAINES TO CONARC

General Ralph E. Haines Jr. has assumed command of the United States Continental Army Command. General Haines brings to his new assignment wide experience and deep knowledge in the fields of command, operations, military education and combat force development. The son of a Cavalry general and the nephew of a former editor of *ARMOR's* predecessor, the *Cavalry Journal*, General Haines was commissioned in the Cavalry upon graduation from West Point in 1935. He has commanded Cavalry and Armor units from platoon to division, has commanded an Infantry regiment and has commanded III Corps and US Army, Pacific. His key staff assignments have included service with G3, Department of the Army, as G3 of US Army, Europe and Central Army Group, with the Joint Chiefs of Staff and as Deputy, Assistant Chief of Staff, Force Development. Before assuming command of the US Army Pacific, his last command before CONARC, General Haines was Vice Chief of Staff of the Army.

General Haines

BELL TESTS LARGER-CAPACITY HELICOPTERS

An aircraft capable of carrying a 40 percent increased load over present medium-size utility tactical helicopters began testing in October at Bell Helicopter's Fort Worth, Texas, facilities.

Unveiled during the annual meeting of the Association of the U.S. Army in Washington, the craft, Model 214 Huey Plus, has a strengthened H Model airframe and a 1900 shaft horsepower Lycoming T53 engine, and an improved drive system incorporating a 2000 horsepower transmission.

The craft's main rotor has been enlarged to 50-foot diameter and 27-inch chord, compared with the UH-1H Hueys 48-foot diameter and 21-inch chord. Its maximum gross weight is increased from 9,500 to 11,000 pounds.

It can hover out of ground effect at 4000 feet altitude at 95 degrees Fahrenheit. It will have a cruise speed of 130 knots and a mission radius of 100 nautical miles, plus reserve.

Huey Plus can carry a standard 10-man squad, pilot, co-pilot, two gunners and needed equipment.

Though it is essentially a new aircraft, its parts have been thoroughly tested. The airframe has accumulated more than 7,750,000 combat flight hours in Southeast Asia. The proposed drive system has been flying in the Bell Huey Tug for more than two years and has more than 700 flight hours. The engine is a growth version of Lycoming's proven *T53* powerplant and has 1800 hours of running time on a related model and more than 13,000,000 hours on predecessor versions.

AIR CAVALRY TROOP PASSES EUROPEAN TEST

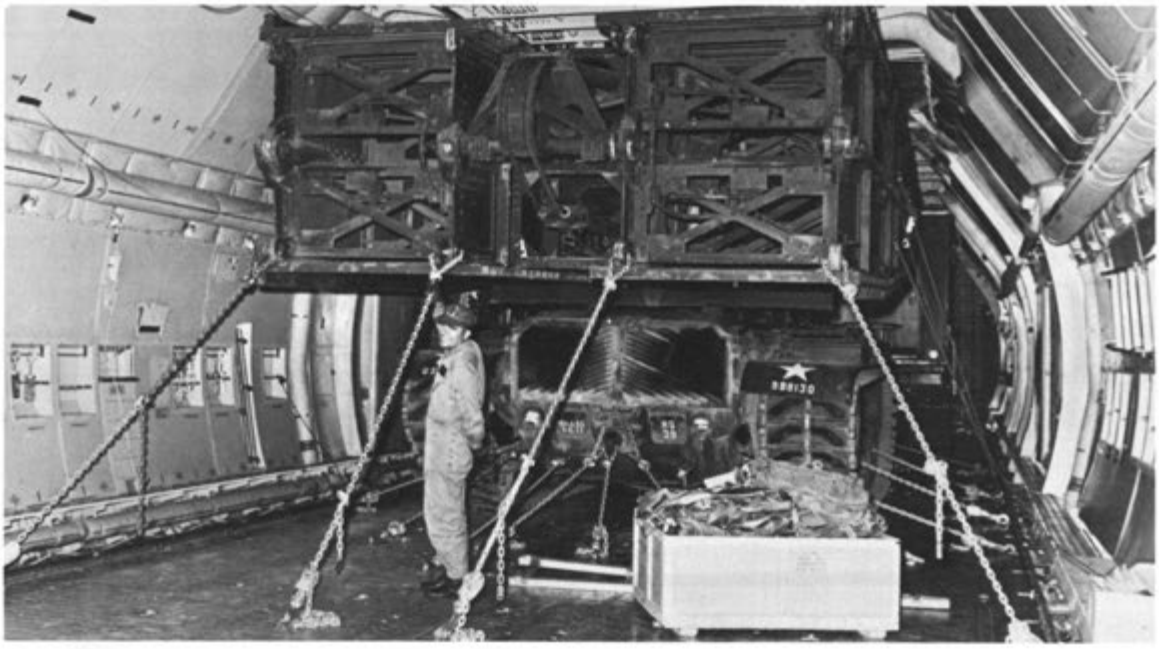
Tests during the past year have determined that the Air Cavalry Troop is suitable for European weather and terrain during 90 percent of the year.

Testing was ordered by General James H. Polk, Commanding General of USAREUR, in August 1969 to determine whether the concept used so successfully in Vietnam could be transferred to Europe.

Initial training, through March 1970 was held in individual units, with emphasis on bringing the units up to full troop strength (45 officers, 125 enlisted men, 26 helicopters).

Later testing concentrated on specific facets of the overall concept and was often held in conjunction with infantry battalion readiness tests and annual training exercises.

When the first *AH1G* Cobra gunships began arriving, a follow-up evaluation was held to examine how much the Cobra increased the Air Cavalry Troop's capabilities.



During recent tests the 121,000 AVLB was flown from Pope AFB/Ft. Bragg to the Lockheed plant at Marietta, Ga. Even with the 40-foot scissors bridge aboard there was plenty of room to accomodate the additional 67,000lbs of cargo which could be carried.

These evaluations culminated in a massive demonstration in Hohenfels at which the Cobras were flown by both American and German pilots.

Reports of the demonstration said the helicopters unloaded a barrage of miniguns, 40mm cannons and airborne rockets to show the spectators, sitting only a few hundred yards away, the overall firepower which can be called upon to defeat an aggressor force.

CHEYENNES SHOW STRENGTH

Army Cheyenne helicopters (*ARMOR*, November-December 1968) have been displaying regularly their firepower and low level flight abilities on tests at Yuma Proving Grounds, Arizona.

Lockheed test pilots have been flying the crafts to demonstrate their response to a mechanized armor threat. Using the mountain terrain as cover, the helicopters appear suddenly to destroy targets with their varied arsenal: 40mm grenades, 30mm cannon rounds, aerial rockets, and the TOW missiles. For speed, the pilots have been churning through the skies at up to 234mph true air speed.

Lockheed conducted the tests under an Army development contract, with more than 1550 flights completed. Army pilots began testing the helicopters during the fall.

All of the Cheyenne's weapons have been fired successfully during the tests, both singly and simultaneously. They can be fired either by the gunner, using a swiveling periscopic sight, or by the pilot, using a helmet sight system.

Testing has demonstrated the integration of various fire control components, including the laser range finder, stabilized sight, velocity measuring equipment and a computer, into a weapons system.

Among the superior features cited by Lockheed were the diversity of choice in weapons to match the specific target;

The Army's only ACV unit has been inactivated and its vehicles returned to the United States. One of the mounts of the 39th Cavalry (ACV), 3d Brigade, 9th Infantry Division skirts the South China Sea en route to Vung Tan and redeployment.

computerized fire control to give the weapons high accuracies and first-round hit probabilities; an accurate navigation system and superior flight performance.

The company said the Cheyenne has demonstrated an ability to survive on the battlefield through highspeed maneuvering and concealment, attacking from a standoff position, passive defenses, and active defenses for suppressive firepower.

HELICOPTER VULNERABILITY TESTED

While helicopters were demonstrating their suppressive firepower and maneuver capabilities in other parts of the world, they were receiving another important test at the Hunter-Liggett Military Reservation near King City, California—their vulnerability to enemy jet fighters and attack helicopters.

The tests were part of a series to evaluate the survivability of the attack helicopter in the skies. Other facets will include the effect of friendly antiaircraft artillery support, weather, operating procedures, topography, and even human factors, on the helicopter's durability.

The attack helicopters were pitted against US Navy Jet Fighters in a typical combat scenario, with each phase treated as part of the overall problem. Data derived from these tests will be used in arguing for or against the concept of the modern attack helicopter.

GHOSTS AT FORT HOOD

They were billed as "ghosts of battles past," but the figures inside all those old uniforms at Fort Hood, Texas, were all vigorous and hearty. They had to be to scrounge all the outfits they were wearing.

Members of the American Society of Military Insignia Collectors (ASMIC) gathered at Fort Hood in the fall for an area convention, and as one member admitted, everything they had on display they had to "beg, borrow or steal." Now no one directly accused the members of stealing any of the insignia, but some of the members did confess to some fancy talking to build their large collections.

The chairman, for example, Staff Sergeant J. C. Fischer, III, had to rent a trailer to bring in his 3800 items of memorabilia.

A special honor guard of six members dressed in uniforms dating as far back as 1881 even carried authentic weapons to the platform, after receiving special permission.

Founded in California in 1937, the ASMIC has steadily increased its membership. The only requirement to becoming a member is a genuine interest in military artifacts from anywhere in the world.

PERIODICALS NOTED

Recently we received several issues of *AFV-G2—A Magazine for Armor Enthusiasts*. The 8½ by 11 typewritten, stapled format resembles a service school special text or handout. The writing is crisp, as are the sketches, maps and photos. Research behind the predominantly World War II material appears careful. There is some material on wargaming and modelling. Address inquiries to: PO Box 293, La Puente, California 91747.

George Bradford's *AFV News* continues to be one of our best references on armored fighting vehicles and related matters. The editor's drawings are particularly well done and useful. Strongly recommended for armor historians and modellers. Address inquiries to the editor at RR2, Presten, Ontario, Canada.

TAKE COMMAND

MG GEORGE P. SENEFF JR., Project MASSTER . . . **MG GILBERT H. WOODWARD,** 2d Inf Div . . . **BG DEWITT C. ARMSTRONG III,** USA Adv Gp III Corps & MR3 . . . **BG JOHN G. WHEELOCK III,** Ft. Polk . . . **COL JOHN C. FAITH,** 3d Bde, 1st Armd Div . . . **COL CHARLES K. HEIDEN,** USA CDC Armor Agency . . . **COL JACK W. NIELSEN,** 1st Bde, USATCA . . . **COL ROBERT W. NOCE,** Proj Mgr Sheridan Wpns Sys and Proj Mgr, URFWS Hq USA Wpns Comd, Rock Is Arsenal . . . **COL MARSHALL SANGER,** Inf, 2d Bde, 4th Armd Div . . . **LTC SHELDON J. BURNETT,** 1st Sqdn, 1st Cav, Americal Div . . . **LTC DAN L. DRURY,** 3d Sqdn, 4th Cav, 25th Inf Div . . . **LTC CHARLES R. FASSINGER,** 2d Sqdn, 107th Armd Cav, OhioARNG . . . **LTC JAMES R. FERGUSON,** 3d Sqdn, 107th Armd Cav, West VaARNG . . . **LTC HOWARD G. GLOCK,** 2d Bn, 32d Armor, 3d Armd Div . . . **LTC DANIEL**

A. GRUNDVIG, 1st Bn, 33d Armor, 3d Armd Div . . . **LTC HOWARD K. HOSTLER,** 3d Sqdn, 3d Cav . . . **LTC BERNARD F. HURLESS,** 2d Bn, Sch Bde, USAARMS . . . **LTC ALFRED J. ILLER JR.,** 2d Bn, 67th Armor, 2d Armd Div . . . **LTC HAROLD R. JOHNSON,** 8th Bn, 4th Bde, USATCA . . . **LTC WILLIAM V. JOHNSON,** 2d Bn, 64th Armor, 3d Inf Div . . . **LTC MARLIN C. LANG,** 5th Bn, 33d Armor, 194th Armd Bde . . . **LTC JAMES D. MARETT,** 7th Sqdn, 1st Cav, 164th Avn Gp . . .**LTC DON A. McKNIGHT,** 1st Sqdn, 11th Armd Cav Regt . . . **LTC CECIL M. MINICH,** FA, 2d Bn, 78th Arty, 4th Armd Div . . . **LTC ROBERT H. NEVINS,** 1st Sqdn, 9th Cav, 1st AirCav Div . . . **LTC LAWRENCE H. PUTNAM,** 13th Bn, 4th Bde, USATCA . . . **LTC ERNEST A. SMART,** 7th Sqdn, 17th Cav . . . **LTC ROBERT J. SUNNELL,** 4th Bn, 1st BCT Bde, USATCI, Ft. Lewis . . . **LTC JOHN W. SWAREN JR.,** Inf, 1st Bn, 48th Inf, 3d Armd Div . . . **LTC FRANK E. VARLJEN,** 3d Sqdn, 11th Armd Cav Regt . . . **LTC DALE A. VESSER,** 2d Bn, 7th Cav, 1st AirCav Div . . . **LTC WILLIAM B. WASH,** 1st Bn, 72d Armor, 2d Inf Div.

ASSIGNED

BG ADRIAN ST. JOHN II, USAElm, JCS . . . **COL GUSTAV J. BRAUN JR.,** CH Army Comptroller Div, Nat Gd BUREAU . . . **COL ARTHUR BRINSON,** Dir of Plns, Tng & Sec, Ft. Meade . . . **COL THEODORE J. CHARNEY,** Dir of Industrial Opns, Ft. Dix . . . **COL ROBERT S. FORD,** Calif-ARNG, Exec Off, Mil Dept, State of California . . . **LTC BURTON S. BOUDINOT,** Dep CO, 2d Bde, USATCA . . . **LTC LAWRENCE L. CLARDY JR.,** Dep CO, 194th Armd Bde . . . **LTC RAYMOND E. GEER,** Dep Dir, Grnd Sensor Dept, USA Combt Surv Elec Warfare Sch . . . **LTC WALTER L. WATKINS,** G3, 4th Armd Div . . . **CSM LEONARD P. HEDGES,** 2d Sqdn, 1st Cav, 2d Armd Div . . . **CSM DWIGHT M. JAMES,** 2d Armd Div . . . **CSM J. W. MATTINGLY,** 5th Bde, USATCA . . . **CSM ARNOLD E. ORR,** 1st Armd Div . . . **CSM ROY D. SHONK,** Div Arty, 3d Armd Div . . . **CSM FRANK S. ZLOBEC,** 4th Armd Div.

VICTORIOUS

Of 1248 US students in 1970 CGSC classes, only four completed the requirements for the Master of Military Art and Science degree. Two of these were Armor officers—**MAJs JAMES E. LONGHOFER** and **ANDREW P. O'MEARA JR** . . . . Distinguished Armor Officer Basic Course Graduates: 24-70, **2LT LLOYD D. FITZPATRICK,** USMC; 1-71, **2LT STEPHEN L. STOLL;** 2-71, **2LT JERRY W. WESSEL;** 3-71, **2LT ARTHUR B. ALPHIN:** 4-71, **CPT HAROLD L. WILSON** . . . . Four Ft. Knox captains have been commissioned Kentucky Colonels in recognition of outstanding leadership in youth program of Shively. These are: **VINCENT P. GALENIS,** FA, 8th Sqdn, 1st Cav; **DAVID P. KEATING,** AOAC3; **RONALD J. McDANIEL,** AOAC3; and **MICHAEL H. REED,** TC, 8th Sqdn, 1st Cav.

AND SO FORTH

Armor units inactivated include **6th Sqdn, 1st Cav, 2d Armd Div** and **6th Recon Sqdn, 2d Bde, USATCA** . . . **2d Sqdn, 1st Cav** has returned from Vietnam to 2d Armd Div . . . **4th Bn, 70th Armor (LTC Zachary Whaley)** has been reassigned from 194th Armd Bde at Ft. Knox to 5th Inf Div at Ft. Carson . . . In Vietnam, **3d Sqdn, 5th Cav (LTC Harold R. Page)** was transferred from inactivated 9th Inf Div to 1st Bde, 5th Inf Div . . . ACSI DA is seeking **Foreign Area Specialty Program** volunteers to develop expertise on Vietnam, Korea, India, Southwest Pacific, Western Europe/North Africa and the Arab World. While shortages in these areas are severe, there are also vacancies for other areas. See AR 614-142.

FROM THE BOOKSHELF

BRITAIN AND HER ARMY: 1509-1970

by Correlli Barnett. William Morrow. 530 pages. 1970. $15.00

Corelli Barnett's latest offering is a richly rewarding volume certain to delight the student of military history who likes his reading exciting, his compass wide, his soldiers heroic in battle, and is accustomed to seeing them neglected in peace. The author's excellent style is complemented by this handsome book. By design, a survey of the institution which Britains have shown a genuine reluctance to accept, it is lively, packed with detail, illuminating of the obscure and immensely refreshing, not only to the general reader but to the military buff.

As a survey it does not capture in depth the full scope of activities of the frequently abused, improperly used, and at times surprisingly triumphant Army. Yet, the author does convey the flavor of this force which, from the time of Henry VIII, took second place in public affection behind a much heralded Navy. Marlborough and Wellington notwithstanding, the tradition of Drake and Nelson held the English heart despite the Army's phoenix-like rise on occasion to victory against seemingly insurmountable odds.

The author, recognizing the frequent opprobrium under which the Army marched, chose to demonstrate the trials of this institution which suffered "a series of *ad hoc* expansions and reforms" while being "alternately neglected by the nation, or trustingly looked to in moments of fright." He ascribes this condition to an antimilitary bias derived early in British history and certainly not later than the "rule of the major-generals" during the Commonwealth, a time of relatively good rule from which the myth of military misrule arose more as an indicator of political feeling than genuine concern for accuracy of judgment. Mistrust of the military was to relegate the Army to perpetual second place despite its accomplishments and sacrifices on fields of honor throughout the world.

Another element in this excellent work is the nature of the British expeditionary force, a natural outgrowth of the tendency of the English since before Crécy to fight in foreign places, as national interests dictated the use of impermanent land forces which need not be returned *in toto* to the home islands. The expeditionary force became a peculiarly British idea and occupied a significant politico-military role for an island people bent on colonial expansion and continental balance of power. Britain's great generals fought abroad and won their laurels generally well removed from the Plain of Salisbury. However, Cromwell at Marston Moor and Naseby did earn his reputation at home to stand almost alone among post-Elizabethan military leaders.

Two particularly gratifying coverages by the author are his attention to organization, with special focus on reforms, and his coverage of the corresponding development, equipment, strategies, and tactics of armies which the British met in combat or with which they allied themselves. In this latter function, *Britain and Her Army 1509-1970* is a useful adjunct to Montross, Ropp, and Preston, Wise and Wener in their various treatments of European forces and their interrelationships with the societies that spawned them. The special attention given to British troops, away from the normal coverage accorded them in battle studies or the allusion to important reform programs mentioned in many general works, merits notice by serious students of warfare.

At a time when the Irish seem intent on reverting to the violence that characterized their relationship with the English in Elizabethan times, the author's use of the King's English may still sorely offend those Irish literate and cautious enough to read about war rather than prosecute it. Barnett writes that the descendants of the tradition of Iona were somewhat feisty, so much so that ". . . in Ireland the English government was holding down a colony inhabited by turbulent savages." These savages from time to time filled British Army ranks, and it is well that the English took the trouble to subdue its close colony.

Recruiting Irish soldiers was only one problem of an army which too often was faced with military operations in which the dregs of society were expected to perform in a sterling manner. The appalling conditions of the Army before permanent barracks were established matched the brutal manner in which miscreants were treated. However, Barnett suggests that the Puritan preaching of the Commonwealth may have been subtler punishment but equally harsh as the lash used at other times. All are reminded in this that the punishments meted out,

or the commissions purchased by ineffective ne'er-do-wells, or the horrendous living conditions should all be viewed in light of the times. This Collingwood flavor is refreshing and reminds us that we may not lightly compare present morality or mores with those of years past, as if our disapprobation somehow is applicable in all times and all places.

One constant does run throughout this candid review of British Army history and it is the unimpeachable courage of the common soldier. Discipline in battle at Minden was relived at Breed's Hill. Despite the "pernicious recruitment" of officers by purchased rank, the common soldier's steadfastness permitted British gentlemen to prevail against French professionals, a paradoxical twist of logic that even in the loss at Fontenoy saw British honor saved as all ranks lost a battle but retained their entity as they marched into the maw of death and then withdrew "bloody but unbowed." The reader will forgive the embellishments in memory of brave men doing somewhat foolish maneuvers with simple, straight-forward courage. Henry V's "Once more unto the breach dear friends . . ." was a prophetic iteration to be acted out on the real battle stage many times after Agincourt. Unfortunately, the "obverse of stoical calm" in the line was the plunder of towns, possibly the psychological release needed after facing death at 25 yards from the impact of a .50 caliber smoothbore slug.

Roughly half of the author's effort goes into describing the Army from the time of Napoleon to the present. Barnett enjoys a bit of debunking in this period. He sees General Sir John Moore of Peninsular fame in a somewhat different light than do most general military historians. He says "Moore . . . was to ensure his own legend by dying at the climax of his first campaign. It is probable that Moore's reputation likewise exceeds his talents or achievements." Generations brought up on the accomplishments at Shorncliffe and the brilliant retreat to Corunna are likely to bridle somewhat at this bold disclaimer. Barnett credits the Duke of York with the principal improvements and reform which saw the Army through these hard times and prepared it for the last campaigns against Napoleon, even though York resigned in 1809 under false charges of connivance in profiting from promotions.

Barnett's other major disclaimer is his defense of Marshal Douglas Haig. Alan Clark, in his near damnation of Haig in *The Donkeys*, and other recent writers have painted a dismal picture of Haig as a leader, tactician, and strategist. Barnett's defense notes Haig's open-mindedness with regard to new weapons and his superb organizational abilities in masterminding the building of the unprecedented British force in Flanders. The reader is presented with a catalogue of Haig's logistical marvels and they were marvelous indeed. Curiously, the reader is also presented with the bloody stand-offs on the Somme and Passchendale (Third Ypres) and is expected to replace these with the 1918 victories in assessing the worth of Haig. Indeed, Barnett says, "It was the British Army that played the greatest part in rolling the Germans out of France, and it was Haig's ideas rather than Foch's that moulded allied strategy." This is high praise and accounts for Barnett's assertion that "by a curious feat of amnesia" the British nation forgot 1918 in favor of remembering the horrible attrition in the trenches up to the armistice.

Considering the attention given to the more recent aspects of British Army history, it is surprising that Liddell-Hart's "limited liability" is given such brief coverage. Nonetheless, Liddell-Hart was coupled with General J. F. C. Fuller as one of several interim-war advocates of mechanized forces and we are rewarded with a brief but adequate relevancy of Liddell-Hart's ideas to the tactics employed by German armored units.

Barnett serves both the reader and the British Army well with this remarkable tour of several centuries. This review does not do justice to the fine portraits of Roberts, Wolseley, and Kitchener, the Victorians who sustained the Army in Empire and in preparation for world war. It does not deal with the British Army in India, in Africa, or in America. I have not mentioned the author's intense interest in and excellent coverage of the reforms of Cardwell and Haldane. The omissions of this review are many, and I leave the reader to his own enjoyment in pursuing these and other areas of interest in this fascinating account of the British Army.

The last part of this first-rate book is entitled "Full Circle," and it is composed of one chapter detailing the retreat from Empire in our own time. Its concluding remarks sum up the course which Barnett took in his 461-year tour through Britain's military history. He says:

> In their history, the British solved the problem of reconciling military power with civilian government . . . with remarkable success, fundamentally because of their immunity from invasion behind seas commanded by the Royal Navy. On the other hand, the British at times ran close to

national catastrophe in their neglect and suspicion of soldiers. May it be that they never run it too close.

Barnett runs us close to the near catastrophe and mercurial fortunes of British arms which prevailed against unusual odds, not the least of which were to be found in the complicated, internal societal values which took away from the British Army almost as much as they gave to it. COL WILMER F. CLINE, USAF, USAWC.

ARMY OFFICERS IN ARAB POLITICS AND SOCIETY
by Eliezer Be'eri. Praeger. 514 pp. 1970 $9.50.

Translated from the original Hebrew, Be'eri's book sets out a scholarly analysis of the struggles of Army officers for power in Arab states, commencing with the 1936 revolt in Iraq. Defining, comparing and classifying coups, the author develops the socio-political background for growing participation by Army officers in political affairs in Arab countries. Country by country, he details the history and social origins of the Arab officer class, motivations of the officers themselves as politicians, and an evaluation of how they have performed as heads of states. Generally, he concludes, officer politicians believe themselves to be liberators of revolutionary energy in their countries—it is they who will lead the revolution to ultimate victory. In pursuit of this belief they have a distinct advantage over other candidates for power—they control a hierarchical organization with institutionalized power, and generally entertain no reservations about the use of military force to achieve their aims. However, in broader context, Be'eri concludes, military dictatorship is fundamentally opposed to basic political requirements of the contemporary Middle East, which he sees as the need for mutual respect and a spirit of cooperation to achieve common goals. Domination of Arab life by an officer corps leads to a blind alley, for officer politicians cannot lead their people in a spirit of tolerance and mutual accommodation so necessary to bind them together and insure their continued growth in all sectors. DAS.

COMBAT COMMANDER: Autobiography of a Soldier
by Major General Ernest N. Harmon, USA, Retired, with Milton MacKaye and William Ross MacKaye. Prentice-Hall. 352 pp. 1970. $8.85.

This book is precisely what its title advertises it to be—the autobiography of a soldier. It is straightforward, direct and forthright, as General Harmon himself has always been. One can anticipate a tendency to write it off as an old soldier's sunset reminiscences. But in this time of confused values, purposes and standards of performance, it is refreshing to reaffirm the timeless values, traits of character and measures of performance. For General Harmon is a hard rock New Englander—uncompromising, staunch and steadfast—and these virtues shine through on every page of his book.

Because most men spend less time in command during their entire careers than General Harmon spent as a division commander in combat, one might hope for more professional detail in describing techniques and management devices that made the general such a successful commander, and later a highly effective college president. Probably quite wisely, however, he has suggested but a few of these, leaving the rest to the reader's professional imagination. Highly recommended reading for those who would like to spend a few hours with an old pro. DAS.

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I certify that the statements made by me above are correct and complete. ▶ R. S. Johnson, Lt, Armor, Managing Editor

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The CAVALRY JOURNAL

ARMOR

March-April 1971

EIGHTY-THIRD ANNIVERSARY ISSUE

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.

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STAFF

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

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LETTERS TO THE EDITOR

Alternative To Armageddon

Dear Sir:

The authors of *Alternative to Armageddon* are most appreciative of the objective and perceptive review given the book in your November-December issue by Colonel Garland McSpadden. His critical points are well taken, therefore a brief explanation may be of interest both to him and to your readers.

The historical examples were designedly sketchy, in the hope of avoiding repetition (a great bugaboo in a work of this kind) and to emphasize the command and control factors which form the essence of the book. Admittedly, we did not wholly succeed; it is perhaps even regrettable that we excised almost an entire chapter on the details of conducting a Strike Command type of attack on a defended airhead, certainly the sublimation of the art of command.

We considered and rejected discussion of other alternatives to nuclear war on the grounds that none would offer a credible deterrent. Overseas invasion on a large scale becomes increasingly infeasible in a world demanding instant mobilization and massive air- and sealift; emphasizing defense of the homeland on the Fortress America principle not only does not appear to offer credibility as a deterrent but induces the very type of command attitude we wish to avoid. There may be other and more political alternatives, too, and we would be among the first to urge the development of an exhaustive analysis leading to the adoption of a firm, publicly-accepted national military policy. In fact, without such a policy the attainment of a blitz capability is unlikely. But all this may or may not support a treatise on command-control.

We shall be happy if *Alternative* leads to renewed emphasis on the proper blending of Mobility, Firepower and Control as a prime factor in future practical leadership training.

WESLEY W. YALE
Colonel, USA-Retired

Pebble Beach, California

Still More On Badges

Dear Sir:

Recently, I was tempted to write you regarding the letters to the editor concerning the Combat Armor Badge. I couldn't help but recall one occasion in the Korean winter of '50-'51, probably in about February, when the tank battalion I was in had reached Suwon. Our S3, a major with combat experience in tanks both in Africa and Europe (as I recall) was lamenting the lack of a Combat Armor Badge. The thing that stopped him was a voice from the corner of the room saying, "Major, come on over here and tell it to the old Chaplain." What the Major didn't know and we didn't know at the time was that the reason the Chaplain was standing in the corner was because he couldn't sit down—he'd been creased through the buttocks the night before. And, of course, he didn't have a Combat Chaplain's Badge. I'll leave you to draw the moral, if any.

STEPHEN O. EDWARDS
Colonel, Armor

US MACV
APO San Francisco 96222

Mine Clearing

Dear Sir:

The US Army Armor School Presentation "How Would You Do It?" in the November-December 1970 ARMOR did not touch on a very important mine clearing technique used in Vietnam. The use of mine detectors in the clearing of a road is certainly vital; but lessons learned in Vietnam prove beyond a doubt that the majority of antitank vehicular mines emplaced in roads are discovered visually.

The technique usually employed encompasses a three man search team leading the clearing operation as it progresses down the road. These men are dispersed and echeloned. They examine the road carefully, looking for mounds in the road or other unusual signs of the road surface having been disturbed. It is extremely desireable to use the same three "searchers" on the same stretch of road each day the road is cleared. The continuous use of these men allows them to become extremely aware of abnormalities, or changes from the previous day, in their section of road and causes them to become experts in visually detecting mines. Following these searchers and some 15–20 meters behind come the "sweepers" with their mine detectors.

I would also like to take this opportunity to congratulate you on producing a superior publication. As a member of another branch your articles are extremely useful and interesting to me in that they make for a greater awareness of the great capabilities of the combined arms team.

PAUT T. DeVRIES
Major, Infantry

Falls Church, Virginia

Informative, stimulating letters such as the foregoing, as well as the contributions of the authors of the articles and features, make ARMOR *what it is. If it is a "superior publication," which is our aspiration for it, we of the* ARMOR *Staff can only thank the unpaid contributors for their major part in making it so. And we invite more of you the readers to pitch in and help too.* THE EDITOR.

WHY IT'S CHEAPER TO BE A PROFESSIONAL INFANTRYMAN

We salute the sharp-eyed reader who, during a williwaw at Unimak which blacked out the TV, took the time to read deeply what passed for an editorial in the last ARMOR. Despite his (adjectives intentionally omitted) comments on our stirring (our word, not his) prose, he is apparently giving serious consideration to the options announced as being viable alternatives for those who come to the end of a trial year of Armor Association membership.

Something about the fourth option apparently caught his fancy because he dwells at length on the lesser price of our superb friendly rival (now it can be told)—INFANTRY.

In mulling over possible answers, we thought about various polished statements we might make in attempting to placate this aroused reader (and perhaps others more silent). Then we decided to scrap that approach and to put forth the naked, bold truth.

ARMOR costs more than INFANTRY because it has fewer subscribers among whom to spread its fixed costs.

The fact is that it costs about as much to print one copy of a magazine as it does to print several thousand. But when you get above 10,000, the per thousand price gets relatively reasonable.

During 1970, ARMOR and INFANTRY both published six issues averaging 67.3 pages each. Basic costs of printing for both should be similar, although INFANTRY used more color. So, how come ARMOR cost $6.50 per year and INFANTRY only $4.75?

ARMOR averaged 9269 paid circulation per 1970 issue. INFANTRY averaged something over 17,000.

Now for a chart:

ARMOR Expenses per Member/Subscriber

If _____ mbrs/subs	5000	8000	**9269**	12,500	**17,000**
Expenses for each	$8.55	$6.05	**$5.36**	$4.54	**$3.65**

Other sharp-eyed readers will note quickly that ARMOR must have made money in 1970. It did. It had to. We spent some $15,000 on badly needed new circulation machinery in order to give you the better service you deserve. If we had not replaced the old stuff, it is questionable if we could have continued to give you any service at all.

Looking ahead—if you will recruit those needed to keep circulation at a reasonable level, we will, despite rising costs, give you a bigger, more attractive journal at the same price you are now paying.

But if you do not work successfully to sell your fellow professionals on supporting their branch journal . . . (no need to pursue that thought further).

ARMOR circulation is down about 1000 from its 1970 peak.

The Editor

SALERNO:

Retracing the steps of battles past

by Captain
Robert J. Hayman-Joyce

"Then round that corner over there," the tall man pointed inland, "came a single tank with this little fat bastard on the back."

The little fat man chuckled.

"The whole of my battalion was caught in this lane and was cut to pieces." He glanced down from his perch on a low wall at the jovial red German face. "This," he continued "is the man responsible."

The tall man was Colonel Peter Sawyer. Now an architect in Winchester, England, he was then commander of S Company 5th Bn, The Hampshire Regiment. The place was the notorious Hampshire Lane, Salerno Beach, Italy; the time, D plus 26 years. By a prodigious feat of organisation, 26 years to the day after the Salerno landings, Exercise Gypsy Moth was under way.

The aim of the exercise was to study the Salerno Battle, and to give officers an idea of the atmosphere of war and human reactions in battle. To achieve this, the story of Operation Avalanche was retold on two distinct levels. First, we heard an outline of the operation as a whole. Then followed—each afternoon—a detailed description on the ground by the commanders of the time, from both sides.

Four officers from the 11th Hussars were present among the hundred or so students and observers. A wide range of speakers had been chosen. The Navy was represented by Admiral Best who was Gunnery Officer of Force N, while Group Captain Gilroy told the RAF story; he had commanded 324 Wing (Spitfires) operating at extreme range from the northern tip of Sicily.

The Salerno sector had been defended by the Stalingrad-hardened 16th Panzer Division, and the veterans of this formidable unit were as impressive in 1969 as their defence had been in 1943. General von Baer, then Chief of Staff of the Division as a lieutenant colonel was accompanied by a very worried looking dental surgeon from Gronau; "He was my staff captain in 16 Panzer," announced the old general, "He was so good then that he keeps the post today." Dr. Holstrater still seemed in awe of his erstwhile commander.

Military history tends to forget the civilian population when preoccupied with tactics and strategy. There was quite a dense population in the Salerno plain when the Allies landed. Monsiegneur Arturo Carucci had been chaplain of a Sanatorium overlooking Salerno. The citizens of the town, he said, were convinced that the Allied landing would be in

D Plus 26 Years

ARMOR OFFICER ADVANCED COURSE 3-70

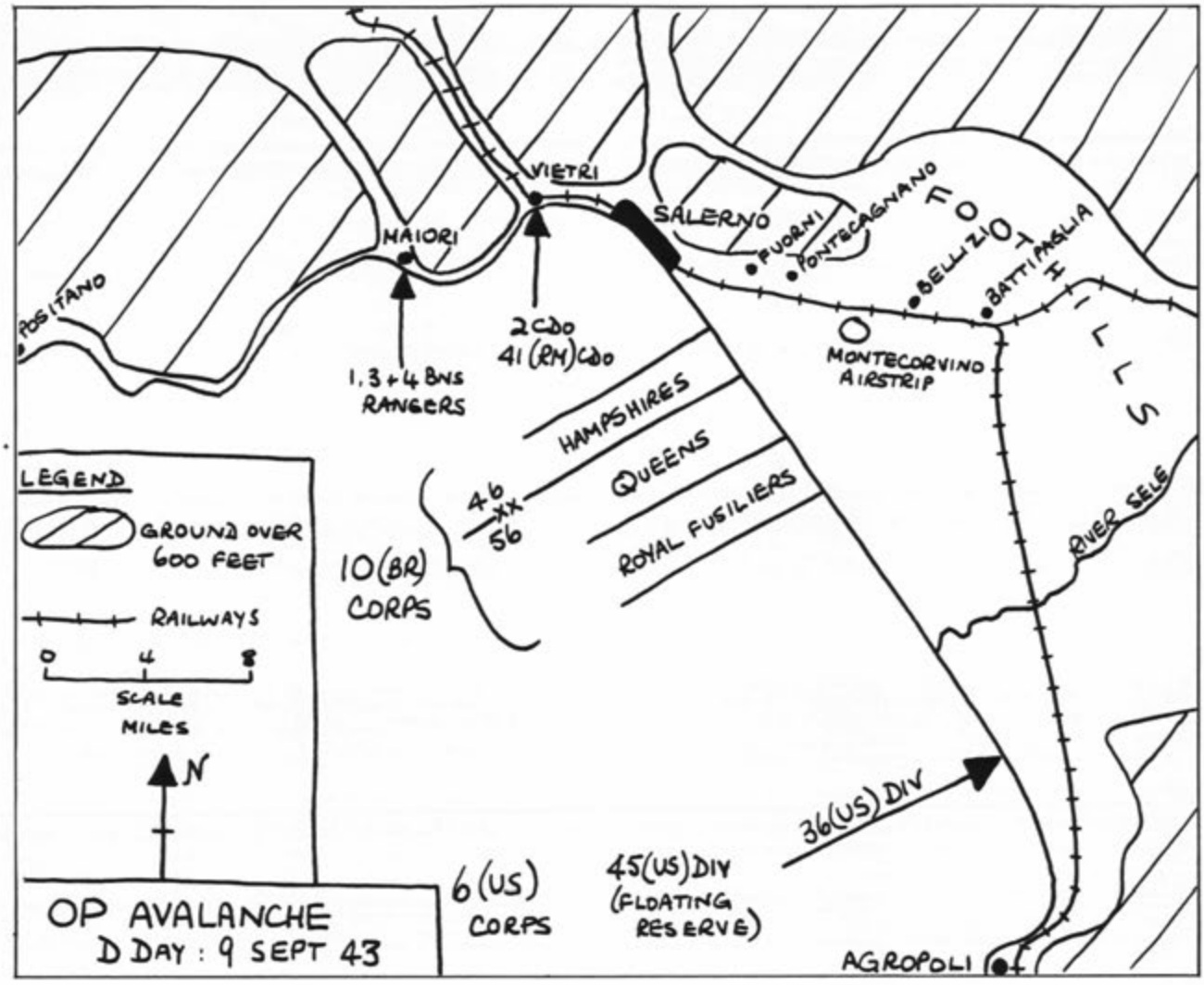
their bay. For one thing, the harbour installations were left alone by the Allied bombers; for another, a lone Spitfire flew a reconnaissance every morning along the beaches. If General Kesselring commanding Army Group B or General von Baer had known this with the same certainty, the Allied landings would have been even more costly, and perhaps ultimately a disaster.

Several questions have always remained unanswered over Operation Avalanche. One topic which has provoked much discussion has been the effects of the announcement of the Italian capitulation on the morale of the assault waves only a few hours before they landed. Major Hugh Pond, in his book *Salerno,* lays much emphasis on this as a reason for the slow progress in the early stages. The evidence heard on these beaches 26 years later, both British and German (but unfortunately not American) seemed to refute this view. It would appear that most commanders relayed the message to the troops in a responsible way. Corporal Peart of 17 Platoon D Coy, 2/6 Queens, reinforced this view, "We were glad to have the Ities out of it, but we had no illusions about the Germans."

The German defence relied on holding a series of low foothills which dominated the plain as the seats in a Roman amphitheatre overlook the stage. A valuable road and rail lateral ran along the edge of the foothills. It was the communication centres on this lateral which focused the battle in the first few vital days. (See sketch map.)

The Germans decided to hold the foothills and dominate the little towns of Battipaglia, Bellizi and Pontecagnano without actually occupying them. For the Allies, they were the key to the German defence, as they governed several routes into the mountainous hinterland and the approaches to Naples. These three towns with the vital Montecorvino airstrip, were the Allied objectives in the 10 (BR) Corps sector, and the battles to capture these were the main subject of our study.

The rough treatment received by the Hampshires has already been described. Their neighbours, the Queens, successfully established themselves ashore but then ran into heavy opposition as they fought inland towards Bellizi. Responsible for this stern German defence was a young captain commanding the 64 Panzer Grenadier Battalion. Diffidently Captain (now Doctor) Eberhard Spetzler explained how he parried the Queens' thrusts, counter attack-



Before Colonel Delforce could react,
the first car had sped by.
"I am glad you missed that first car,"
General von Baer interrupted.
"That was me."

ing first left, then when that was halted, sending another company round to the right. "My company reached this gateway here and then we knew we could achieve little more. My soldiers were very tired after 48 hours fighting and casualties had reduced the companies to platoon size. We were pulled out."

Behind this quiet flow of words, the holocaust on the Queens front as they fought inland was only too vivid. General Ling, who was second-in-command of 2/5 Queens on D Day, ruefully testified to the tenacity of the Herr Doktor's defence.

The ubiquitous Spetzler was also concerned on another stage. On the Queens' right the new commanding officer of the 9th Royal Fusiliers had been firmly pinned down by enveloping attacks on his right flank. Again, when accused, the German Captain owned up. The 9th Royal Fusiliers had already seized Battipaglia on D Day but had provoked a furious reaction from the Germans. One curious incident during the confused fighting in the town emerged 26 years later. Colonel Delforce described how he had seen two staff cars approaching the crossing he was holding. Before he could react, the first one had sped by, but the second was successfully shot up and burst into flames. "I am glad you missed the first car," General von Baer interrupted. "That was me."

Away to the North West another fierce and confused action was being fought. Colonel Parsons, then B troop commander, 41 Commando, Royal Marines, showed us how a well-trained and well-led force can combat the terrain, tiredness and the confusion of battle. We walked the course of one typical battle on D plus 6 in the impossibly steep mountain and ravine country north of Fuorni. His commando was reduced to seven men before, drained mentally and physically, they were withdrawn to the relative safety of a gun position in Fuorni.

The impressive feature of the exercise, apart from the precision of the administration, was the way the viewpoint of the front line soldier was put over to an audience who, for the most part, had had little or no combat experience. The scene of the action; the dramatis personae retelling their own stories first hand; the exact date 26 years later; all these helped to re-create in the most vivid way the stress and chaos of battle and the isolation of the individual fighting his own personal war.

Apart from the fascination of seeing history come alive, Exercise Gypsy Moth was invaluable in three main ways.

First, we learned the importance of detailed planning for an amphibious operation.

Second, we understood better the factor of human reactions. Since very few officers had seen combat we were all intensely curious about how we ourselves might have behaved. The stories the guest speakers told gave us a clear picture of what that battle had been like and how their own decisions had been coloured by the stress of combat.

Lastly, we were impressed by the value of morale. We saw its effect in the controversial announcement of the Italian Armistice, we heard convincing testimony of the high morale value of the Naval bombardment (denied to the Americans in the South); and in both the Royal Marine Commando action in the North and in the spirited defence of 16th Panzer Divison, we recognised the significance of *esprit de corps.*

As the British Army's overseas commitment dwindles, the value of battlefield tours such as this will increase. As combat action is reduced for the American soldier, similar exercises could be used to give young officers an idea of what combat is like.

Who knows? The veterans of Hue from both sides may retell their experiences of Tet '68 to a young audience with no combat experience in the year 1984—26 years after.

CAPTAIN ROBERT J. HAYMAN-JOYCE was commissioned 1963 from Cambridge University, into the 11th Hussars (Princess Alexandra's Own). He served successively as a troop leader, Regimental Signals officer and assistant adjutant, and squadron second-in-command before returning to Bovington in 1967 to take the Long Armour Course. He returned to his Regiment as a squadron leader until the 10th and 11th Hussars were amalgamated last year to form the Royal Hussars (Prince of Wales' Own). In 1970 he attended the Armor Officer Advanced Course at Fort Knox. He is currently assigned to the Royal Military College of Science in the first year of the two-year Staff College course.

RANGE 80

you need more than a good memory to pass

by Colonel Vincent P. Gannon

"Gunner, HEAT, Tank, Fire." Seconds later comes the bright flash of hot steel on cold and another United States Army, Europe, tank crew is on the way down Grafenwoehr's Range 80. The goal—to be designated "Combat Ready" in this final examination in tank gunnery.

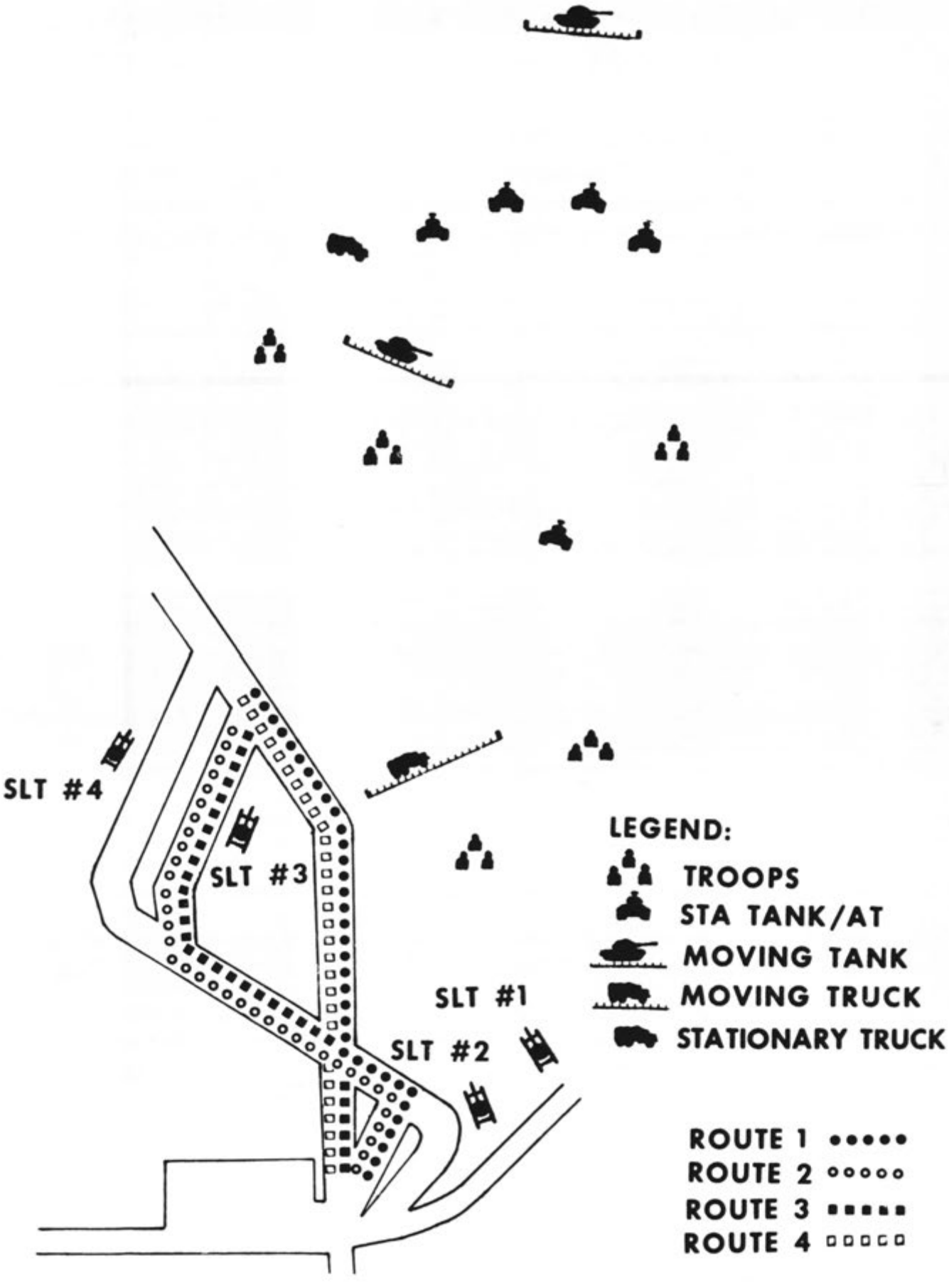
Faced with an enemy who is offensively oriented and tank-heavy, USAREUR relies on armor and mechanized units to maintain its North Atlantic Treaty Organization (NATO) commitment. USAREUR's armored divisions, the 3d and 4th; its mechanized infantry divisions, the 3d, 8th, and the European deployed portion of the 1st, and the 2d and 14th Armored Cavalry Regiments, provide these armored units in a high state of readiness by continuous realistic training. The heart of this training is the live-fire Tank Crew Qualification Course (TCQC) at Grafenwoehr.

The new Table VIII TCQC provides an accurate annual evaluation of each USAREUR tank crew. It is the payoff, second only to combat, in determining the ability of each crew to get rapid first round hits. Additionally, the course discloses what areas of gunnery training and maintenance must be improved to sustain USAREUR's high state of readiness.

Thirty minutes of combat-like situations are compressed into the Grafenwoehr TCQC. The upper limit of professional skill and crew alertness is tested during the one-mile run. Fast and accurate employment of all weapon systems is required to successfully engage the variety of targets. As in combat, the sequence of engagement and locations of the targets to be encountered are unknown.

The present TCQC evolved from a tank crew proficiency course built and tested in 1955 by the Seventh Army Tank Training Center at Grafenwoehr. The following year USAREUR armor units fired the course for record.

The original course followed a single route and each tank crew fired at the same targets in the same sequence from identical firing points. Administrative restrictions, such as prescribing the weapon and ammunition for each engagement, made crew operations strictly rote and reduced realism. However, this method of testing the combat readiness of tank


SLT #4
SLT #3
SLT #1
SLT #2
LEGEND:
TROOPS
STA TANK/AT
MOVING TANK
MOVING TRUCK
STATIONARY TRUCK
ROUTE 1
ROUTE 2
ROUTE 3
ROUTE 4

M60A1 TANK CREW QUALIFICATION

DAY

EXERCISE	NO OF ENGAGE	AMMO	POSSIBLE POINTS		
MAIN GUN	4	HEAT/HEP TP-T	TARGET HITS 0-15 SEC/HIT		100
			TARGET HITS 16-40 SEC/HIT		50
			CREW DUTIES		40
MACHINEGUN	5	CAL .50 COAX	OPENING BURST 0-15 SEC		30
			TARGET EFFECT (40 SEC)		50
			CREW DUTIES		20
			TOTAL POSSIBLE DAY	(1460)	1260

NIGHT

MAIN GUN	4	HEAT/HEP TP-T	TARGET HITS 0-15 SEC/HIT		100
			TARGET HITS 16-55 SEC/HIT		50
			CREW DUTIES		40
MACHINEGUN	5	CAL .50 COAX	OPENING BURST 0-15 SEC		30
			TARGET EFFECT (55 SEC)		50
			CREW DUTIES		20
			TOTAL POSSIBLE NIGHT	(1460)	1260

COMBAT READY WITH DISTINCTION 1900 COMBAT READY 1550

crews quickly became a major factor in determining the combat ready status of USAREUR armor units.

During 1958 a night phase requiring illumination of targets by 18-inch searchlights and artillery or mortar illumination rounds was added. The course was continually improved after each annual tank gunnery cycle until 1968 when a new course was built on Range 80. This new range provided a wider safety fan and reduced range shut-down time due to fog. However, it retained the same fire-by-rote, lack of realism short-comings despite the improved capability possible on Range 80.

By the fall of 1969, 90 percent of all USAREUR tank crews were qualifying at Grafenwoehr. The relative inexperience of tank crewmen and the rapid personnel turnover in the command made this level of proficiency very suspect. Further investigation uncovered dry TCQCs run at local training areas—each a miniature Range 80. Obviously, the emphasis was misplaced. Units were attempting to "G2" Table VIII rather than to prepare for a good test of basic tank gunnery and combat readiness. Many crews memorized the engagement sequences and target ranges, and TCQC had become a memory exercise, not a test of a tank crew's ability.

In December 1969, the Combined Arms School at Vilseck, utilizing elements of the 1st and 3d Squadrons, 2d Armored Cavalry Regiment, began a major review of the TCQC on Range 80. The objective was to design a course that would emphasize "Training for Combat." To reduce second guessing, the new range was designed to permit variable target sequences. The layout included several roads and an increased number of available main gun and machine gun targets (Figure 1). During a course run, the tank crew was required to engage four main gun and five machine gun targets at varying ranges up to 2800 meters depending on the particular firing point. The specific targets and the sequence of engagement were unknown to the crew. Thus the crew had to be proficient in target acquisition, alert for surprise targets, have all weapons systems ready to fire, and be fully trained to engage each type of target.

The new course required the crew to fire from a buttoned-up tank, the tank commander to engage

one of the main gun targets, and the crew to fire at targets using either the coaxial machine gun, or the cupola machine gun depending on the range and situation. The infrared panel target was replaced with a hard target to show the crews how an enemy tank would look through the infrared system. The number of searchlight-illuminated engagements was reduced from four to one or two to better approximate the battlefield. Maximum on course times of 25 minutes for the day and 35 minutes for the night run were established, and the scoring system was revised.

By January 1970 evaluation of the new TCQC was completed and all proposals were incorporated except the requirement to fire buttoned-up. Safety, control, and the knowledge that a tank commander should keep his head outside the turret unless the battlefield were NBC contaminated, eliminated this proposal. However, the tank commander is permitted to drop into the turret to make repairs or adjustments if the loader assumes his observation mission.

The new TCQC emphasizes obtaining first round hits quickly. It provides an accurate measure of the combat effectiveness of each tank crew. Since the crews do not know the sequence of firing, the target locations or the range to the target, they must learn and demonstrate the basic crew skills necessary to acquire, identify and destroy the threat immediately.

Uniformity and fairness are guaranteed since Combined Arms School instructors operate the range and administer the test. Officers-in-charge, course control officers and tank crew examiners are thoroughly trained before they are allowed to evaluate a tank crew on Range 80.

Following completion of firing Tables IV through VII on other ranges, tank crews move onto a range next to Range 80 where last minute sight and weapon systems adjustments are made and each tank crew is given a detailed briefing on range procedure and safety. No information about the sequence of events, nature of the target or range to the target is revealed. Qualifying crews are not permitted downrange.

The tank moves to the ammunition pad and loads for its firing run. At this point a Combined Arms School tank crew examiner checks the tank to make sure it is ready to go. When crew and vehicle are ready, the examiner hooks his headset into the intercom and instructs the tank commander to move to the start point. Unless communications fail, there is no turning back. Weapons are loaded and the tank moves down the road.

The upper floor of the Range 80 control tower houses the CAS officer in charge and his control team; the lower floor provides observation area for the firing unit and visitors.

Just before reaching a firing point which requires use of the main gun, the examiner informs the tank commander that he is about to receive fire from either a tank or anti-tank weapons. The examiner also signals the range control officer, who parallels the qualifying tank in a quarter-ton truck, to simulate enemy fire by detonating a charge near the target. The time required for the crew to find and engage the enemy target is then measured and scored. Only target hits are counted, with more credit going to those crews that take the least time to hit the target. The examiner alerts the tank commander to machinegun troop targets, reaction time beginning when the target has been identified. At night, illumination of the target signals the start of timing for main gun engagement.

Hard target consisting of old tank hulls permit hits to be sensed and scored by the control officer, while troop target hits are scored by the examiner. Panel target hits are scored by counting bullet holes after each run.

When time runs out all weapons are cleared and the tank moves off the range. A crew receives credit

only for those targets engaged within the established time limit.

Alibis and protests were practically eliminated by the new course. By allowing either machinegun to engage a troop target, re-tests because of machinegun failure are virtually unknown. Protests are allowed only when the problem can be traced to range failure. Use of the experienced Combined Arms School range control team makes possible standardized scoring and control despite a variety of weather and visibility conditions.

Ten minutes after clearing weapons, the tank crew is off the range and ready to be debriefed by the examiner. Each engagement is discussed thoroughly, mistakes are reviewed, and suggestions are made which will help the crew correct its errors. After the night run, the crew learns how it scored: Combat Ready, Combat Ready with Distinction, or Not Combat Ready.

To be designated "Combat Ready" a crew must first of all have good maintenance, perform thorough pre-combat checks, and function as a team. On the course the crew is scored according to the time required to engage the target, main gun target hits, machine gun target coverage, and performance of crew duties (Figure 2). First round main gun target hits are weighted to emphasize their extreme importance during tank engagements.

To be designated "Combat Ready with Distinction," a tank crew must excell in all these areas required for the Combat Ready designation. Each member must be thoroughly familiar with basic gunnery techniques and perform his duties in the quick and efficient manner necessary for survival on the battlefield.

The new course at Grafenwoehr tests and trains the hundreds of crews which are the backbone of USAREUR's armored might. "Combat Ready with Distinction" is the coveted goal of all tankers. To deter the powerful armored threat facing NATO today, USAREUR tank crews continue a long tradition of combat readiness sharpened continuously at Grafenwoehr. There is no second place winner on the battlefield.

COLONEL VINCENT GANNON JR., Armor, is commander of the Seventh Army Training Center at Grafenwoehr. A 1946 Infantry graduate of the US Military Academy, he transferred to Armor in 1948. In recent years, he has served as brigade commander in the 4th Division, as the division's chief of staff, and as chief of personnel management division in USMACV.

SIMULATOR OR REAL McCOY?

In 1955, the 714th Tank Battalion at Fort Benning was charged with supplying umpires for a problem of the 64th Tank Battalion. I was one of the lieutenants chosen for the detail. When my ¼ ton driver and I observed an *M41* light tank moving slowly up a wooded hill, I decided to bring him under simulated artillery fire. Reaching into the jeep I picked up an artillery simulator and pulled the string. It was hot and my hands were sweaty. Standing by the right side I made ready to throw the simulator down the hill. As I drew back to heave the simulator football style, it slipped out of my hand and landed in the ¼ ton in some cranny where we were unable to see it. We looked quickly around the inside of the vehicle as the simulator began to whistle. When this started, we beat a hasty retreat to the shelter of nearby trees. We discovered later that the blast dented the gas tank, blew the radio mike over and out the back of the jeep, frosted the glass on the dash dials and "detached" quite a few wires under the dash. The Report of Survey was among the more interesting, if not best selling, novels of the second half of the 20th century.

Moral: Have a dry hand and a hard grip when throwing artillery simulators.

—Major Robert G. Daniell

A Sitting Duck

by Captain Hartmut Schuler

ARMOR OFFICER ADVANCED COURSE 3-70

"The art of entrenchment shall serve the defender not to defend himself more securely behind a rampart, but to attack the enemy more successfully."

von Clausewitz

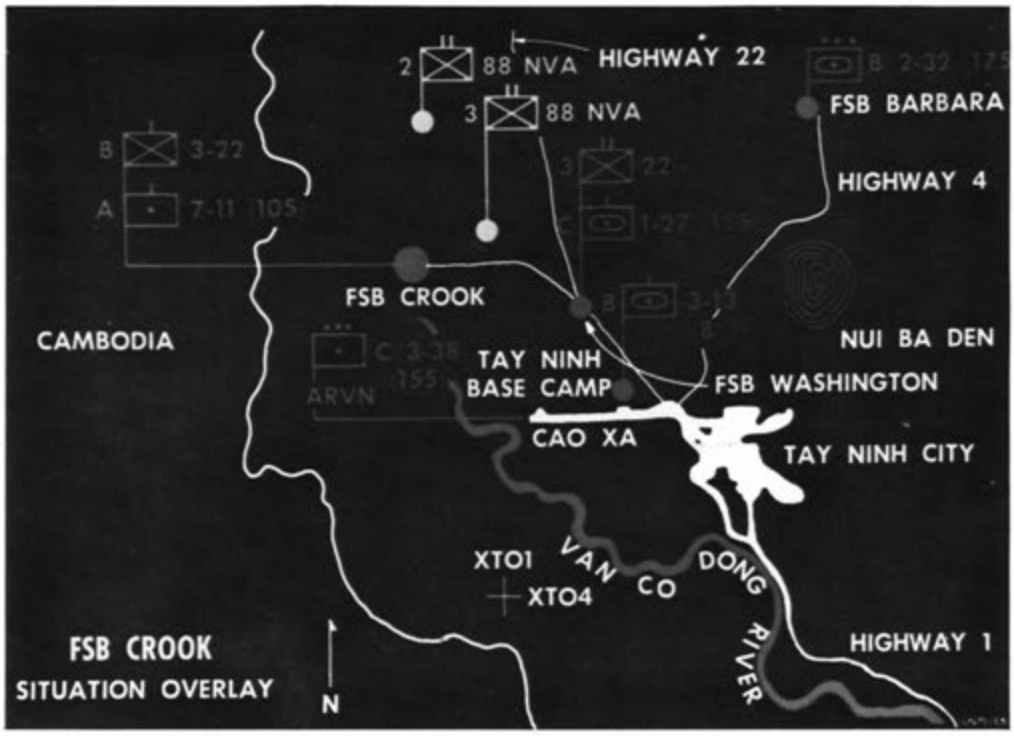
In the spring and summer of 1969, North Vietnamese and Viet Cong leaders were seeking a major and spectacular victory in Vietnam to convince the world, their troops and perhaps themselves that they were still keeping the initiative and that their effort of "liberation" had not bogged down. The City of Tay Ninh presented a favorable target to meet this goal.

Tay Ninh, the capital of Tay Ninh Province, lies 60 miles to the northwest of Saigon and 15 miles from the Cambodian border. Regimental size NVA units were located only 20 miles away in sanctuaries across this border. Units of the 25th Infantry Division had the mission of establishing fire support bases to defend the city and to stop infiltrating enemy forces on their advance towards Saigon. (See sketches A and B)

Some military critics feel that the use of entrenched bases is a purely passive measure, employed out of weakness, which brought about the defeat of the French forces in Indochina. But when speaking of this new form of defense General Vo Nguyen Giap realized "only when we had wiped out the fortified entrenched camp, could we open up a new situation, paving the way for new victories for our army and people."[1]

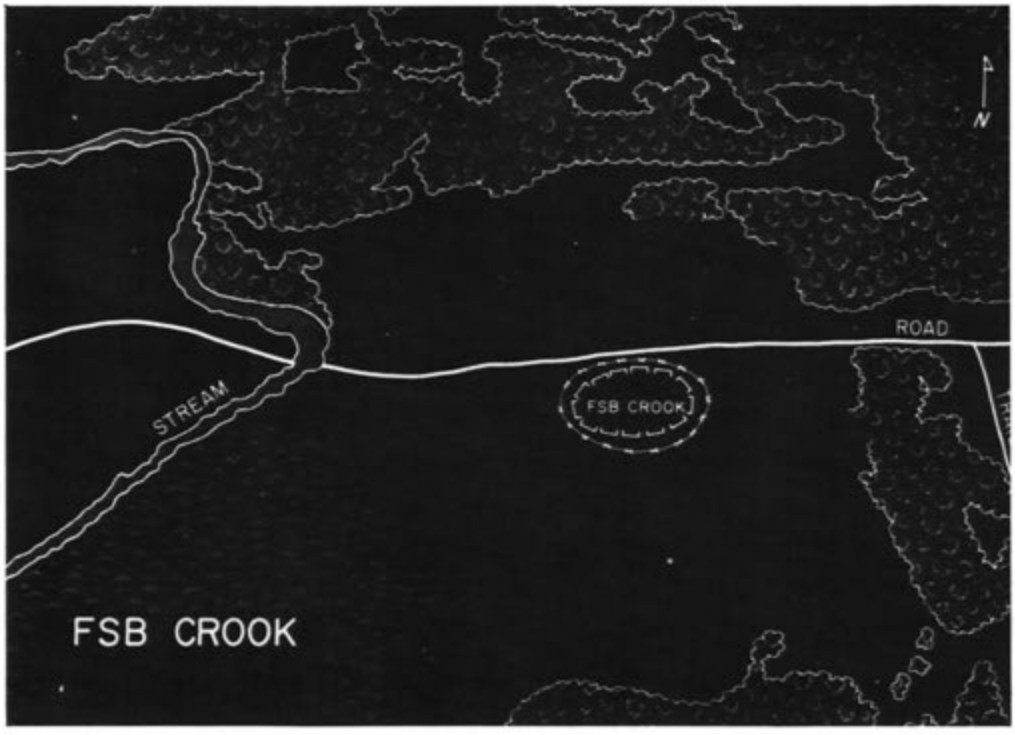
In countless attacks on fire support bases the enemy has proven that he is forced to deal with these strong points because they give us a tactical advantage, not just to annihilate our manpower. Aggressive patrolling and use of the art of fortification must be employed by the defender to gain every advantage. He further moves away from being passive by using electronic devices and accurate long-range weapons to hit detected targets instantly.

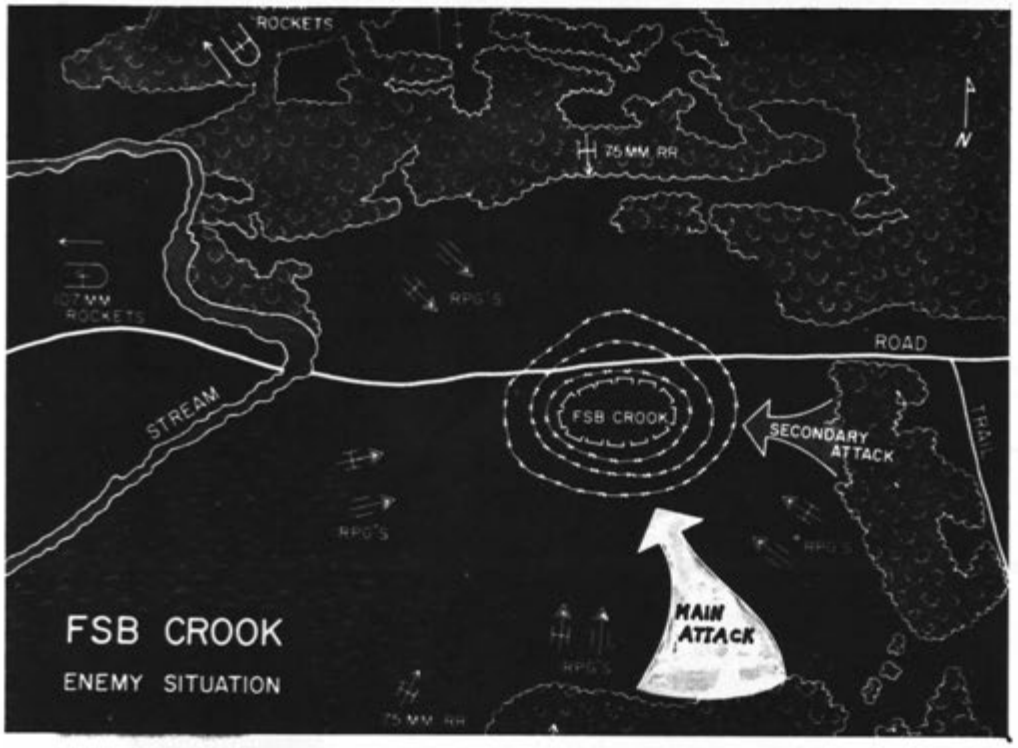
The 3d Battalion, 22d Infantry established Fire Support Base Crook, 10 miles to the northwest of Tay Ninh and six miles from the Cambodian border. The base was within supporting range of artillery units located in Tay Ninh Base Camp and other fire support bases. It was manned by a rifle company, a battery of 105mm howitzers, a heavy mortar platoon, and an attached engineer platoon. A 30-foot radar and observation tower was erected and bunkers and fighting positions with overhead cover dug into the berm surrounding the base. Could the enemy resist attacking such a small strong point, only two hours march away from his main forces? He would surely follow the "fundamental principle of the conduct of a revolutionary war: strike to win, strike only when success is certain; if it is not, then don't strike," as was done during the planning and conduct of the battle of Dien Bien Phu.[2] After making the decision to attack, the NVA commander would then have to decide on the method: (1) to strike swiftly to win swiftly, as had been done during the attacks on many bases, and cities, or (2) to strike surely and advance surely, as done so brilliantly at Dien Bien Phu.[3] But this second method would probably not be considered; too many defeats were



caused by it in recent years: Khe Sanh, Dak To, Hue.

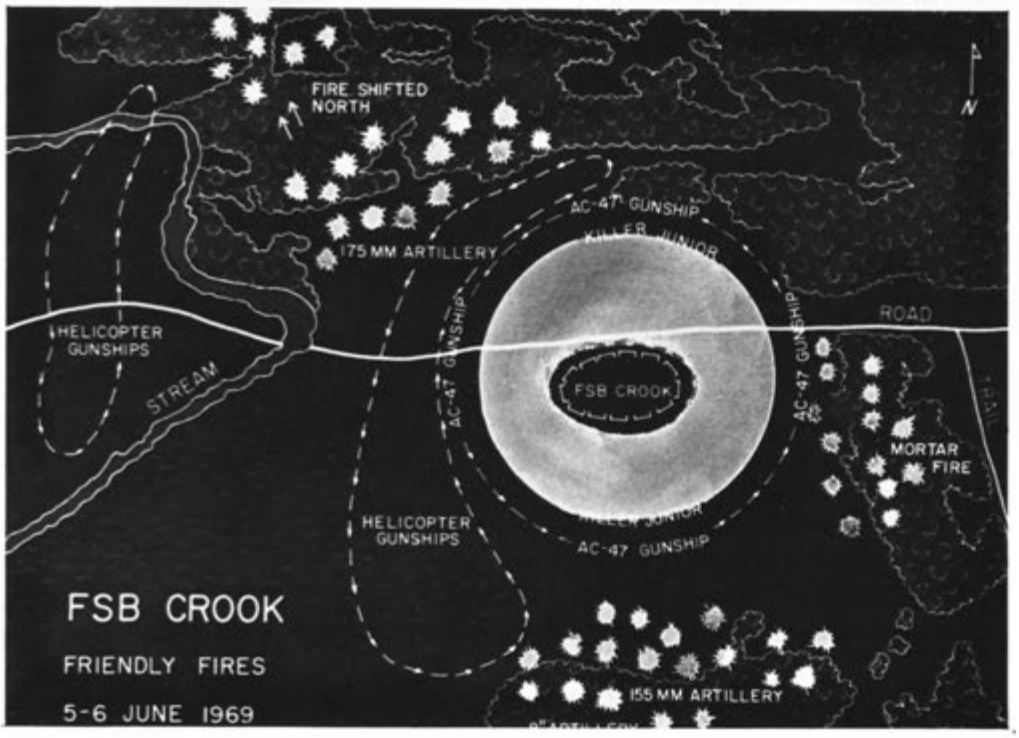
Our massive firepower would not allow a high concentration of enemy troops. However, a simultaneous attack on several bases to wipe them out in a wave of attacks and to prevent their support of each other, could be expected. A fire support base, such as Crook, could surely be overcome by applying the tactics of progressive attack, quickly massing forces to have great local superiority and by striving to neutralize our artillery fire and mobile forces, as advocated by General Giap.[4] Ambushes, mining approaches against armor reaction forces

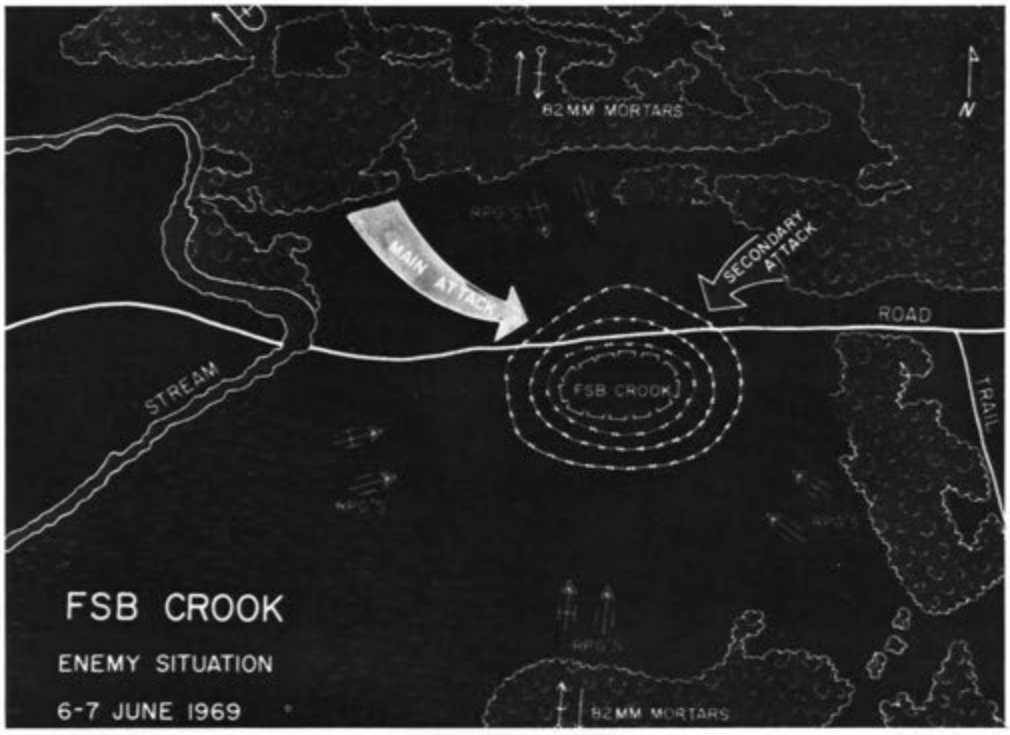




and concentrated shelling of airstrips and artillery batteries would aid the attacker.

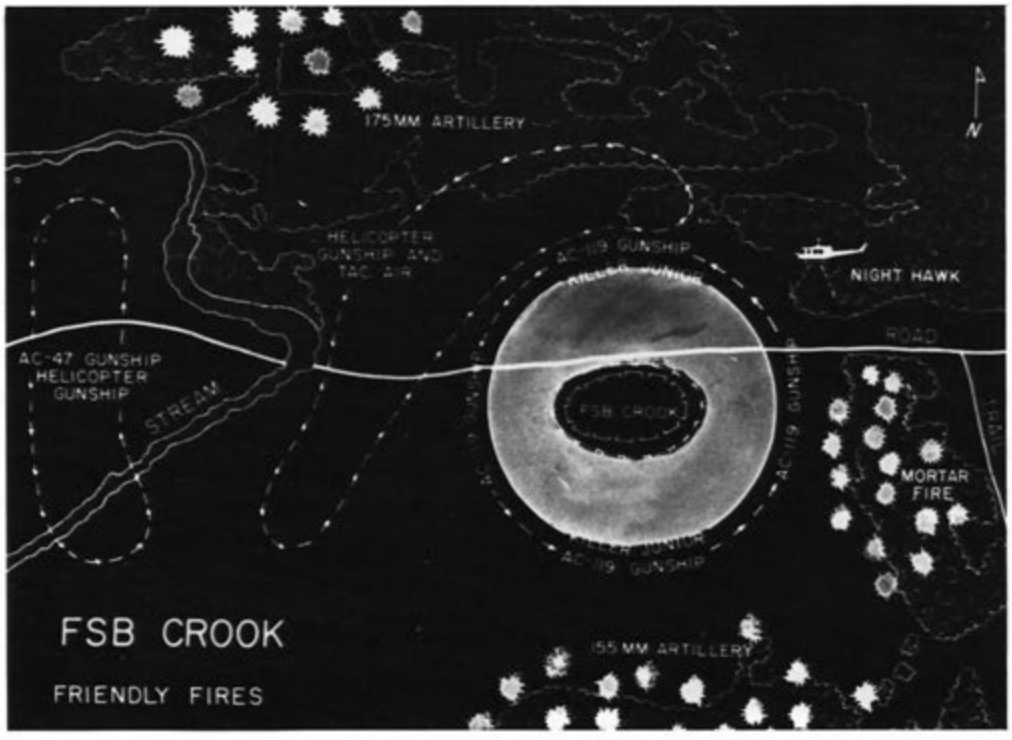
The first indication of the impending attack on Fire Support Base Crook came at 2000 hours on 5 June, when the base monitored seismic sensor activations, indicating heavy movement around the position. The radar set also detected small groups of personnel moving in the woodline all around the base. All areas were engaged with artillery fire. At this point the NVA soldiers dug positions as close as 150 meters from the perimeter, positioning rocket-propelled grenade launchers, recoilless rifles, machine guns and command posts. Telephone wire, found the next day, led right into these positions





from rear areas and supporting indirect-fire elements. At 0255 hours the enemy started a concentrated attack by fire, using rockets, mortars, recoilless rifles and rocket-propelled grenades in addition to small arms fire from all around the base.

As had been planned, defensive fires from artillery units, including a South Vietnamese 155mm element, were placed on the NVA positions. (See sketches C and D.) Coordinated with the attack by fire, the enemy launched a battalion-size ground assault from the south and east. The defenders laid down a heavy volume of grazing fire as the howitzers fired point blank at the assaulting waves. To be successful, a wave attack demands a continual series of timed



drives. In 1915 the opposing forces on the Western Front realized that to attack with huge waves often fails because of the staggering numbers of casualties causing a backwash, obstructing the advance of other troops. The emerging theory of the new military attack was the concept of attacking with small waves and advancing at short intervals to achieve the break-through that mattered.[5]

In the attack on Crook such a wave of 16 men was able to breach the wire with bangalore torpedoes on the south side, but failed to reach the bunkers with their satchel charges. This well-armed element obviously had the mission of establishing a firm foothold for the following forces and knocking out the command bunker which was in close proximity to the intented breach. The defenders now concentrated all available fire on the large wave that was trying to move through the gap and easily stopped their advance, having them trapped in the open. Arriving helicopter gun ships made numerous passes over the fleeing enemy and caused further casualties. The enemy withdrew at 0530 hours, pursued by artillery fire, gunships and air strikes.

North Vietnamese soldiers are taught that it is absolutely necessary not to lose sight of the main objective which is the destruction of enemy manpower, avoiding losses even at the cost of losing ground, or face.[6] The NVA commander decided to attack Crook again the following night, this time assaulting with two battalions of the 88th Regiment and one company of the 272d Regiment. The action was almost a rerun of the previous night's. Again at 0255 hours an even more intense attack by fire, followed by a ground assault from the northwest and northeast. As before, the attacking waves were trapped in the open and cut down and withdrew by 0530 hours. (See sketches E and F.) General Giap speaks of the Central Committee's scientific analysis of concentrating forces to move to the offensive against strategic points where forces are relatively weak in order to wipe out their manpower.[7] At Crook, the NVA commander apparently felt that success was now ensured because the base had not been substantially reinforced following the first assault. It can be assumed that this lured him into attacking again after his first defeat.

On the third night, the base commander ordered that a test firing be conducted at 2000 hours. On command, all available weapons were fired into the woodline. Moments later, the base received small arms and recoilless rifle fire from all around the base, followed by rocket and mortar rounds. This exchange of fire lasted until the enemy withdrew at 2130 hours. A third attack had been detected and aborted by the test fire.

The friendly units suffered one killed and 28 wounded during the three battles. The enemy left behind 402 bodies and 10 prisoners before fleeing to his sanctuaries in Cambodia. While fighting bravely, the enemy soldiers and their leaders did not realize that their effort was one out of desperation, violating many of the principles set by their first leaders. They paid the price because their deep-rooted indoctrination led them to believe that each of their struggles, however big or small, is imbued with the "spirit of Dien Bien Phu," promising victory.[8] This experience, however, taught them that a small fire support base manned by determined men is not a "sitting duck," but a "coiled rattlesnake," ready to strike.

FOOTNOTES

1. General Vo Nguyen Giap, *People's War People's Army*. (New York: Frederick A. Praeger, 1962), p. 167.
2. *Ibid.* p. 170.
3. *Ibid.* pp. 169-170.
4. *Ibid.* pp. 173-174.
5. H.A. Sargeaunt and Geoffrey West, *Grand Strategy*. (New York: Thomas Y. Crowell Co., 1941), pp. 110-113.
6. General Vo Nguyen Giap, *People's War People's Army*, p. 48.
7. *Ibid.* p. 161.
8. *Ibid.* p. 187.
9. 25th Infantry Division, *After Action Report on Battle of FSB Crook*, July 1969. (note: short excerpts were used throughout the article to illustrate the action).

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Captain Hartmut Schuler, Infantry, was commissioned in 1965 from Infantry OCS, Fort Benning, Georgia. He graduated from the Airborne Course and Special Forces Officer Course the same year and was then assigned to the 10th Special Forces Group, Germany, where he served as executive officer and commanding officer of an A Team. In 1966 he was assigned to the 5th Special Forces Group, Vietnam, where he held the position of company commander/advisor. After returning to CONUS in 1967 he served as company commander with the 3d Brigade, 5th Infantry Division (Mech.), Fort Carson, Colorado. In 1968 he returned to Vietnam and was assigned to the 3d Bn, 22d Infantry, 25th Infantry Division, where he served as S5 and adjutant until his return to CONUS in 1969 to attend the Armor Officer Advanced Course.

MAINTENANCE MADE EASY

by Captain Marvin V. Matthews

ARMOR OFFICER ADVANCED COURSE 3-70

I'll always remember that day in Germany when the squadron commander called me into his office. "Lieutenant Matthews," he said, "the squadron has been without a maintenance officer for over seven months now, so I am assigning you to that position."

All I could think about when I left his office was where had I gone wrong. What had I done to deserve this? And even more critical, what was I going to do? I had spent four months with the 2d Squadron, 3d Armored Cavalry Regiment as a platoon leader, my first assignment as an officer, and now I was thrust into a role I felt totally unequipped to fill. None of my previous schooling or experience had prepared me for this job.

I asked other officers of the squadron about the job and searched everywhere for information. I found very little written about it, and what there was did not even begin to shed light on what would be required of me.

Over the next 13 months, I was continually doing things that I should have done at the beginning of my assignment as squadron maintenance officer. If I had known what to do in preparation for the job, I could have spent the majority of my time refining my maintenance program instead of establishing it.

Even though the TOE of most units calls for an Ordnance officer as the squadron/battalion maintenance officer, it is still probable that some of you will have this assignment. I do not propose the following recommendations as a cure-all for the new maintenance officer, but as a guide to aid them in becoming capable maintenance managers as rapidly as possible

after being assigned the responsibility of the battalion maintenance program.

As soon as possible after being assigned as maintenance officer, enlist the aid of your S3 in attending TAER'S, Maintenance Officer, Material Readiness, and PLL schools. These courses have some overlap in subject matter and taken as closely together as possible will provide you with a sound basis on which to base your maintenance program. Once you have been programmed to attend these schools, compile a book listing of the equipment you will be responsible for and the maintenance problem areas occurring within your unit. The experience of the instructors at these schools can be tapped to aid in finding a solution to the problems. While you are in school get acquainted with the other students and your instructors. Before you leave, get their unit and phone number and add them to your book. When you need help in the future you will have all you should need by picking up the phone.

As in most assignments in the Army you will inventory your equipment when you assume control. To do the job right, first check the appropriate manuals to get a list of the tools and equipment for which you are responsible. Once this has been done, begin your inventory. Be constantly on the watch for unauthorized tools as you inventory. Improper tools are an indication of improper maintenance procedures and could cause more headaches than you are prepared to handle.

After your equipment check is complete, begin a check of your personnel. How many do you have? How many are school trained? How many are OJT? Do not stop with your maintenance section; also check the maintenance sections of the entire unit. The mechanics should be balanced throughout the unit by experience and schooling and, if they are not, this should be one of your first recommendations to your commander.

If You're Named Maintenance Officer . . .

- Attend all maintenance classes available.
- Check your manuals *before* you inventory.
- Evaluate your people.
- Update your maintenance library.
- Listen to your motor sergeants.
- Use existing support facilities.
- Treat the shop as if you owned it.

Even if you have the people and tools you still have one more inventory to make. One of your most important resources is your technical manual library. It is desirable to maintain two sets for each type of equipment for which you are responsible. One set is for your office reference. This set should be the most correct in the entire unit. It is the base reference, not only for your use but also for your subordinate unit motor sergeants. The other set is for the daily use of your mechanics and should be placed where they are readily accessible to them. In inventorying your manuals, do not forget *PS: Preventive Maintenance Magazine. PS* is devoted to explaining maintenance procedures, new techniques, field expedient methods, and keeps you up to date on TM's and Modification Work Orders. These are all explained in simple language.

To assist you in your maintenance program you have a motor sergeant in the battalion maintenance platoon and one in each company maintenance section. Each will have his own ideas of how maintenance should be performed. It will be one of your greatest concerns to orient them and guide them continously in your program. However, do not become inflexible. They will have many good ideas that can and should be incorporated into your maintenance plan. Your greatest asset is your personnel. Keep them at peak performance. Encourage them to sharpshoot each other on maintenance procedures and technical information. You will find the human ego a great aid. No one likes to know that someone else is smarter than he is about his job.

Now that you have your schooling, equipment and personnel—ORGANIZE! None of your resources is any good to you without organization. There are a thousand and one good methods, limited only by the imagination. I will not even attempt to give you one. There is only one guideline to follow and it always works. Organize and run your maintenance shop as if it were a civilian garage and you owned it.

Your shop and maintenance cannot accomplish every task or answer every question you will encounter. You have help from your supporting units and technical representatives.

Your direct support unit is an extension of your arm. Meet the commanders and shop personnel.

Tour the direct support facility and become acquainted with their assets and problems. Treat them as part of your unit. You will be surprised at the difference in the service you will get.

General and depot support units are not of direct concern to your maintenance program but, to be completely knowledgeable, a visit to these units is warranted. As you tour their facilities and talk with the people there you will probably find them asking you questions. Their limited contact with field units makes them unaware of problems that are a daily occurrence to you. Some of these could possibly be solved by a change in their procedures.

Technical representatives are available in most areas and they are extremely willing to help you solve any problem, no matter how big or how small. They are trained and paid to act as a liaison between all levels of maintenance, including the manufacturer. Put them to work.

With what I have written here, it might seem that maintenance is a complicated business. It is, and it takes a good officer to do the job and do it right. With the more emphasis on mobility on the battlefield, the job of the maintenance officer is becoming increasingly important. Do not shy away from it as a junior officer. It will be an invaluable aid to you as you progress in your career.

CAPTAIN MARVIN V. MATTHEWS JR., Armor, received his commission through Officer Candidate School in 1966 at Fort Benning. In addition to his tour with the 3d Armored Cavalry Regiment in Germany, he has served at Fort Lewis (coming from Germany with the 3d Armored Cav during redeployment in Operation Reforger) and as chief of the Tactical Operation Center, 44th Special Tactical Zone in Vietnam.

interpre

"Sergeant, do you have a pair of size 4 jungle boots?"

"No, sir."

"Do you know where I can get a pair?"

"No, sir, not that small."

And so it went as I tried to find the unusually small boots for my 105 pound Vietnamese interpreter. Finally on a trip to Saigon I was able to trade a larger pair of boots for the elusive size 4 I needed.

What's so important about a pair of boots?

I had recently taken charge of a six-man mobile advisory team, and by the third week I was very enthusiastic about my interpreter's potential. Like so many other Americans I had heard a great deal of bad and not much good about interpreters as a group, and I was extremely pleased that my interpreter, Sergeant Lam Hiep Bon, was intelligent and seemingly eager to cooperate. During the first few weeks most of my time was spent at various Regional and Popular Force outposts with Sergeant Bon at my side. While he was doing a fairly good job, it was obvious that just as I was checking my team members' abilities, so Bon was checking me. Was I sincere in my desire to assist the Vietnamese, or was I just another American existing for a year in Vietnam?

It was during this "check-out" period that I was sent to Saigon for a week of school. Bon's worn-out boots had attracted my attention previously, and as I left, he reminded me that I had promised to try to get him a new pair. He also informed me that jungle boots were a status symbol, and that of course I wanted my team members to dress first class. His point was well made.

Fortunately I was able to get the boots. This small extra effort made a lasting impression on Bon and our other district interpreters; my willingness to go out of my way to help a Vietnamese pleased Bon even more than the new boots themselves. We were off to a good start.

The mobile advisor's training includes a brief course in Vietnamese. My initial attempts at speaking the language amused Bon and the other interpreters, but they were pleased that I would at least try. Bon's eight-week course in English had been shortened by the 1968 Tet Offensive, and he was anxious to improve his English. This led us to study the two languages together, and as our vocabularies grew, so did our confidence in each other. This improved ability to speak the language proved valuable in my work, for it showed my counterparts that I was sincerely interested in my job.

A mobile advisory team is authorized a captain, a lieutenant, and three noncommissioned officers. Having this many persons accustomed to being leaders makes it difficult to insure that each man has a chance to show his ability. On my team this led to a problem between the medic, who was the junior man, and the interpreter. The medic was resentful of his position and reacted by trying to give orders to Bon. He was extremely dissatisfied when Bon was

ter

by Captain David O. Treadwell

ARMOR OFFICER ADVANCED COURSE 3-70

not as responsive to him as to others on the team. Gradually the medic learned how to work with an interpreter, but the wounds created by his unfairness did not heal, for the Vietnamese have a great deal of pride and do not forget a personal affront quickly.

A conscientious advisor has few days without something to do, but an interpreter, who has grown up with war and who is at most only a few hundred miles from home, does not readily accept this attitude. The Vietnamese are convinced they must have a certain amount of time off; they have learned that there is more to life than war. On the other hand an advisor often finds that his efforts at even simple projects are stifled when he is without his interpreter. Because time off is considered so very important to the Vietnamese, a major problem can easily be created. By following the ARVN leave policy closely and using a Regional Force soldier as a substitute interpreter, I was able to overcome the problem to an extent. But there is no substitute for having one's own interpreter.

Many times I have heard interpreters accused of cowardice. My experience contradicts this. The six interpreters I have known best have all been quite brave and even felt a responsibility for their advisors' safety. Bon was quite serious when he called himself my bodyguard. When we were traveling by jeep and heard shots to our front, it was Bon who checked it. On patrol he stayed close to me with his rifle ready, and he continually gathered information from the civilians to insure our safety. He never showed hesitation in undertaking any mission and was confident of his ability as a soldier.

Our greatest achievement as an advisory team came in the training of our Regional and Popular Force units in the use of the *M16* rifle and in patrolling. Sergeant John H. Bell Jr., my infantry noncommissioned officer, was an invaluable asset in this training. I gave Sergeant Bell the responsibility for the training on the *M16*. Instead of teaching the class himself he spent hours teaching Bon the weapon so that Bon was able to teach the class. The results were beyond our highest hopes, for the initial presentation took less time and more was left for practical exercise. The Vietnamese were very responsive, and Bon felt strongly that he was a contributing member of the team.

Good rapport is almost as important in an advisor's relationship with his interpreter as with his counterpart. A basic understanding of the Vietnamese is vital to a good advisor, and an interpreter is a prime source of such information. If he is loyal, he can save his advisor many embarrassing moments as the advisor learns the customs and mores of the country. As Bon and I worked together, he spent a great deal of time telling me about his way of life, his interests and his goals. My interest helped our working relationship, and he provided me with a better understanding of the Vietnamese. He was also able to tell me many helpful things about my counterparts and ways to work with them.

Just as Americans have difficulties with their

interpreters, so interpreters have their own problems. On a mobile advisory team interpreters are under the pressure of being outnumbered by foreigners five to one, and they are forced to spend a great deal of time speaking a strange language with men from a different culture. The difference in the American standard of living soon becomes obvious, and often an interpreter's feelings are hurt by careless remarks about America's wealth or Vietnam's poverty. Our anticipations of going home often frustrate them since they have nothing really to look forward to except more of the same war. But perhaps the greatest pain inflicted on an interpreter is the ostracism he receives from his own people, especially soldiers who are resentful of the way the interpreters live. An advisor must understand all these problems in order to deal fairly with an interpreter.

Although Bon worked hard at being an interpreter, he was not so adept at housekeeping and improving our defenses. His diminutive size and strength would not allow him to match the physical labor of the other team members; furthermore his refusal to push himself at all was frustrating and aggravating. My team members, especially the medic, resented this attitude, and so team unity was injured appreciably. While I never settled this problem completely, we did notice greatly improved results when we allowed the interpreters to work on a project as a group without the Americans scrutinizing their every move. This solution was fairly satisfactory—certainly better than losing a good interpreter.

The most important step in working with an interpreter is making sure he understands the advisor so well that he can accurately interpret feelings instead of simply translating words. An interpreter can be made to translate, but he must desire to learn to interpret. He must spend enough time with the advisor to learn the advisor's feelings and ways of expressing himself before he can truly interpret. If the interpreter does not gain respect for the advisor as he learns more about him, this lack of respect may be evident in his translations without the advisor even knowing it—and counterparts are influenced by everything the interpreter says or implies. The best way for an advisor to earn his interpreter's respect is first to have a conscientious and professional attitude toward his job, then to understand the problems facing an interpreter and deal fairly with him to overcome them.

My first few weeks with Bon were very busy, but he was just a translator; however, as we spent more time together, he began to understand more clearly what I wanted, and consequently he developed into an interpreter. When I was angry or disgusted about something, he let my counterparts know it and also made them understand why I felt that way. And when I was pleased, that was also interpreted. A true interpreter is invaluable in dealing firmly, yet tactfully, with a counterpart, for he must not be afraid to show the advisor's feelings, but he must not be unnecessarily offensive. Bon became a master at this. He learned to speak firmly to lieutenants and captains without creating unnecessary hostility, and he explained my counterpart's feelings as well as his words to me. He deserved a great deal of credit for the good rapport between my team and our counterparts.

Unfortunately not all interpreters are as able or willing to devote themselves to the job as Bon did. Some are so bad they are best used when returned to ARVN. Others may be prompted to better efforts by the mention of a return to ARVN, for an interpreter's job, while not easy, is highly desired. But the patience and understanding necessary to train an interpreter are well rewarded when he learns not only to translate but also truly to interpret.

CAPTAIN DAVID O. TREADWELL, Infantry, was commissioned in 1965 from Wheaton College, Illinois. He graduated from the Infantry Officer Basic Course, Ranger Course, and Airborne Course in 1966. He was then assigned to the 2d Battalion, 12th Cavalry Regiment, 1st Cavalry Division (Airmobile), Vietnam, where he served as a reconnaissance platoon leader, rifle platoon leader, and company executive officer. In 1967 he returned to CONUS and served as Adjutant of the Basic Combat Training Committee Group, Fort Polk, Louisiana. In 1968 he returned to Vietnam, serving six months as senior advisor on a mobile advisory team and five months as a company commander with the 101st Airborne Division (Airmobile). He attended the Armor Officer advanced Course in 1970 and is currently assigned to the Reserve Officer Training Corps, Wheaton College.

ARMOR
and
CAVALRY MUSIC

by Major Verne D. Campbell

A Survey of Songs and Marches—

and the units that rode to their strains

In the foreword to the recently published *Armor-Cavalry, Part I, Regular Army and Army Reserve*, a volume of the "Army Lineage Series," Brigadier General Hal C. Pattison, former Chief of Military History, has written:

> "Successful military organizations are solidly founded upon the pride of their members—soldiers with a strong sense of belonging to their unit and enthusiastic about its being their own. Good military leaders always strive to attain this intangible quality—generally known as *esprit de corps*. Anything that helps an army to achieve it contributes to better units."[1a]

Music has always played a major role in maintaining the spirit of the soldier throughout the history of warfare, and military units have adopted particular songs which have special meaning or significance to the members of those organizations. Some tunes were purposefully written for a specific organization to provide it with an identifiable song of its own. Other tunes have become traditional as the result of individual heroism or unit valor on a noted battlefield, oftentimes with meaningful lyrics which have been set to the tune of a well-known ballad. In the same manner some of the famous tunes of yesteryear, known throughout the civilian world by one title, were readily identified by a proud regiment by the name of its favorite drinking song!

Regardless of its origins, each song has contributed immeasurably to unit pride and camaraderie—that intangible quality: *esprit de corps*. The songs of armor and cavalry units are among the most widely-known and beloved in the lore of American military music. Many of the tunes and lyrics, attributable to cavalry and armor units, have been "borrowed" almost intact for use by units of other arms, attesting to their widespread popularity and appropriateness.

In undertaking a survey of armor and cavalry music, one quickly ascertains that fact and legend blend into a rich tradition which, although reinforcing the proud heritage of these arms, defies clear-cut, definitive analysis of the origins of every song. The following narrative attempts to outline most of the best-known tunes, and perhaps some lesser-known songs, with emphasis on their association with armor and cavalry units in today's active Army. Since cavalry predates armor, this discussion will begin with a survey of cavalry regiments, modern elements of which survive in active service.

The 1st Cavalry dates it origin to the establishment of the United States Regiment of Dragoons in 1833 (later the 1st Regiment of Dragoons), but waited for a distinctive song of its own until 1927 when Ruth Bingham Herman wrote and copyrighted "The First Cavalry March (Dragoons)," dedicated to the regiment. Lieutenant Colonel Arthur Poillon collaborated on lyrics to accompany the tune. Apparently the march was never formally published, but a manuscript is on permanent file in the library of The United States Army Band, Fort Myer.[2]

It is safe to assume that the 1st Cavalry's early years were marked by the singing of many of the popular ballads and soldier-songs of the times which were prevalent in military units of all types. However, a tune with lyrics attributable to the 1st Cavalry became popular in 1852 when Lieutenant Colonel Edwin V. Sumner of the 1st Regiment of Dragoons led a punitive expedition against the Navajos. This action resulted in the celebrated march into the famous Canyon de Chelly in New Mexico. During this campaign a song was composed which was sung to the tune of the bugle call "Stable-call:"

Come get to the stable, as fast as you're able,
Water your horses and give 'em some corn,
For if you don't do it the colonel will know it,
And then you will rue it as sure's you're born.[3]

The 2d Cavalry (2d Dragoons) has a rich lore of songs which have sprung from the regiment's long and distinguished history. Albert G. Brackett's *History of the United States Cavalry From the Formation of the Federal Government to the 1st of June 1863* recounts the hardships of a soldier's life during the war with the Seminoles in Florida, but indicates that there were moments of merriment. During this time one of the officers, who remains anonymous, wrote "The Dragoon Bold," a song "which has been sung by many a dragoon with the voice of a Stentor, and moistened with old Bourbon during the singing. The poetry is dragoon poetry, and must not be too closely criticized. The sentiment is good."

Oh! The dragoon bold he knows no care,
As he rides along with his uncropp'd hair;
Himself in the saddle he lightly throws,
And on the weekly scout he goes.

At night he camps in the old pine wood,
He lights his fire and cooks his food;
His saddle-blanket around him throws,
And on the ground he seeks repose.

If an anxious care should cross his mind,
'Tis of the girl he's left behind,
When he parted from her in sorrow and woe,
And went to the wars a long time ago.

Then cheer, boys, cheer for the girls afar,
We'll all go home at the close of the war;
And, sadly tanned by a Southern sun,
We'll spin long yarns of the deeds we've done.[4]

One of the 2d Cavalry's most able commanders during the Indian Wars was Brigadier General George F. Crook, who improved cavalry logistics

by eliminating wagon trains in favor of pack trains, so that supplies could be readily available to the rest of the troop column. General Crook was known throughout the Army for several idiosyncrasies, including a definite aversion to the regulation uniform. Noting the plain linen suit which he normally wore, the troopers serving under him in the mid-1870's sang this verse:

"I'd like to be a packer
And pack with George F. Crook
And dressed up in my canvas suit,
To be for him mistook.
I'd braid my beard in two long tails
And idle all the day,
In whittling sticks and wondering
What the New York papers say."[5]

According to Edward A. Dolph in his book, *Sound Off: Soldier Songs from Yankee Doodle to Parley Voo*, a song entitled "In the Second Cavalry" dates back to at least the turn of this century, and was sung to the tune of "Crambambuli."

Twas in Eighteen hundred and thirty six
That we fought in the Everglades;
When we showed the Seminole the trick
That from memory never fades.
We have been in many a fight since then,
For 'tis there that we belong;
So we got the right that we'd earned like men
To sing this Regiment's song.

CHORUS

Trot, trot, trot, is the soldier's lot
When he 'lists for the Cavalry.
And it's hike, hike, hike, which they don't much like
For our friends the Infantry.
Oh, it's shoot, shoot, shoot, when the trumpets toot,
If you're in the Artillery.
And it's fight, fight, fight for your country's right
In the Second Cavalry.

When the trumpet sounds that the firing's ceased,
And our war flag we may furl,
We are always ready, to say the least,
To flirt with a pretty girl.
For at making love or at duty's call
Our motto is 'Toujours Prêt.'
Oh, a soldier's life is the best of all,
So sing with a will today.

CHORUS

Let's sing a song to the cavalry,
We'll follow where'er it leads;
We love its yellow standards,
All lined with gallant deeds.
So here's to the horse and the rider bold,
To the trot and the gallop free,
To the charge and the rush and the fierce melée
Of the dashing cavalry.

LAST CHORUS

When the trumpets ring and the chargers spring
And the lines of the foremen reel,
Then dearer far are the ways of war
To the lads of the spur and steel.
With 'Old Glory' bright, through the dusty light
And our guidons floating free,
For the ranks of war it's hip, hip, hurrah!
In the Second Cavalry.

Dolph notes an additional version of the chorus of "In the Second Cavalry" which was particularly popular among the men of the regiment:

Oh, it's groom, groom, groom!
'Tis the soldier's doom,
When he enlists in the cavalry;
And it's work, work, work,
Which you can't well shirk,
If you're in the infantry;
And it's clean, clean, clean,
When the harness gets green,
If you're in the artillery;
But it's drill, drill, drill,
When you ain't in the mill,
In the Second Cavalry.[6a]

A book published by the 3d Armored Cavalry Regiment, outlining its history, provides the background surrounding its regimental song, "Green Grow The Rushes, Ho!" This tune is several hundred years old and traces its origins to cloisters and seminaries in Europe. Although originally possessing something of a sacred character, its use as a song for drinking and merrymaking in various parts of Europe is well-documented. The verses used by 3d Cavalry soldiers during the Mexican War have been lost to antiquity, but the original twelve verses are as follow:

1. *Leader:* *I'll sing you one, ho!*
   Chorus: *Green grow the rushes, ho!*
   What is your one, ho?
   Leader: *One is one and all alone*
   And ever more shall be so.
2. *Leader:* *I'll sing you two, ho!*
   Chorus: *Green grow the rushes, ho!*
   What is your two, ho?
   Leader: *Two, two the lilywhite boys*
   Clothed all in green, ho!
   Chorus: *One is one and all alone*
   And ever more shall be so.

(Leader and chorus continue as above, repeating the previous verses as each new verse is added.)

3. *Three, three the rivals.*
4. *Four for the Gospel makers.*

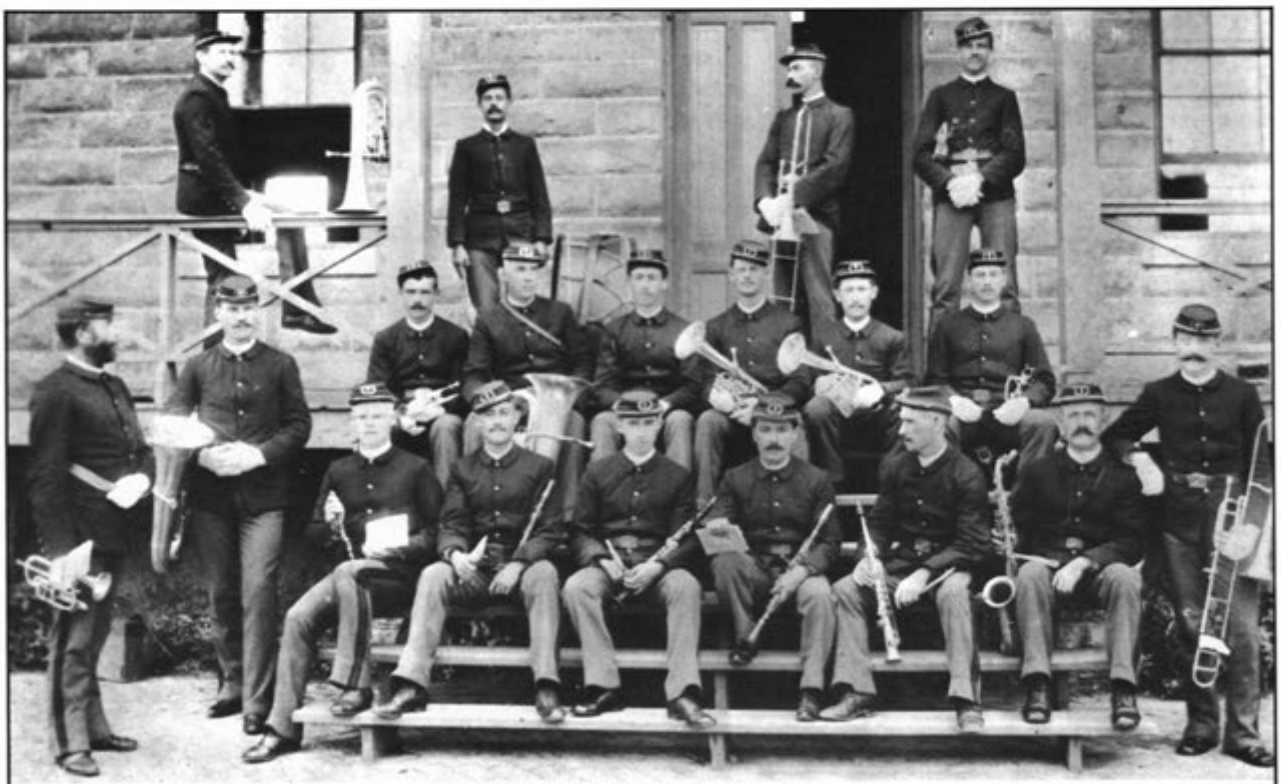
The 1st Cavalry Band at Boise.

5. *Five for the symbols at your door.*
6. *Six for the six proud walkers.*
7. *Seven for the seven stars in the sky.*
8. *Eight for the April rainers.*
9. *Nine for the nine bright shiners.*
10. *Ten for the ten commandments.*
11. *Eleven for the eleven went up to heaven.*
12. *Twelve for the twelve Apostles.*[7a]

The 3d Cavalry's frequent and loud renderings of "Green Grow the Rushes, Ho!" during the war with Mexico gave rise to the account that the Mexicans readily corrupted the "Green Grow" into the commonly used term for Americans—"Gringo."[8]

The same 3d Armored Cavalry reference states that the official march of the Regiment is "Brave Rifles," composed by Warrant Officer Yassel, the Regimental Bandmaster, which was dedicated to the Regiment while under the command of Colonel (later Major General) Kenyon A. Joyce (26th Colonel of the 3d Cavalry) from 1933 to mid-1936.[7b] This raises a question since copies of the instrumental parts to "Brave Rifles," published in 1937 by the 3d Cavalry at Fort Myer, attribute its composition to Cipriano Campagna, a sergeant with the 3d Cavalry Band.

Several years earlier (1924) Frank Frank dedicated the "Hoof Prints" march to the 3d US Cavalry and



The 1st Cav Band again, at Fort Riley.

included two verses of lyrics to be sung during the trio of the march:

We're here we're there, we're mostly anywhere
We ride and fight and always do our might
We drill and spill that is the cavalry game
When fair or chill that is how we got our fame.

We ride and hike and sit in saddles all day
Thro' fields on hills and roads down far away
We sleep in tents on grass and marshy land,
For you, Uncle Sam, like a reg'lar Cav'lryman.[9]

The 4th Cavalry traces its origins to the 1st Cavalry organized in 1855. However, the 4th was formed along with the 5th and 6th Cavalry when Congress reorganized all mounted troops in 1861 and assigned regimental numerical designations by seniority. Following the Civil War, the 4th spent many years on the western frontier in campaigns against the Indians, particularly in what is now the Southwestern United States. These years gave birth to a well-known cavalry song entitled "Old Arizona Again."

Oh, it's old Arizona again,
It's old Arizona again;
It's a place where we all have been.
We have all been there before,
And we're going back once more,
Back to old Arizona again.

Oh, it's old Arizona again,
It's old Arizona again;
With its greasers and bad, bad men.
They don't know the Boston dip,
But they shoot you from the hip,
Down in old Arizona again.

Oh, it's old Arizona again,
It's old Arizona again;
It's a place where we all have been.
With its scenery and fresh air,
They will be your bill of fare,
Down in old Arizona again.

Oh, it's old Arizona again,
It's old Arizona again;
It's a place where we all have been.
With the bears and rocky ground,
And the rattlers running around,
Round in old Arizona again.

Oh, it's old Arizona again,
It's old Arizona again;
It's a place where we all have been.
And if you get away,
They will bring you back to stay,
Down in old Arizona again.[6b]

In 1927 the "March King," John Philip Sousa, wrote "Riders for the Flag," which was "dedicated to Colonel Osmun Latrobe, Regimental Commander and the Officers and Men of the Fourth U.S. Cavalry." It is now the official regimental march of the 4th Cavalry.[10]

In describing the campaign against the Sioux Indians in 1876, First Lieutenant Charles King, acting regimental adjutant of Colonel Wesley Merritt's 5th Cavalry, recalls the singing around the campfires during the cool October evenings after a hearty meal:

> The year before, those irrepressible humorists, Harrigan and Hart, of the New York stage, had sung at their 'Théatre Comique' a witty but by no means flattering ditty which they called 'The Regular Army, O.' One of its verses, slightly modified to suit the hearers, was particularly applicable to and popular in the Fifth Cavalry, and their adjutant, when he could be made to sing *pro bono publico*, was always called upon for the song and sure of applause at the close of this verse. It ran—

We were sent to Arizona, for to fight the Indians there;
We were almost snatched bald-headed, but they didn't get our hair.
We lay among the canons and the dirty yellow mud,
But we seldom saw an onion, or a turnip, or a spud,
Till we were taken prisoners and brought forninst the chief;
Says he, 'We'll have an Irish stew'— the dirty Indian thief.
On Price's telegraphic wire we slid to Mexico,
And we blessed the day we skipped away from the Regular Army, O.[11]

Colonel John H. Stodter wrote an article on cavalry songs in the April 1923 issue of *The Cavalry Journal* which provided an excellent description of the legend of Fiddler's Green, a song which was a favorite with the 6th Cavalry.[12] In more recent times, Lieutenant Colonel Paul M. Crosby wrote an article on "Fiddler's Green" in the November-December 1965 issue of *ARMOR*. Although its origin is uncertain, Colonel Stodter's article described "Fiddler's Green" as a broad meadow located halfway down the trail to Hell, dotted with trees and crossed by

Jakie Maier and his band.

many streams. Allegedly this was the place where "all dead cavalrymen were camped, with their tents, horses, picket lines, and campfires, around which latter the souls of the dead troopers gathered to exchange reminiscences and tell stories. There was also the old army canteen store (where liquor was sold), long since hounded from this mundane sphere by the zealous efforts of the W.C.T.U."[13] The appeal of this enchanting place is apparent in the lyrics to the song which were published in Dolph's book[6c] and reprinted in Colonel Crosby's article:

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

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

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

And so when man and horse go down
Beneath a saber keen,
Or in a roaring charge of fierce melée
You stop a bullet clean,
And the hostiles come to get your scalp,
Just empty your canteen,
And put your pistol to your head
And go to Fiddlers' Green.[14]

Since the 6th Cavalry's reactivation at Fort George G. Meade in 1967, a march in manuscript entitled "6th U.S. Cavalry March" by W. T. O'Callaghan has been frequently performed for 6th Cavalry ceremonies by the First US Army Band. The year in which the march was composed is not indicated on the music, nor is there any explanation presently available concerning the occasion or circumstances for which it was written and first used.

The history of the 7th Cavalry is rich in musical lore which has become associated through the years with almost all armor and cavalry organizations.

Probably the most famous cavalry song of them all is "Garry Owen." This song did not actually originate with the 7th Cavalry, however, Major Mark M. Boatner III (now Colonel, Ret.) provided a brief history of the song in his book, *Military Customs and Traditions:*

> Almost a century ago, the Seventh Cavalry Regiment adopted the rollicking drinking song of the Fifth Royal Irish Lancers, 'Garry Owen.' The origin of this song bears a strange parallel to the origin of West Point's 'Benny Havens.' 'Garryowen' is Gaelic for Owen's Garden, an inn near Limerick, Ireland, which was the favorite haunt of the Fifth Lancers. (Similarly, Benny Haven's Tavern, opened on the West Point reservation in the early 1820's, had been a favorite meeting place of officers and—when Benny's elaborate grapevine told them the coast was clear—of cadets.) 'Garry Owen' came into the Seventh Cavalry when a great many ex-troopers of the Irish Fifth Lancers immigrated to the U.S. and joined the Seventh. Custer's favorite, the song signaled the charge with which the Seventh defeated the Cheyennes in the Battle of Washita in 1868.[15]

Eight years later "Garry Owen" was played by the 7th Cavalry Band as Custer led his forces out of Fort Lincoln on the ill-fated expedition which ended at the Little Bighorn.

"Let Bacchus' sons be not dismayed
But join with me each jovial blade;
Come booze and sing, and lend your aid,
To help me with the chorus.

CHORUS
Instead of Spa we'll drink down ale,
And pay the reck'ning on the nail;
No man for debt shall go to jail
From Garryowen in glory.

We are the boys that take delight in
Smashing the Limerick lights when lighting,
Through the streets like sporters fighting,

The 3d Cavalry Band—and admirer—at Jefferson Barracks.

The 4th Cavalry Orchestra.

And tearing all before us.

CHORUS

We'll break windows, we'll break doors,
The watch knock down by threes and fours;
Then let the doctors work their cures,
And tinker up our bruises.

CHORUS

We'll beat the bailiffs out of fun,
We'll make the mayors and sheriffs run;
We are the boys no man dares dun,
If he regards a whole skin.

CHORUS

Our hearts so stout have got us fame,
For soon 'tis known from whence we came;
Where'er we go they dread the name
Of Garryowen in glory.

CHORUS[6d]

Prior to the 7th Cavalry's departure for the Philippines in 1905, Chief Musician J. O. Brockenshire, of the 7th Cavalry Band, rewrote the music of "GarryOwen," and also composed revised stanzas and chorus.

We are the pride of the army,
And a regiment of great renown,
Our name's on the pages of history.
From sixty-six on down.
If you think we stop or falter
While into the fray we're goin'
Just watch the steps with our heads erect,
While our band plays 'GarryOwen.'

CHORUS
In the Fighting Seventh's the place for me,
It's the cream of all the cavalry,
No other regiment ever can claim
Its pride, honor, glory and undying fame.

We know no fear when stern duty
Calls us far away from home,
Our country's flag shall safely o'er us wave,
No matter where we roam.
'Tis the gallant Seventh Cavalry
It matters not where we're goin'
Such you'll surely say as we march away,
And our band plays, 'GarryOwen.'

CHORUS

Then hurrah for our brave commanders!
Who lead us into the fight.
We'll do or die in our country's cause,
And battle for the right.
And when the war is o'er,
And to our home we're goin'
Just watch the step, with our heads erect,
When our band plays, 'GarryOwen.'[16a]

George Custer's love of music was evidenced by the acquisition of a rented piano from St. Paul, Minnesota, which was put to frequent use in his quarters at Fort Lincoln. The Custers hosted fre-

quent songfests which almost invariably included one of the 7th Cavalry's favorites, and a song popular with all cavalrymen for many years, "The Girl I Left Behind Me."

Full many a name our banners bore
Of former deeds of daring,
But they were of the days of yore,
In which we had no sharing;
But now our laurels freshly won
With the old ones shall entwined be,
Still worthy of our sires each son,
Sweet girl I left behind me.

The hope of final victory
Within my bosom burning,
Is mingling with sweet thoughts of thee
And of my fond returning.
But should I ne'er return again,
Still worth they love thou'lt find me;
Dishonor's breath shall never stain
The name I'll leave behind me. [17a]

Another song attributed to the 7th Cavalry was a bit earthier. "Thaddy O'Brien" perhaps became popular because of the Irish origins of many of the troopers of the 7th.

Thaddy O'Brien was a sergeant gay,
In the U.S. Cavalry,
The fresh recruit would often say
'I earnestly long to see the day,
When 'neath the sod he's put to stay,
That son-of-a-bitch from Dublin Bay,
That sergeant with the 'suparior' way
My life's burden every day.'

CHORUS
Ta-ra-ra Boom de ay,
Ta-ra-ra Boom de ay,
Ta-ra-ra Boom de ay,
Ta-ra-ra Boom de ay.

Too long were the trousers by a span,
The recruit received from Uncle Sam,
The sergeant bawls as loud as he can,
'Go and let out yer supinders man!'
The hat he drew was much too small,
And failed to stay on his head at all,
'Stretch it ye spalpeen!' Thaddy would call,
'Ye'll niver be a throoper at all!' [17a]

"Sergeant Flynn" is a ballad which has been a part of the lore of the 7th Cavalry for many years. Its origins are obscure, but it was obviously inspired by the events of June 1876. According to Lieutenant General (Ret.) W.H.S. Wright, the following verses were particularly popular among cavalrymen in 1935 "when we as young lieutenants sang it at the drop of a hat with a drop of bourbon at Fort Riley."

1. *Through the night the Sioux were singing Sergeant Flynn*
I could hear their tom-toms ringing Sergeant Flynn
Oh, I heard their tom-toms ringing
And I heard the Sioux bucks singing
But they know not yet the tune of Garry Owen.

2. *There goes boots and saddles sounding, Sergeant Flynn*
To the lines the men are bounding Sergeant Flynn
Hurry, saddle up and fall in
For the trumpets are a-calling
And the band is tuning up for Garry Owen.

3. *There's the forward, we're advancing Sergeant Flynn*
In the breeze the guidons are dancing Sergeant Flynn
Trot, march, gallop, charge by thunder
We will drive the cut-throats under
Drive your saber to the hilt for Garry Owen.

4. *We are ambushed and surrounded Sergeant Flynn*
But recall has not yet sounded Sergeant Flynn
Here you men stand fast and rally
Make a last stand in this valley
For the Seventh Cavalry and Garry Owen.

5. *(This verse sung slowly and sorrowfully)*
You lie scalped and cut and battered Sergeant Flynn
All your men are dead and scattered Sergeant Flynn
I will make your grave tomorrow
With a heart bowed down with sorrow,
O'er your grave I'll whistle Taps and Garry Owen.

6. *(This last verse sung with vigor and spirit)*
Garry Owen, Garry Owen, Garry Owen
In this valley of Montana all alone
There are better days to be
For the Seventh Cavalry

When we charge again for dear old
Garry Owen.

Three additional verses have been frequently performed in recent years by The United States Army Chorus in conjunction with several of the verses indicated above.

Ten thousand braves were riding
Sergeant Flynn
In the black hills they were hiding
Sergeant Flynn
Crazy Horse and Sitting Bull
They will get their bellies full
Of lead and steel from men of Garry
Owen.

We'll dismount and fight the heathens
Sergeant Flynn
While there's still a trooper breathin'
Sergeant Flynn
In the face of sure disaster
Keep those carbines firing faster
Let those volleys ring for dear old Garry
Owen.

Though your bones to dust will crumble
Sergeant Flynn
Down the years our drums will rumble
Sergeant Flynn
In the annals of the brave
Comes our whisper from the grave
On the breezes we're singing dear old
Garry Owen.[18]

One more verse is recorded in Chandler's "Of GarryOwen in Glory." On March 26, 1951, while the regiment was serving with the 1st Cavalry Division in Korea, a ceremony was held to celebrate Greek Independence Day, since the 4th Battalion, Greek Expeditionary Forces, was attached to the regiment. On that occasion an address was delivered by Major General A.G. Dascarolis, Greek liaison officer to the Far East Command, which included an expression of the close comradeship and mutual respect shared by these allies:

. . . As soldiers we will do our best so
that one day to hope
that the future officers and men of the
7th Cavalry Regiment
will remember in their songs our
names as in the verse—

'Look at Cameron and O'Brien
Sergeant Flynn
With a smile they're fighting, dying
Sergeant Flynn
Though not one will be alive
Still their spirits will survive
To sing the name and fame of dear old
GarryOwen.' . . .[16b]

"8th U.S. Cavalry March" was written by Kenneth Hebert and published by the 8th Cavalry at Fort Bliss, Texas. No publication date is indicated on the music, but it probably originated during the early 1940s while elements of the 8th Cavalry were stationed at Bliss. An additional song entitled "The 8th Cavalry Regimental Victory March" was written by an unknown composer, and the words were recorded in a history of the 1st Cavalry Divison published after the Korean war. A copy of the words are maintained in the music library files of The United States Army Band, but the music accompanying the words remains unknown.

From an island known as Angel we
were born to lead the way,
With the Honor and the Courage
we'll protect the USA.

We're the 8th Cav in the first team;
we're the cream of infantry,
From a horse back to the half track
we have fought to keep men free.

From the Indian wars to Korean shores
we wrote a gallant story.
Like a burst of flame we have placed
our name in everlasting glory.

We're the 8th Cav in the 'First Team;'
we'll go on in history
In the big fight we're the upright
of the US Cavalry.

From the dunes of Arizona
to the woods of Oregon,
We patroled the Western regions
under moon and blazing sun.

Came from Cuba back in '02; met the
'Peens' in nineteen five.
Kept the order on the border, did the
job with zeal and drive.

With a powerful might we got in the
fight, and won in the Pacific.
Then from Pohang-Dong up to Ol'
Ansong we hit with force terrific.

We're the Mustangs of the 8th Cav;
we mean hell to any foe.
From Comanches to the 'Commies' we
can proudly prove it so.

Now we hail our three battalions, and
supporting units too.
They can always be relied on for
the great Red, White, and Blue.

The 4th Cavalry Band at Fort Huachuca, 1886.

We're the 8th Cav in the 'First Team'
and we always take the lead,
For we're scrappy and we're happy
to uphold the 8th Cav creed.

We are proud of a date in eighty-eight,
the sojourn from Fort Goncho,
T'was the longest march, but we had the
'starch' to hike to old Fort Keogh.

We're the 8th Cav in the first team,
and the toughest in the game,
We're the main seam of the 'First
Team,' and we'll always stay the
same.[19]

The 9th Cavalry was composed of Negro enlisted men and white officers when it was constituted in July 1866. The rollicking tune which became the "anthem" of the 9th Cavalry has little in its lyrics to explain its origins or reasons for perpetuation. However, Dolph indicates that many old-timers believe it was brought into the regiment by some recruit from the South. The melody is that of "The Monkey Married the Baboon's Sister."

The monkey married the baboon's sister,
Smacked his lips and up and kissed her,
Kissed so hard he raised a blister,
But it soon got well.

CHORUS
Hi, Hi, Hi, Hi,
Hi, Hi, Hi, Hi,
But it soon got well.

Then she put on some court-plaster,
Stuck so hard it couldn't stick faster.
Surely was a great disaster,
But it soon got well.

CHORUS

Oh, the monkey loved the baboon's sister,
Smacked his lips and then he kissed her.
Kissed her so hard he raised a blister,
And she set up a yell.

CHORUS

Now, what do you think the bride was
dressed in?
Green gauze dress and a big brass
breast-pin,
Red leather shoes. She was quite
interesting,
She was quite a belle.

CHORUS[60]

The 10th Cavalry was also one of the four new cavalry regiments formed in July of 1866. Like the 9th, it was composed of Negro enlisted personnel, who eventually were dubbed "buffalo soldiers" by the Indians. The origin of "buffalo soldier" is uncertain; however, the common explanation is that the Indian saw a similarity between the hair of the Negro cavalryman and that of the buffalo. The buffalo was sacred to the Indian, and the nickname was one of respect.[20] The well-known Stephen Foster melody, "Camptown Races," provides the tune to the regimental song of the 10th Cavalry, "The Buffaloes."

We're fighting bulls of the Buffaloes,
Git a goin'—git a goin',
From Kansas' plains we'll hunt our foes;
A trottin' down the line.
Our range spreads west to Sante Fe,
Git a goin'—git a goin'.
From Dakota down the Mexican way;
A trottin' down the line.

CHORUS
Goin' to drill all day,
Goin' to drill all night,
We got our money on the buffaloes,
Somebody bet on the fight.

Pack up your saddle and make it light.
Git a rollin'—git a rollin'.
You are training fast for a hard fight;
A rollin' down the line.
Untie your horse and boot and gun,
Git a goin'—git a goin'.
Shake out your feet or you'll miss the fun,
A rollin' down the line.

CHORUS
Goin' to march all day,
Goin' to march all night,
We got our money on the Buffaloes,
Somebody bet on the fight.

It's Troops in line for the Buffaloes,
Git a movin'—git a movin'.
Then Squadron mass when the bugle blows;
A movin' into line.
Pull in your reins and sit your horse,
Git a movin'—git a movin'.
If you can't ride you'll be a corpse;
A movin' into line.

CHORUS
Goin' to fight all day,
Goin' to fight all night,
We got our money on the Buffaloes,
Somebody bet on the fight.[21]

For several years, music associated with the 11th Cavalry was somewhat elusive, due to a lack of formal documentation and infrequent performance. However, the regimental song, "Allons," the title of which is derived from the regimental motto meaning "Let's Go," has again returned to popular use in Vietnam. The first two verses of the song and the refrain have existed for several years, although the original lyricist remains unknown. Several additional verses were composed during the regiment's tenure in Vietnam by Major Leslie Culver, the regimental signal officer, of which three are indicated below. "Allons" is performed to the tune of "The Bonnie Blue Flag," a favorite song of the Confederacy during the Civil War. An arrangement of the song for band exists in manuscript, although the arranger remains unknown.

We are the Blackhorse tankers, the finest in the land.
We fight for right and use our might to free our fellow man.
Our girls wear yellow ribbons, as pretty as can be;
They're troopers too and loyal through, we're in the cavalry.

REFRAIN
Allons, allons the pride of Cavalry,
The best damn regiment that you will ever see.

The horse is made of iron, eats gas instead of hay
Has first round hits, no snaffle bits, and sabres are passé
We wade through mud with guts and blood and keep our country free;
With shout and song and allons on, we're 'leventh cavalry.[22]

REFRAIN

In nineteen hundred zero one, the regiment was born;
To shoulder freedom shore to shore, used right to conquer wrong;
Guerrilla fighting land through land, pages in history;
We're Blackhorse troopers young and old, 'leventh cavalry.

REFRAIN

Now we are in Vietnam, what are we doing here?
Our role is helping, training friends to stand up without fear.
Again our girls are waiting, bravely as can be,
With yellow ribbons in their hair, to show we're cavalry.

REFRAIN

The Philippines to Vietnam, wherever freedom stands;
You'll find a Blackhorse trooper there, to help his fellow man.
Our guidons raised in honor, our glasses held on high;
Allons and on toward peace we go, in glory—live and die.[23]

REFRAIN

A march, "The Prancing Blackhorse," was composed for the 11th Cavalry by a member of the 83rd Army Band at Straubing, Germany, in 1962, at about the time that Colonel (now Major General) George M. Seignious II assumed command of the regiment. The march was a tangible manifestation of the high degree of esprit enjoyed by the regiment while under the leadership of Colonel Seignious. "The Prancing Blackhorse" has never been formally published.[24]

(The concluding portion of Major Campbell's article will be published in the May-June issue.)

All photos from National Archives.

REFERENCES AND ACKNOWLEDGEMENTS

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MAJOR VERNE D. CAMPBELL, Adjutant General's Corps, is assigned as Staff Band Officer, Office of the Deputy Chief of Staff for Personnel, Headquarters, United States Continental Army Command. Graduating from Washington State University in 1961, he received a bachelor of arts in music with honors, and was also designated a Distinguished Military Graduate of the ROTC program. He has done graduate study in music at the University of Maryland. Major Campbell is a graduate of the Armor School Officer Basic Course, the Infantry School Airborne Course, and the Adjutant General's Corps Officer Advanced Course. His Army service has included troop duty with armored cavalry and armor units, an ROTC assignment, and various staff positions. He is now one of the Army's 25 Army Band Officers (MOS 5241). In his present assignment, Major Campbell is responsible for supervising and developing policies affecting training, operation, administrative procedures and logistical requirements for 36 active Army bands in the continental United States, as well as providing guidance for 17 Army Reserve and 55 Army National Guard bands, and the ROTC band program. Prior to his assignment to CONARC, Major Campbell was Staff Band Officer for Headquarters, First US Army.

MEMORANDUM FOR MEMBERS OF THE UNITED STATES ARMOR ASSOCIATION

SUBJECT: 82d ANNUAL MEETING, FORT KNOX, KENTUCKY, 13-15 MAY 1971

This is to give you enough information on the 82d Annual Meeting that you can mark your calendars and start planning to attend. Further details, and registration and proxy forms, will be mailed to all Armor Association members by 15 March 1971.

This year the Fighting Vehicle Systems Section, Combat and Surface Mobility Division of the American Ordnance Association (AOA) will meet at Fort Knox in conjunction with the Armor Association. It is hoped that this will afford unique opportunities for designers and users to exchange views. Armor Association members having secret clearances are invited to attend the technical sessions of the Ordnance Association meeting. Further information and registration materials for the AOA sessions are available on request from Colonel Paul H. Scordas, USA-Retired, American Ordnance Association, Union Trust Building, 740 15th Street NW, Washington, D.C. 20005. TEL: (202) 347-7250.

Also meeting concurrently with the Armor Association will be the Blackhorse Association. Details on membership and meeting activities are available from The Secretary, Blackhorse Association, PO Box 11, Fort Knox, Ky. 40121.

CONDENSED TENTATIVE SCHEDULE

Wednesday, 12 May 1971

All Day	Registration

Thursday, 13 May 1971

All Day	Registration
AM	American Ordnance Association--Technical Presentations
PM	American Ordnance Association--Address by Hon. J. Ronald Fox, Assistant Secretary of the Army (Installations and Logistics), and Panel Discussion
1830	Reception and Buffet

Friday, 14 May 1971

AM	Honors Ceremony
	Keynote Address
	Symposium on Current Leadership Challenges
	CDC Armor Agency Presentation
1200	Armor Association Business Luncheon
PM	Air Cavalry and Fighting Vehicle Demonstrations
1830	Banquet and Speaker

Saturday, 15 May 1971

0900	Armor Association Executive Council Meeting
0900	Blackhorse Association--COL(BG Designee) Donn A. Starry, Speaker
1900	Blackhorse Ball

CEASE FIRE

You Are Shooting Friendlies

by Captain Kenneth C. Collenborne

ARMOR OFFICER ADVANCED COURSE 3-70

The young first lieutenant was aroused from deep thought by the burning stub of the cigarette clenched between his fingers. He leaned over the edge of his cot and ground out the cigarette in a half-filled ash tray on the floor, then fell back on the pillow and lit up again. His eyes focused on a single star, visible through a small hole in the canvas ceiling above his head. The tiny flickering of white slowly turned to orange and began to grow larger as his thoughts again returned to the last mission he had flown that afternoon.

He was watching the red flash of a tracer as the 2.75in rocket streaked towards the jungle floor below him. His thumb began to depress the firing button a second time, when suddenly a burst of tracers raced skyward past the nose of his aircraft. He rolled the attack helicopter sharply onto its right side as his wingman's voice in the earphones confirmed the danger. "Break out lead! You are taking fire from six o'clock!"

The gunner's question over intercom voiced his own thoughts. "I wonder where those guys came from? They weren't there on our last pass."

Regardless of where they came from he would not give them another target by making another pass over the same area! He informed his wingman that the next attack would be from the west, then switched to the ground commander's frequency and advised him of the change in direction of attack. When he did not receive an acknowledgement, he assumed that the transmission had been received and the commander on the ground was just too busy to answer.

As he lined the aircraft up to attack from the new direction, he noticed that the target area appeared a little different from that angle. The smoke from his last strike was still clearly visible, but he wasn't sure that he was on the same line as before. He chose a spot near the smoke and started the attack.

As he broke away from the target, the ground commander's voice came over the radio. "33 this is 26—move your fire about thirty meters to the right—over."

He acknowledged the adjustment and then notified his wingman, "32, place your fire about thirty meters from my last pair of rockets—over." He glanced to his left at the target just as his wingman's rockets exploded, and suddenly a voice screamed in his ear-

phones. "CEASE FIRE! CEASE FIRE! YOU ARE SHOOTING FRIENDLIES!"

"You are shooting friendlies!" . . . "You are shooting friendlies!" . . . The lieutenant shook his head and rose slowly from the cot. He started out of the tent, and then stopped as the flap swung open and his roommate stepped inside.

"Some of the guys are trying to get up a game next door. You feel like playing?"

"No thanks." He replied. "I think I'll skip tonight. I was just heading over to operations to get some coffee."

His friend glanced up from the foot locker where he was rummaging for a deck of cards. "Too bad about what happened this afternoon. Those things happen some times, just can't be helped."

"No, I guess not" he mumbled and moved outside into the darkness of the Vietnam night. But why? Why couldn't it be helped? The details of the day began to turn over in his head.

The mission had begun the same as many others he had flown in the past. His fire team had been scrambled to provide fire support for a ground unit, and the operations officer had given him a radio frequency, a call sign and a six digit coordinate to contact the unit. As soon as the flight was airborne he had called the commander of the unit to be supported, who in turn briefed him on the situation and advised him that he would adjust fire using the direction of attack as the gun-target line. The accident that followed was the result of changing that direction of attack.

Am I to blame, he wondered, because I assumed that he had received my transmission? Or was it the fault of the ground commander for not paying more attention to what was going on in the air? After all, FM1-41 says the ground commander is responsible for controlling and adjusting all fire support in his area. It really didn't make much difference who was to blame now. At least not to those four men who were wounded.

He had heard many stories about armed helicopters firing into friendly positions by mistake, but he had never dreamed that it would happen to him. Now he realized how easily it could happen. Just one error by either the man on the ground or the fire team leader, and the results could be tragic. Now

that he thought about it, there had been several times in the past when accidents such as this had almost happened.

One time he was supporting that unit near Dau Tieng. The commander on the ground had marked his position with smoke, but he had failed to inform the fire team that some of his people were moving through an adjacent wood line in an attempt to flank the enemy positions. That had been a close one. If those men had been any closer to the junction of the wood lines, his rockets would have been right on top of them. *Marking every position of friendly troops on the ground should be SOP all the way down to squad level to avoid such things as that.*

And then there was that time a unit had been ambushed and the commander was a casualty. His fire team just happened to be in the area and could have provided immediate fire support, but the radio operator on the ground could not point out the enemy positions. He had tried to direct them to the target by indicating wood lines and canals in relation to the enemy positions, but from the air the area was a maze of wood lines and canals. Finally, the radio operator was told the direction of flight of the aircraft and then it was a simple matter for him to direct the fire team to the target using a compass direction and a distance. Unfortunately, by the time the enemy was detected by the fire team the unit had suffered casualties that could have possibly been avoided. *The use of terrain features to locate a target will work, but the terrain must be easily identified from both the ground and the air.*

The use of compass direction and distance seemed to be the best method for both locating a target and to adjust the fire. A glance at the instrument panel in the aircraft, and the pilot knew immediately which direction to shift his fire. Compass directions do not change and there is no chance for confusion as there is when using a gun-target line. With the use of a gun-target line, left and right may change several times as the situation develops.

He had known which was the best method from past experience, and should have requested adjustment by compass direction that afternoon. Maybe the accident could have been prevented.

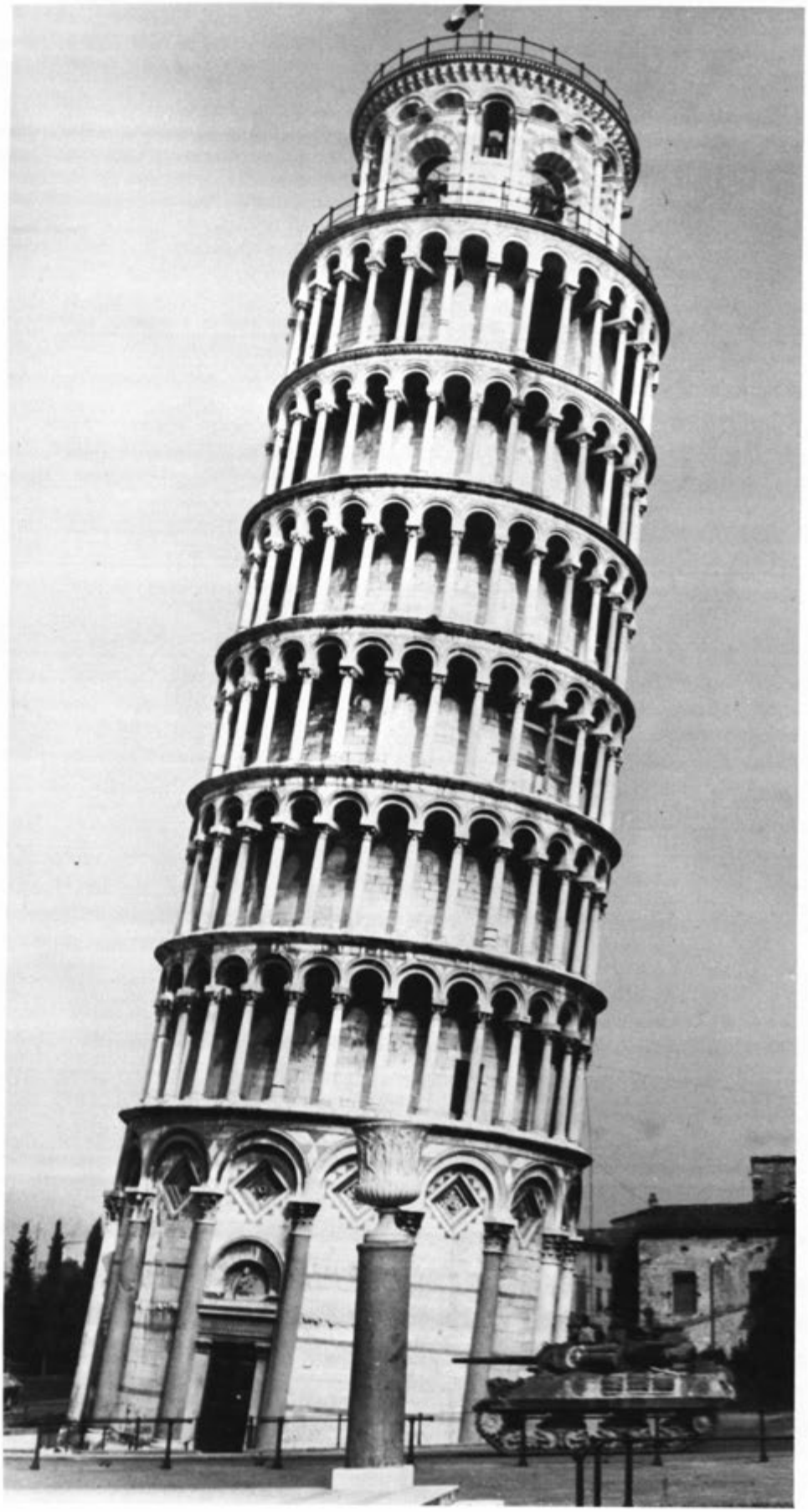
Sure, the manual says the ground commander has the responsibility. But when it comes to close air support, everyone involved is responsible. *If the pilot is ever in doubt, he should request the information he needs and never press the button until he is absolutely sure of his target.* Of course, valuable time could be lost during the exchange of information and in many cases speed is essential.

Why not coordinate ahead of time? If the commander on the ground knew exactly what information he had to give to the fire team leader it would eliminate unnecessary confusion. Such things as the location of all friendly positions by marking both flanks and the forward elements, as well as all separate groups, with smoke or colored panels; giving target locations and adjusting fire by the use of compass directions and distance; the description of the target and type and intensity of enemy fire is also nice to know, as it helps to select the appropriate weapons system and an altitude and direction of attack.

Each supported unit should be briefed on the procedures for control and adjustment of armed helicopter fire support before the operation, and then train all of their personnel to use them. It would take very little time.

The lieutenant stopped in front of the operations bunker and looked back towards his commander's tent. Why don't we do just that, he thought? I think that cup of coffee can wait until I have a talk with the Old Man. He turned to retrace his steps and the voice from that afternoon echoed in his ears once again. "Cease fire! Cease fire! You are shooting friendlies!" No, he thought, that will never happen to me again.

CAPTAIN KENNETH C. COLLENBORNE, Armor, was commissioned in 1966 from Officer Candidate School, Fort Knox. In 1967, he was graduated from the rotary-wing flight school and was assigned to the 3d Squadron, 17th Air Cavalry in Vietnam, where he served as lift section commander and as a fire team leader in the aero-weapons platoon. He was later assigned to the 8th Squadron, 1st Cavalry, where he acted as operations officer, executive officer and troop commander. He attended the Armor Officer Advanced Course in 1970.



'Seek Strike Destroy' — The World War II Tank Destroyer Corps

by Roger A. Beaumont

Its motto was "Seek; Strike; Destroy"; its branch colors, orange and black; its insignia, a profile of a half-track mounting a 75mm gun. The patch of the tank destroyer training command was the head of a black panther crushing a tank between its teeth. Its birth was glamorous and well publicized. But the Tank Destroyer Corps was to be the most short-lived branch in the modern US Army's history, ending its existence in 1946. The reasons for its dramatic rise and fall are rooted in the strange world of false perceptions and panic that followed the fall of France in 1940.

After Dunkirk, the Western Allies were reeling psychologically as well as physically. Ambassador Kennedy and Charles Lindbergh prophesied Britain's imminent fall. Few were as detached. The blitzkrieg had subdued six nations and eliminated the British Expeditionary Force as a military factor. In the summer of 1940, the world held its breath as the Germans moved about mysteriously on the Channel Coast. In the summer of 1940, the German army was victorious and the successful panzers were viewed not as a crust on a basically conventional post 1918 army using horse and foot transport, but as the first wave of mechanized might flowing out of a totally mobilized war economy. The record of German successes which followed in Greece, Yugoslavia, on Crete and in North Africa in 1941 did little to alter that view of the pattern of war on the part of Western planners. That feeling of too little-too late was to continue on into 1943, when the Western Allies were to find that the levels of German production and intensity of mobilization and mechanization were considerably less than that they had believed earlier.

The Tank Destroyer Corps was child of the early dark days. Both British and American planners began to consider the importance of the antitank gun. The British were to choose the towed version with mixed long-range results. Their doctrine called for these guns to be subordinate to the infantry. The Americans, however, moved in another direction.

It was decided in view of anticipated soaring levels of German tank production and the barrier to lead-time in American and British tank production—as well as diversion to the Russian Lend-lease channels—that the spirit of the attack would have to fill the gap. Thus the Tank Destroyer Corps evolved at first with a strong emphasis on individual—virtually hand-to-hand—techniques of antitank fighting and with reliance on the fact that existing antitank weapons were not adequate. It was not a suicide

Tank destroyer with 75mm cannon.

corps, but anticipated odds of survival were not far from that category.

The Corps was born as the US Army was in the throes of rapid growth. Dummy weapons used on maneuvers brought home the cost of the dream of easy peace. Americans had no armored divisions, while Hitler had 10, as he stood poised on the channel as if to spring at the last survivor of his conquest of seven major European countries in half a year. It was known in the United States that tanks large enough to stand against the German panzers would be expensive and slow in coming. If the Army took to the field in Europe, the gap caused by the lack of tanks in the American arsenal would have to be filled in with the zeal and the unshielded bodies of men.

The War Department Training Circular of 23 September 1940 first addressed the antitank problem urging the use of a minimum number of guns in fixed forward positions, with the bulk held back in a mobile reserve. Relative indifference to this document caused General Lesley J. McNair, chief of the Army Ground Forces and the man faced with shaping the new army's organization and training base, to call an "antitank conference" in October 1940. The chiefs of Coast and Field Artillery, Armor, Cavalry, General Headquarters and the Plans Division attended. Not unexpectedly, some branch rivalry reared its head. The Armored Force, however, did not want what was in theory their nemesis, and suggested the forming of a separate antitank branch. It was not until May 1941 that General Marshall ordered its creation. Colonel Andrew Bruce, who had supported the concept at the antitank conference, was named as chief of the new branch—which immediately caught the attention of the press. Bruce had defined the ideal tank destroyer as a "cruiser" rather than a "battleship," and McNair manifested an early cost-effectiveness outlook when he suggested, "Certainly it is poor economy to use a $35,000 medium tank to destroy another tank when the job can be done by a gun costing a fraction as much."

In July 1941, General Marshall called a conference at the Army War College to face the problem again. It was known that the British towed antitank guns were getting off four to eight shots before being put out of action or forced to withdraw. The concept of the self-propelled tank destroyer had been tested in crude form in the fall of 1941 when the Third Army in the Louisiana and the First Army in the Carolina maneuvers used jeeps and three-quarter ton trucks mounting 37mm guns. Success begat further enthusiasm. In August 1941, a detailed planning memo projected a 110 battalion TD program under armored branch control.

A principal problem at this point was finding a tracked motor carriage mounting a high velocity gun of at least 3in bore diameter—a need emphasized by the introduction of heavier German tanks in the desert war against the British. A temporary stopgap appeared in the form of towed gun units and the use of the thinly armored halftracks or scout cars mounting a 75mm gun. While these proved to be inadequate against German armor in late 1942 in North Africa, 50 of them did heavy damage to Japanese armor in the Philippines campaign earlier in the year—and thereby gave impetus to the program. The official

M10 with a 3in gun.

title of "tank destroyer" replaced "antitank" in December 1941, and the units under the control of other branches were either disbanded or transferred to General Headquarters control.

The training of the Tank Destroyer Forces—initially at Fort Meade but mainly at Camp Hood—put heavy emphasis on first-round hits and on continuing the fight if the gun or motor carriage was knocked out—since this seemed most likely. Techniques of tank disabling and infantry type training were also stressed. There was more than a little of the flavor of a forlorn hope about the Tank Destroyer Corps in those days. At the same time, tank destroyer officers assigned to self-propelled TD units were cautioned against trying to get into a meleé with tanks just because they had equivalent guns. With armor of minimal thickness—one to two inches—they only needed to be hit once.

By late 1942, the Tank Destroyer Center was established at Camp (later Fort) Hood near Killeen, Texas, and Bruce had been advanced to Major General. But while the aggressive hunter spirit impressed many, others like General Patton saw the answer to the tank problem as more tanks. Back in the United States, the search for better equipment continued (more than 200 vehicle types were screened) and evolved over the next three years through the *M18* with 76mm guns on an *M24* chassis to the *M36* which mounted a variant of the 90mm antiaircraft gun on an *M10* chassis in response to the Panther-Tiger challenge. All had open turrets for better observation—and quick exit.

The early view of the tank destroyers as cruisers deployed in Groups and Brigades to plug *blitzkrieg* incursions faded away as the war moved into the continent of Europe. In the Pacific, relatively light involvement of armor saw tank destroyers employed in sparse numbers. In spite of early successes in the Philippines and on Guadalcanal, the TDs were assigned supportive roles. The picture in Europe had changed by 1944 because of the heavy destruction of German armor in Russia, low replacement rates, and the depredation of Allied tactical air power. Both the Russians and Germans had developed self-propelled guns whose function approximated the TDs. But these "hunting" tanks and SP guns were really a strategy to provide cheaper tanks and usually had full-thickness armor. They also had the advantage of reduced silhouette. When it became apparent that German tanks were growingly thin on the ground, tank destroyer forces in Europe found themselves parcelled out to combat units, and to headquarters for marginal duty as well. This fragmenting made for uneven standards of employment, weak intrabranch communication, and reduced esprit. More and more, because their 3in ammunition was light and cheap, they were assigned the role of reinforcing artillery. TD junior officers were handicapped in trying to assert their role when dealing with field grade commanders of the units to which they were attached. The splintering and scattering also meant that battle lessons were often not distributed to other TD units. Since their forward deployment and high velocity guns added to the reach of artillery, they became more and more committed to indirect fire missions. The TDs also were used more and more as assault guns to reduce fortifications, becoming virtual

"infantry" tanks. Slowly they drifted into the artillery's sphere of control because of the need for survey support and forward observer coordination, and because their mission was growingly an artillery one, *ipso facto.*

Yet, in spite of the change in role, the tank destroyers inflicted twice as many casualties on the Germans as the average line unit—at one-fifth the casualties. In Europe, 39 battalions of TDs accounted for over 1300 tanks and self-propelled guns, 684 artillery pieces and antitank guns, 251 armored cars and light tanks, 668 pillboxes and took almost three divisions of German prisoners.

The recommendations of the General Board for disbandment of the Corps were based on the argument that the functions of the TDs would be filled in the future by the artillery and by the divisional tank battalion under armor control and by the field artillery. Thus a successful service branch and its dearly bought experience was consigned to oblivion, remembered only by veterans and insignia collectors.

There is a note of irony in the way in which the tank destroyer program paralleled naval experience with the battle cruiser. The battle cruiser, like the tank destroyer, was designed to be a thinned-skinned, fast version of the dominant armored vehicle of the time. And in both cases, no one seemed to know where to put the new device or how to use it other than scattering it about on various missions. The battle cruiser was a product of a transformation of a concept by Cuniberti, the Italian naval theorist, in Admiral Fisher's fertile brain. As far as can be determined (Fisher sometimes stressed drama over precision) it was intended to be a slightly lesser complement to the "Dreadnought" class battleship. The cruiser's duties were to act as a super scouting cruiser, a "greyhound of the sea," with enough gun power to break through any screen and report back to the main battle line. Its other functions were seen as commerce raider hunting and as a supplement to battleships in action. But in the end, BCs were used without much concern for pre-defined doctrine.

The real parallel to the tank destroyer came in the eventual deployment of battle cruisers (although later the cruisers began to blur with the big battleships in terms of armor, speed and armament as did the TDs motor carriages with supplemental armor) in battleship roles. The price was high. Thirteen of the 30 battle cruisers built were sunk (a 43 percent KIA factor for the species) and four times the loss rate of battleships.

Since the tank was first developed by the Royal Navy, (hence the use of nautical terms in tank nomenclature) it is interesting to note that the tank destroyer program—like the British cavalry regiments in the desert—failed to profit from their marine brothers' experience and had to learn it all over again. And the debate still lives on. In units assigned thin-skinned, high-speed armored vehicles, veterans of heavy hulled tank duty speak of "kiddie cars with mortars."

The question still remains: is speed really a compensation for protection? And if so, how much? Do modern antitank missiles and ammunition make hull strength obsolete? Are units using thin-hulled vehicles really armor—or should their training emphasize the passive gadfly approach of European scout car tactics? The experience of the Tank Destroyer Corps suggests that the elements of these problems have not faded with time.

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ROGER A. BEAUMONT is Associate Director of the Center for Advanced Study in Organization Science (CASOS), University of Wisconsin. In addition to teaching at the primary level and at the University of Wisconsin-Milwaukee, Wisconsin State University – Oshkosh, Kansas State University and Marquette University, Professor Beaumont has served in both staff and line managerial roles in the private sector and in the Army. He has served as consultant to state and urban government and has been active in CASOS institute program design and teaching since 1965. With primary professional interests in organizational structure and conflict and aggression reduction, and a member of the Inter-University Seminar on Armed Forces in Society, Professor Beaumont has published in numerous military magazines as well as contributing a chapter to *Bayonets in the Streets* (edited by Robin Higham) and co-editing the forthcoming *Martian Horizons: Military Institutional Trends in the 1970s* with Martin Edmonds.

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ARMOR OFFICER ADVANCED COURSE 3-70

Captain William V. Chiaramonte

The Red, White and Blue Team: Air Cavalry–Air Force Cooperation

Sergeant Ton was a veteran. He had been fighting in South Vietnam for almost three years. The very fact that he was still alive testified to his skill and experience. If it was only for his safety that he had to be responsible Sergeant Ton would not be worried. However, he was now responsible for the safety for 31 replacements and he was concerned.

Sergeant Ton had been given the mission to pick up a group of replacements at Special Region One's headquarters and return them to his unit. This was to be done before the attack by his unit on the convoy to Dan Tieng. He had been amazed at how young and poorly trained the new men were. Because of their lack of experience, Sergeant Ton had only moved during absolute darkness on the way south. This was their final stop before reaching the battalion in the rubber plantation known as Cau Cui. He had settled his men in a small bunker complex which his own company had built a few weeks ago and prepared to wait out the day until they could move again.

Inside his bunker Sergeant Ton was anticipating the praise he would receive from his commander for doing his job so well; he hoped that he may even receive a promotion. Suddenly his thoughts of reward were shattered by the sound of a small helicopter very near his location. He began to worry if all of the men's gear had been taken underground and if the other signs of occupation had been camouflaged.

Something must be wrong! The small helicopter was still circling the area. Has he seen something? Sergeant Ton's stomach tightened as he heard the pop and hissing of a smoke can. Maybe the small ship was only marking his position, thought Sergeant Ton. Surely it wouldn't realize there were 32 men beneath the ground. Again his hopeful thoughts were broken abruptly by the sharp hammering of one of his men's assault rifles. The fools had fired on the small one!

Sergeant Ton knew what would follow, the big ship with its painted teeth would fire rockets and bullets into the area. He was still not deeply worried, however. If all of his men remained within their bunkers they would not be seriously hurt. He knew that the rockets could not pierce the heavy logs and layers of dirt. The helicopters would soon leave and since his battalion had placed the nearest soldiers 10 kilometers away, Sergeant Ton would have time to move to another part of the forest.

When the firing stopped, Sergeant Ton listened to see if any other helicopters had come; they had not. Carefully he emerged from his bunker to rally

his men and move them as fast as possible. He saw the holes left by the rockets. They had been close, but none of the bunkers he could see were badly damaged. There was still a yellow smoke can burning off to his right. The small helicopter must have marked the area again before he left. Sergeant Ton knew he must hurry to leave the area before the Americans reacted. Based on past experience, he figured he had about 30 to 40 minutes to get away from the area.

Suddenly a tremendous roar rocked the ground and Sergeant Ton was thrown down violently. Seconds later another explosion tossed the big trees around like feathers. Again and again the blasts hit until Sergeant Ton was bleeding from the nose and ears. The small helicopter came back. It circled for a minute, dropped another yellow smoke can, then left. Sergeant Ton got up and ran as fast as he could away from the smoke. As he ran he saw the huge holes and demolished bunkers his men had been in. He heard a new sound, like a great roaring wind, then felt the fierce heat. Napalm! He kept running until he found a tunnel he remembered seeing that was very deep. He crawled as far as he could and wept. His wounds hurt him very much, and in his mind he could still hear the cries of his men, feel the concussion, and see them being flung about like dolls.

Sergeant Ton knew that he had failed in his mission and that he was seriously hurt. When he heard a voice from outside asking him to come out he did not resist. He could not remember when the Americans had acted so fast. He could not understand how he and his men had been located, bombed, and the survivors captured in such a short space of time.

Sergeant Ton's troubles were caused by one thing: the teamwork of the Red, White, and Blue Team. The team is composed of an Air Cavalry scout team, the Red and White, and an Air Force Forward Air Controller, the Blue. This highly effective group evolved from the informal cooperation between pilots, as did many of the other combat-proven concepts used in Vietnam.

The large area of operations consisting of jungle and rubber plantations, the strength of the enemy, and the small number of troops available dictated an economy of force mission to the 3d Brigade, 25th Infantry Division. It also provided fertile ground for the growth of the FAC-Scout Team concept. The scout teams were frustrated by their inability to engage decisively what they had located, and the Forward Air Controllers were having difficulty in locating targets precisely for destruction. By combining and coordinating efforts, both problems were solved. The initial missions proved so successful that the concept was accepted as an effective arrangement to eliminate enemy targets over a wide area without tying down the limited ground forces.

The basic concept is simple—the coordinated action by a scout team and a Forward Air Controller to accomplish the same goals of finding, fixing and destroying the enemy. Three common methods used to accomplish the goals are:

- The entire team working the same target area. This method is normally used when the probability of enemy contact is high and reaction time is critical. The covering gunship will control his team on a UHF frequency which the FAC will monitor. The FAC and gunship will communicate on a VHF frequency to keep unnecessary traffic on the UHF to a minimum. The gunship and FAC will remain in contact with the brigade or the local ground commander on a common FM frequency. Since the FAC is current with the situation and area, he can react rapidly to targets acquired or enemy action against the scout ship.
- When the enemy situation is doubtful and there is a large area to be reconnoitered, the FAC and the scout team will cover separate areas concurrently. Communications between the team would be essentially the same except that the FAC would probably not be able to monitor the gunship-scout frequency. The FAC and gunship would be on a common frequency; either would be able to call for assistance from the other.
- Either the FAC or the scout team is flying while the other is at base camp standing by. This method would be used when the enemy activity is stagnant or air resources are limited. The element on the ground will be contacted through the Tactical Operations Center if the element aloft requests assistance.

When we compare the capabilities and limitations of the FAC and the scout team we find that they are complementary; the strengths of one compensate for the weaknesses of the other. (See Figure 1.)

To clarify the areas of responsibility between the scout team, the FAC, and the ground commander we will follow a hypothetical mission and see where each member of the team fits.

A probable enemy base area has been located by division G2 within the brigade area. It is suspected that a company-size unit now occupies the area.

The brigade commander decides to use the Red, White and Blue Team to locate and engage the base area.

The commander and his staff are responsible for assigning the mission, clearing the target area for engagement, coordinating other fire support in the area, and indicating friendly troop locations. The team would be briefed by the S2 and S3 on the target and given any other information that is necessary. If time allows, the air strike would be requested as a preplanned strike; if not, the air strike would be requested as an immediate through Air Force channels. The use of an air strike will ultimately be based upon the recommendation of the commander.

Once the team has been briefed by the staff, the scout team pilots and the Forward Air Controller will coordinate the details of the mission. The frequencies, call signs, flight altitudes, and the manner in which the target area will be worked would be decided before take off. Because of the nature of the target area, the team will work concurrently. The scout team leader will control his ship's actions directly. All of the scout's observations will be monitored by the FAC giving him an accurate picture of the target.

When the target has been covered thoroughly enough for the FAC to employ an airstrike, he will request the air strike to come on station. The prestrike briefing and the actual emplacement of the air strike is the FAC's responsibility. He may request the assistance of the scout team to perform damage assessments and mark adjustments during the air strike, or the scout team may hold away or refuel during the strike so it will be available for post strike assessment.

When the air strike has been completed, the scout team normally returns to the target to provide the FAC and the ground commander with accurate and immediate intelligence on the target. With this information the FAC and ground commander may make decisions for further target engagement.

If the target is small enough, the Aero Rifle Platoon from the Air Cavalry Troop may be employed for a ground sweep of the area. The common frequency, intimate knowledge of tactics, and knowledge of the target will enable the scout team to assist rapidly and accurately or to control the employment of the Aero Rifle Platoon under the protective umbrella of the FAC and his link to the fighter-bombers.

The success of the Red, White and Blue Team depends upon three important rules which must be followed:

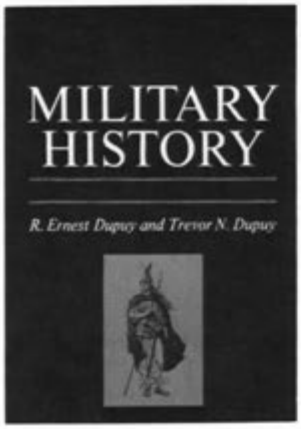
- Personal cooperation and coordination between the FAC and the pilots of the scout team. Each member must work and cooperate to achieve the common goal and respect each other's duties and responsibilities. Interservice rivalry has no place in the air over a hot target.
- Close and continuous coordination between the team and the ground commanders and their staffs. The interchange of information is critical to insure that the air power available is used in the best possible way and that troop safety is guaranteed.
- Thorough knowledge of each team member's capabilities and limitations. With this knowledge, misunderstandings can be avoided, the team will operate more efficiently, and with less trouble.

The success of the concept will give the commander the following benefits:

- Rapid and effective reaction to targets of opportunity.
- Accurate and efficient use of air power.
- Economy of force.
- Ability to inflict severe damage on the enemy with a minimum risk to ground forces.
- Reconnaissance with a punch over a wide area.

This concept is simple to implement, flexible enough to fit many situations, and produces tremendous results. It deserves serious consideration by any commander desiring to improve the use of his available air assets. Red, white, and blue may be 4th of July colors, but the team by the same name will deliver a much bigger bang than any firecracker—and with less risk.

CAPTAIN WILLIAM V. CHIARAMONTE, Armor, attended New Mexico Military Institute and was graduated from the University of Colorado in 1965. He completed the Armor Officer Basic Course the same year and was assigned to the 3d Armored Cavalry Regiment, where he served as a platoon leader and troop executive officer. After a tour at Fort Lewis, Washington, he was graduated from flight training and was assigned as operations officer and areo weapons platoon leader for D Troop (Air), 3d Squadron, 4th Cavalry in Vietnam.



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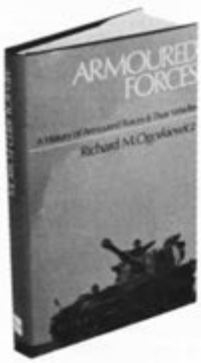

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From The Armor Branch Chief...

General Bruce C. Clarke recently told us an illustrative story about General Omar Bradley, the former Chief of Staff. General Bradley, while being briefed on the Post World War II Army, received a proposal from his G1 that enlisted ranks include a master sergeant, a sergeant first class and a sergeant second class. At that point General Bradley interrupted his G1 saying that as long as he was Chief of Staff, there would be no "second class" sergeant in the United States Army. Thus, he emphasized the importance of military titles both to the bearer and to others.

In Armor Branch, we identify people by name and title, not number. Our personal attention is directed toward the welfare of the individual, and of the Army, through professional development and care of our lieutenants, captains, majors, lieutenant colonels, and colonels, as they work with and lead our splendid troops.

We of Armor should not lower our professional standards nor diminish the dignity of our officers, noncommissioned officers and soldiers by calling them O1, E5, E3 and so forth. Lieutenant, sergeant and even PFC are proud military titles won by demonstrated merit.

In Armor, we are each somebody important—not a number. We should leave the numbers game to pay tables of organization and related computer data. Help put more of the "P" in pride. Let's address each other by our proper titles.

WHERE WE STAND TODAY

Armor's assigned strength is no longer on the rise. We reached a peak strength of 10,230 officers during FY 70; today we still have about 10,000 officers on active duty. This is about 95 percent of our authorization. By the end of FY 71, projected assigned strength, as well as projected authorized strength, will be reduced. The reduction in assigned strength will be brought about primarily by bringing in fewer officers. While shortages presently exist in the grades of major and captain, by the end of FY 71, we do not anticipate a shortage in any grade, except for a minor shortage of captains.

PROFESSIONALS ALL

Armor officers, as do all others of the line, enter the service from one of four sources. Most Armor officers are now coming from the ROTC. The next most numerous group is from the United States Military Academy, followed by those from OCS. Fourth is the relatively small number who receive direct commissions. This differs from the situation during the last few years when our largest input was from OCS.

While the direct commissioning program remains in effect, only a very few highly qualified warrant officers receive direct commissions. The voluntary recall to active duty program, which was a source of procurement, has been terminated. A selective invitation program for the return to active duty of highly qualified officers who have been released from active duty is in effect. Officers considered under this program must have achieved an outstanding efficiency record while on active duty.

Each year, most Armor officers enter active duty in the reserve status. Only graduates of the US Military Academy, Distinguished Graduates of OCS and Distinguished Military Graduates of ROTC who accept a Regular Army commission, enter as Regular Army officers. Since the Regular Army is unable to meet the Army's world-wide commitments, the career reservist (voluntary indefinite service agreement) must augment the relatively small Regular Army. Armor currently has 36 percent Regular Army officers. This compares very favorably with the other branches and illustrates the magnitude of the contribution made by career reservists.

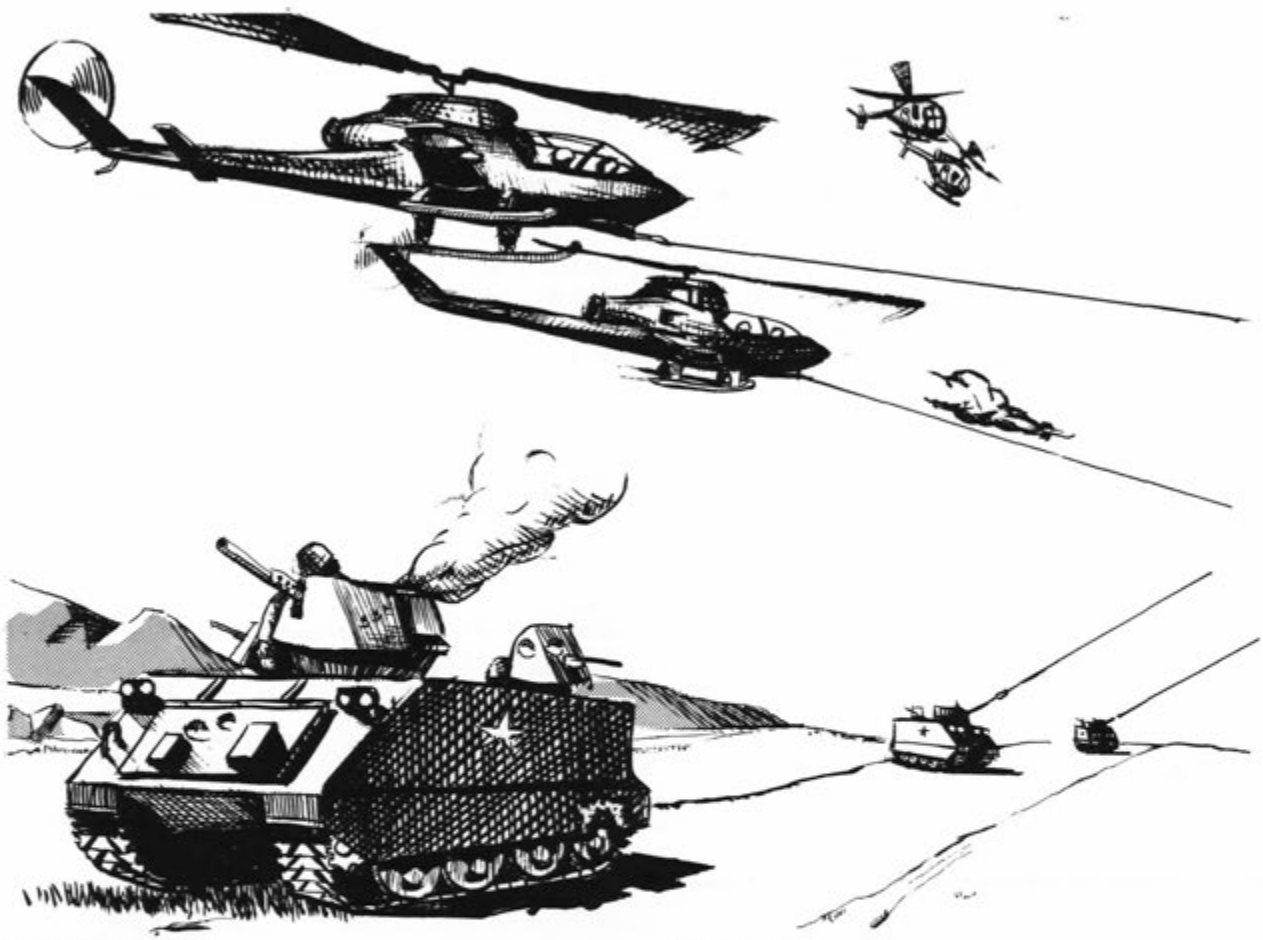
Armor Officers by Grade

GRADE	DEC 66	NOV 70
Colonel	97	97
Lt. Col.	74	76
Major	59	64
Captain	45	29
Lieutenant	23	15

Vacancies exist in most Regular Army year groups. Furthermore, lack of a year group vacancy does not by itself bar integration of qualified officers. Nonetheless, selection is, as it always was, on a highly competitive basis. The Regular Army Selection Board examines applications and chooses those officers who have demonstrated both a fine past performance and a strong potential for future professional progress.

How Would You Do It?

A PRESENTATION OF THE U.S. ARMY ARMOR SCHOOL



SITUATION

You are the platoon leader of the 2d Platoon, Troop A, 201st Armored Cavalry Squadron. You are given the mission of moving your platoon along Route 57 on a search and clear mission. In the morning briefing the troop commander tells you that a heavy scout team (2 light observation helicopters and 2 AH-1G Cobras) from your D Troop will be on call the entire day if you should need additional fire support.

Your platoon moves out at 0620. Approximately 10 miles down Route 57 the lead element of your platoon comes under heavy automatic weapons and recoilless rifle fire. The enemy fire appears to be coming from bunkers located on a ridge line about 200 meters off the road.

PROBLEM

The enemy fire has disabled the lead vehicle and wounded three men on board. In an effort to rescue the crew you find that your organic weapons cannot suppress the enemy gunfire. At this point you decide to call for the heavy scout team from D Troop to neutralize the enemy force.

How will you direct aerial fires to ensure accurate and quick support for your mission? *How would you do it?*

SOLUTION

As the ground observer you must ensure that the helicopters in the attack know the location of all friendly units in the vicinity of the target area.

WRITTEN BY CPT MARK L. HOLBROOK

ILLUSTRATED BY PFC DAVID PEDLER

HOW WOULD YOU DO IT?

SOLUTIONS (Continued)

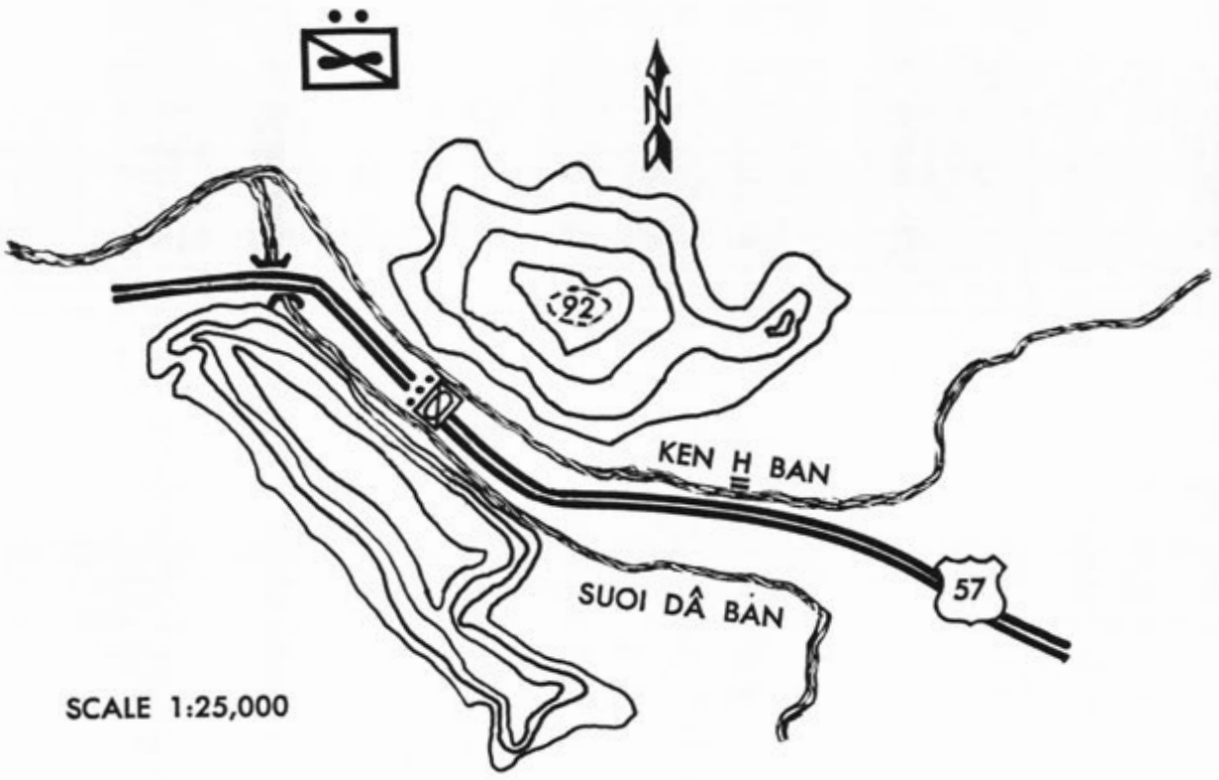
Friendly elements may be identified and located through the use of colored smoke or panels, or with the use of encoded coordinates. (In the briefing you should receive a code common to your unit and the aviation unit.)

After marking friendly units the observer must mark or reference the target by using the most accurate means available to him. If it is impossible to mark the target area the observer must give a direction and range from an easily distinguishable reference point. The clock method of direction may be used; however, both individuals must know how the clock is oriented. A more reliable method of directing an attack helicopter is with the use of a magnetic azimuth from a reference point to the target.

Range from the reference point to the target must be as accurate as possible to ensure a first round hit. Care must be taken to describe the target and weapons in use. This information will assist the pilot in finding his target and deciding how he will attack it.

If you require a specific type of weapon to be used in the target area, a request must be made to the pilot for that specific weapon or combination of weapons.

Adjustments of aerial fires are made using the observer-target (OT) line.



Example

Checkmate 21 this is Hawkeye 26. Friendly elements at XSRFLL. Target 225°, 1,200 m from hill 92. 30 NVA in bunker, am receiving intense small arms and recoilless rifle fire. Request rockets and minigun. Will adjust. Over.

SHORT, OVER, LOST or...TARGET

Some thoughts on

What's Happened to the Mechanized Infantry?

by Major William D. Florence

The article "What's Happened to the Mechanized Infantry?," by Lieutenant Colonel John P. Prillaman (*ARMOR* September-October 1970), focused some much needed emphasis on mechanized infantry. His point that we need to orient the training of our tank and mechanized infantry battalions toward *combined arms* battalion training is certainly valid in view of our practice of cross attachment.

Normally, we do this in our field training exercises to the extent possible, but we probably don't do it with the degree of skill that we should. For example, I doubt if the average infantry officer/task force commander considers himself very knowledgeable about the tactics and techniques of employing a tank company—yet he may have operational control of several.

I feel that Lieutenant Colonel Prillaman has wrongly emphasized that a mechanized infantry combat vehicle (MICV) still will be primarily a squad carrier and that the employment of mechanized infantry will not really change with its advent. This depends greatly on the amount of armor protection and the armament of the MICVs as finally developed.

Any mechanized infantry combat vehicle we develop is, by definition, not *primarily* a squad carrier. We already have a vehicle, the *M113*, which *is primarily* a squad carrier. The present APC carries an infantry cargo which is mentally geared and trained to fight mounted and, situation demanding, dismount a portion of the crew to accomplish the infantry functions. Even with our present carrier we rarely dismount the entire crew, usually leaving the driver and often a gunner on the caliber .50 machine-gun.

In effect, we *should* assume a tank-like role for the MICV because, like the tank, it is a combat vehicle. The MICV will have its capabilities and limitations which will be well known to its crewmen.

This is not a return to a light tank concept because all members of a tank crew are considered essential to operate the tank. The tank crew is not large enough to dismount a portion of its crew to conduct

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

infantry combat, nor are they trained for it. Do we run the risk that the MICV would then be improperly employed and that the MICV crew would attempt to fight mounted when it should dismount? Yes, we do. But let's keep in mind that there are countless examples in armored warfare where rapid, mounted action was decisive and the key to success. Even though losses were suffered, these were far lower than what would have been suffered if a slower, more deliberate, dismounted infantry-type action had been fought instead. This *"Blitzkrieg"* philosophy (proven again in the Israeli-Arab Seven Days War in 1967) is very much in evidence in the present German armored infantry *(Panzergrenadier)* units. They are equipped with a fighting vehicle and they intend to fight from it as much and as long as possible. This blitzkrieg philosophy, the mental attitude, is not present in our armored infantry units despite its proven success in the 31 years since 1939. We probably will never develop this philosophy, with its accompanying spirit, if we insist on emphasizing that a MICV is primarily a carrier of infantrymen and continue to address our armored infantry units as the "___th Infantry (Mechanized)." In other words, today even an armored infantry formation is primarily an infantry unit first and an armored/mechanized unit second—almost as a parenthetical afterthought. They will probably tend to fight that way too.

Turning now to the armament of the MICV, Lieutenant Colonel Prillaman questions the need for a weapon larger than the caliber .50 machinegun. He cites ammunition stowage problems that a rapid fire cannon will generate and the assumption of capabilities beyond the current APC. If the MICV is primarily designed as a squad carrier then it *may* be able to survive on the battlefield with only a caliber .50 machinegun. If the MICV is, in fact, a mechanized infantry *combat* vehicle, it needs heavier armament to survive. It will be where the action is and so must be able to engage not only enemy MICVs but a long list of other armored vehicles normally found in the forward combat area. An example is the *ZSU 23/4*, an armored, self-propelled, quad 23mm "flak panzer" often employed in a dual role, well forward. A MICV armed with only a caliber .50 machinegun could not compete with this and many other more heavily armed Soviet armored vehicles.

An appreciation of the density of Soviet armored vehicles together with Soviet emphasis on the meeting engagement and maintaining an extremely fluid situation suggests that our MICV will probably *frequently* encounter enemy MICVs and other armored vehicles. Here I must disagree with Lieutenant Colonel Prillaman where he indicated that any capability our MICV has in this regard should

In effect, we should assume a tank-like role for the MICV because, like the tank, it is a combat vehicle.

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. . . it is extremely dangerous to design our new equipment to fit an existing (and long ago outmoded) doctrine which was itself a direct result of equipment developed decades ago.

The new Soviet MICV seems to indicate that rigid branch polarization in the Soviet Army does not interfere with the design of what is felt to be the winning combination.

. . . we don't need Infantry or Armor branch experts—we need a small group of highly qualified, well read military men who are thoroughly knowledgeable in modern warfare.

be viewed as a bonus capability. The capability to *engage, compete* and *survive* in these encounters should not be considered a bonus capability. Certainly, this represents a more daily required capability than the capability to swim. Yet despite the associated limitations due to approach gradient, current, etc, which often prevent any utilization of this capability we still seem to insist that our MICV must be able to swim.

Even if we think that MICV versus MICV combat might be only *fairly* frequent, we should still take a look at what we would be up against. In 1967 the Soviets introduced their new MICV which is armed with a 76mm short-recoil gun plus a *Sagger* antitank missile, and has a crew of 11 men. This means that the Soviet squad has a piece of equipment with comparable, if not greater, firepower than our main battle tank of World War II. In effect, it is a tank, but with a crew large enough, and trained, to fight as dismounted infantry when and if required.

The point to be made here is that it is extremely dangerous to design our new equipment to fit an existing (and long ago outmoded) doctrine which was itself a direct result of equipment developed decades ago. It is even *more* dangerous to formulate our equipment design requirements from the European battlefield out of context. This is the context with regard to enemy equipment and doctrine, in which our equipment will be forced to operate.

The new Soviet MICV seems to indicate that rigid branch polarization in the Soviet army does not interfere with the design of what is felt to be the winning combination. That they have done this without a merger of their infantry and armor arms tends to indicate how thoroughly they understand the principles of the blitzkrieg and the requirements of modern mobile warfare. Hopefully, the design of our MICV will reflect as thorough an understanding of the nature of any future war and what will be required to compete on the battlefield. In this regard, I question who should have proponency in developing the MICV. It seems to me that we don't need Infantry of Armor branch experts—we need a small group of highly qualified, well read military men who are thoroughly knowledgeable in modern warfare to include, for example, West German *Panzergrenadier* doctrine and equipment and Soviet doctrine and equipment. How many members of the current MICV design team are professionals, or experts, in this sense?

Lieutenant Colonel Prillaman is right in his comment that all too scant attention has been paid to mechanized infantry by other branches. We simply must subordinate our narrow branch missions to the *combined arms* mission in the development of a MICV. The Soviets have done it and so have the Germans. The Bundeswehr, incidently, has had since its activation in 1956 a special office responsible for the doctrine and equipment of the *Kampftruppen* (combat troops). The two branches—Armor and Infantry—which share the same mission "to close with and destroy the enemy" are considered the *Kampftruppen.* The results and merits of this approach are reflected in the Bundeswehr's well defined and dynamic *Panzergrenadier* doctrine and its excellent MICV, the *Marder.* (See *ARMOR* January-February 1970.) Our Combat Developments Command, which has a similar responsibility and function, simply perpetuates our branch-oriented thinking by subdividing into a CDC Armor and a CDC Infantry Agency.

I think that once we have a good MICV in our hands we will see many changes in our thinking concerning the employment and role of armored infantry in comparison to today's infantry (mechanized). These changes in thinking will probably generate a new training emphasis and probably a new armored infantry *(Panzergrenadier)* spirit.

We may never again have to ask, "What's Happened to Mechanized Infantry?"

MAJOR WILLIAM E. FLORENCE, Infantry, a 1960 graduate of the US Military Academy, is currently assigned to the G3 Section of Headquarters, Central Army Group in Germany.

ARMOR INNOVATIONS CENTER

AOAC USES MAP MANEUVER BOARD

Here lie the bones of Captain Blight.
An Alumnus of this institution.
He died in his very first fight,
Applying the School Solution.

Armor Officer Advanced Course students are very familiar with these words, for they reflect the views of many students in attendance at the Armor School. However, the students are now provided the opportunity to express themselves freely when applying the tactical principles on the field of battle.

The Brigade Map Maneuver, a new unit of instruction presented to Armor Officer Advanced Course students, is a free play exercise pitting the forces of two opposing brigades against each other in a hypothetical war conducted within the United States. Previously, the Armored Brigade Command Post Exercise (CPX) placed the students in a war on a fictitious island with completely canned and controlled results. Although this provided the students with the opportunity to apply the principles and techniques they had learned, the CPX did not adequately challenge the students innovative abilities. The Map Maneuver consists of 35 hours of practical exercise during which not only tests the tactical abilities and knowledge of the students, but allows them to see the results of the actions they take through the success or failure of their schemes of maneuver against an opposing unit.

Simulated newscasts on radio and TV explain the action of enemy forces as they perform a two pronged assault movement across the United States mainland. The use of TV tapes was lauded by students as a refreshing and stimulating manner of preparing them for the instruction. The realism achieved was second only to actual combat newsreels prepared by professional broadcast corporations.

The end result of the Map Maneuver is that the students are provided with an opportunity to apply all the fundamentals received during the course, in situations as close as possible to those found in the field. Additionally, as pointed out by the director of the Command and Staff Department, Colonel Kenneth R. Lamison, "The students will go away

from the school with sufficient background material and knowledge, to be able to succesfully establish Command Post Exercises or similar training vehicles in their own units, and increasingly important capability in this time of limited assets and funds."

ROTC CADETS INTERESTED IN ARMOR?

ROTC cadets interested in assignment to the Armor Branch can enroll in the Armor Officer Basic Correspondence Course, with the permission of their professor of military science.

While it does not assure assignment to Armor, the course gives the cadet basic Armor concepts and doctrines to help him evaluate his branch choice. Also, if he is later assigned to Armor, the background will prove helpful when he attends the Armor Officer Basic Course.

Cadets who would like more information about the course can write the US Army Armor School, ATTN: DNRI, Fort Knox, Kentucky 40121.

TEACHING RACE RELATIONS

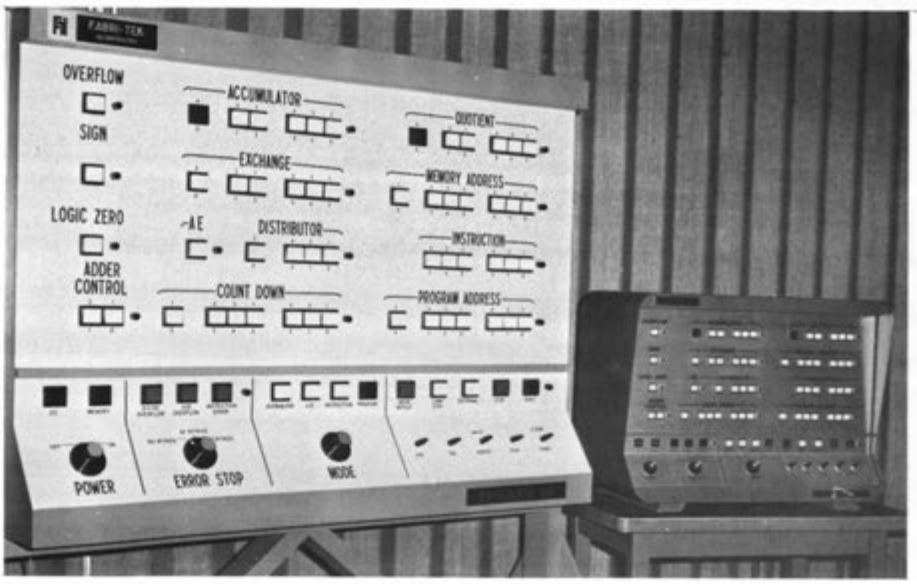
Leadership problems of race relations form the core of a new unit of instruction offered by the General Subjects Department to all AOAC, AOB, and ANCO courses.

Presentations cover contribution made to military and American history by black and other minority groups; an insight to the impact slavery had on the individual and the family structure; some of the most prevalent complaints of black and other minority soldiers, and indicators of possible racial unrest and possible methods of correction. The last two hours of the class are an open discussion of video tape situations of actual racially oriented incidents. This portion of the class is designed to afford the students an opportunity to exchange views on a sensitive topic and promote general discussion and comparisons of possible courses of action.

Material used was developed by the US Army Infantry School.

BI-TRAN SIX COMPUTER MOCK-UP

Because of the impact computer applications are expected to have on the Army in the future, the instruction on Automatic Data Processing has been expanded. Subjects such as computer functions and computer programming will be taught with the aid of the Bi-Tran Six Computer, a product of Fabric-Tek Incorporated of Minneapolis, Minnesota. As an additional aid to compensate for the computer's compact design, a considerably larger mock-up of the computer display panel was constructed for the US Army Armor School, by the First US Army Training Aids Center. Internal wiring, designed by Mr. John Werkman, of the Communication Department, enables the mock-up to simultaneously duplicate the exact operation of the Bi-Tran Six Computer display panel. This combination of computer and enlarged display device provides each student in a large class, an opportunity to visually follow the step-by-step operations of the smaller computer, as the instructor demonstrates actual computer fuctions.



COOKS, RADIO OPERATORS TRAIN TOGETHER

To make their training more realistic, prospective cooks and radio operators recently added a seven-day field training exercise to their curriculum.

Both groups are members of the 6th Battalion (CST), and during the week in the field, the cooks prepare meals for both themselves and the radio operators.

Cooks use the *M48A1* kitchen tent, a mess truck or work in the open with the *M1937* and *M1959* field ranges. Special emphasis is placed on field sanitation and personal hygiene.

The Radio School, meanwhile, gets practice supporting the unit. The operators erect ground plane antennas, work 30 hours in net operations and practice skills of International Morse Code in addition to establishing communications between the base camp and garrison.

Both groups learn to work under blackout and hostile conditions.

STANO CLASS EXPANDED

The Armor School's instruction on Surveillance, Target Acquisition, and Night Observation (STANO) is being expanded to four hours. Initiated in mid-1970, the STANO instruction was taught with training aids. Later it became more oriented to hardware, which was presented in a "show-and-tell" atmosphere.

The instruction is now split between the Communications Department, which presents three hours of "hardware hands on" and the Command Staff Department, which discusses planning and employment of STANO during its one hour.

The instruction is meant to help tactical commanders close the intelligence gap by giving him information on the enemy, especially during times of reduced visibility.

EASY GAP OFFENSE RANGE

Basic trainees at Fort Knox have been receiving a new challenge in their training curriculum at Easy Gap Offensive Range. This close combat course, designed to familiarize the trainee with the basic concepts of fire and movement and cover to cover movement, has undergone considerable change.

Previously the men ran through a series of obstacles, simply following a gravel path from position to position. Running the course in this fashion, in reality only gave the men the opportunity to run, take up a firing position behind an obstacle, fire, and run again. Near the completion of the course he would throw a practice, fuzed grenade in the assault phase at a simulated enemy bunker.

Under the new operation, after moving into the bleachers for their briefing, receive a mission. They are presented a simulated tactical situation in which enemy machinegun bunkers are located to their front. This represents the final objective. Before encountering the bunker, the trainee is likely to detect and subsequently engage the enemy, represented by pop-up, quick-kill targets.

Accompanying each team consisting of two trainees is a team leader (company cadre or Committee Group NCO). The team leader gives the basic commands and guides and guides and controls the fire and movement of the students. The trainee must select a firing position of his own choosing, along with the best avenue of approach and means of movement to that position. He is instructed that it would be wise to stay off of such terrain features as paths and bridges because it is more likely that in an actual combat situation, such as Vietnam, such an area would be booby-trapped or possibly observed by an ambush patrol. Instead he should move along ditches and tall grass or any other natural obstacle which could conceal his movement

and provide him additional protection, in moving forward. Following the negotiation of the course, the trainees are critiqued on their performance by the team leader who accompanied them through the exercise.

In essence he puts to use all of the basic combat principles he has learned in his previous six weeks of training. He applies the fundamentals learned in Basic Rifle Marksmanship, individual tactical training, the proper method of throwing a hand grenade, and target detection.

SERVICING THE GAMMA GOAT

The *M561* "Gamma Goat," 6x6, 1¼-ton cargo truck was recently received by the Periodic Services Division of the Automotive Department to provide familiarization training to the Motor Officer course.

During a two-hour conference and demonstration, emphasis is placed on the maintenance and services of the *M561* that differ from other wheeled vehicles. The conference will cover the location, nomenclature, inspection points, and the maintenance requirements of the vehicle and its components. Comparisons will be made with the *M113A1* for power train components and the *M151A1* for suspension, steering, and braking components. Special emphasis is placed on new items such as the articulation system and the sealed brake units.

At the completion of the 100-minute conference the students are placed in two groups and given instruction on the live vehicle and a live engine and transmission training aid. This small group instruction gives the student an opportunity to view the vehicle's revolutionary design and to become familiar with the servicing points. Here such problem areas as torque specifications on power train components and lubrication points are discussed.

GRENADE LAUNCHER TECHNIQUES

The USAARM's Weapons Department is now presenting instruction on the newest small arm in the weapon inventory, the *M203*, 40mm Grenade Launcher.

Although specifically designed as an infantry weapon, it provides an extremely important addition to the firepower of the reconnaissance crewman. The *M203* is mounted under the barrel of the *M16A1* Rifle, providing one man with all the firepower of the *M79* Grenade Launcher, but with the added capabilities of the *M16A1* Rifle. This over and under arrangement combines the best features of both the *M79* and the *M16A1* Rifle without sacrificing accuracy and actually increases the practical rates of fire for both weapons. The increased rate of fire for 40mm ammunition is the result of the pump-type action of the *M203* which facilitates loading and features automatic extraction and ejection, replacing the manual operations required by the *M79*. The trained gunner, with minimum practice, can become highly proficient. The increased practical rate of fire for the *M16A1* is the result of issuing 30-round capacity magazines to replace the 20-round capacity magazine presently in use. This improvement reduces by 50 percent the number of magazine changes required to fire a given amount of ammunition.

The *M203* fires the same ammunition as the *M79* Grenade Launcher. Therefore, the grenadier/rifleman requires no additional training to recognize and use the available ammunition.

With the addition of the *M16A1/M203* combination to the Armored Command and Reconnaissance vehicle weaponry, the Armored Cavalry trooper has more firepower available while reducing the space required to provide this firepower.

TESTING HELICOPTERS

Light observation helicopters have given the tactical commander in Vietnam the capability to perform visual reconnaissance over terrain often inaccessible to troops on the ground and over areas too vast to be covered by ground troops. Lessons learned from the use of these observation helicopters in Vietnam stimulated a recent study of their use in the future, conducted by the Studies Division of the US Army Combat Developments Command Armor Agency.

The study, "Light Observation Helicopter Armament Requirements and Loss Rates" sought answers to the following questions:

- Can the survivability of the light observation helicopter be enhanced without degrading its demonstrated effectiveness?
- Can the light observation helicopter perform its mission in the face of an enemy with a sophisticated antiaircraft weapons system and tactical air superiority?
- What armament and sensory equipment should be mounted on the light observation helicopter?

Findings will be used in part as the basis for more complex studies into the optimum armament and sensory equipment for all army helicopters and for studies into the best organizations and

methods of employment to insure maximum effectiveness with minimum losses.

Some exploratory data-collection work on this study was done during the recent "Operation Lone Ranger" conducted for CDC by its Experimentation Command (CDCEC) on Hunter Ligget Military Reservation, Ft. Ord, California. This was part of the Basic Attack Helicopter Team Experiment which is looking at the optimum "mix" of helicopters for certain tasks.

In "Lone Ranger" action started when the Battalion Commander was ordered to get his LOH team in the air to acquire an approaching enemy column. Each team in the experiment was given 30 minutes to search a 50-square-mile area to detect and identify the seven-vehicle column. One-, two- or four-helicopter teams were used with about 30 pilots participating. To keep the terrain unfamiliar, no crew flew a repeat mission over the same search area during the 35 trials.

Data compiled during this two-week side experiment is being analyzed as to frequencies of detection-identification (at varying degrees of correctness) and location (at varying degrees of accuracy.) LOH team data will be incorporated in the reports of the Basic Attack Helicopter Team Experiment.

ARMOR CORRESPONDENCE COURSE

Armor officers may now apply to the new Field Grade Officer Refresher Correspondence Course, initiated by the Nonresident Instruction Department.

Designed for officers who completed AOAC more than 30 months ago, it contains 153 credit hours which update previous instruction.

Those interested can receive a detailed description by writing the US Army Armor School, ATTN: DNRI, Fort Knox, Kentucky 40121. Materials will be sent within two weeks.

AMMD ADDS CHAPARRAL

The newest addition to the Army Maintenance Management Division is an *XM54* Chaparral Launching Station. The Chaparral is an infrared heat-seeking missile system designed to meet Army requirements for a forward area air defense weapon. It is a Navy-developed Sidewinder *1C* which has been modified for ground-to-air use, rather than air-to-air. It is expected to provide field commanders with low to medium altitude air defense in forward battle areas.

The launching station is assigned to the Chaparral/Vulcan Battalion (TOE 44-325G), which is organic to the Armored, Infantry and Mechanized Divisions. This battalion consists of a Headquarters and Headquarters Battery, two Vulcan Batteries and two Chaparral Batteries.

NEWS NOTES

ANNUAL CAMP MEETING

The Council On Abandoned Military Posts (CAMP), an historical association dedicated to seeing that former military posts no longer in use as such are not forgotten, will hold its Fifth Annual Assembly in Washington, D.C. 7 and 8 April 1971. Highlights tentatively planned include a tour of the Civil War forts ringing the Nation's capital and addresses by Mr. Robert C. Utley, the Chief Historian of the National Park Service and Brigadier General James L. Collins, Chief of Military History. Rounding out the meeting will be a seminar on military history research to be held at the Smithsonian Institution. Further details are available from Lieutenant Colonel Herbert M. Hart, USMC, 2606 South Dundee, Tampa, Florida 33609, the assembly officer-in-charge.

PREP SCHOOL SEEKS INFORMATION

Officials at the United States Military Academy Preparatory School at Fort Belvoir are seeking information about the school's early years. They are compiling a history of the school and need information in the form of memorabilia, reminiscences, copies of newspaper or magazine articles and photographs.

Anyone with information can contact either Lieutenant Colonel W. C. Cousland, the school's commandant, or Command Sergeant Major D. P. Brosnan, at the school, Fort Belvoir, Virginia, 22060.

The Tarpaulin

SELECTED FOR COLONEL AUS

*Indicates Secondary Zone

ARNET, Robert A . . . **BACHINSKI,** Stephen . . . **BECKWITH,** William J . . . **BECZKIEWICZ,** Peter . . . **BELL,** John E . . . **BROWN,** Dewey E . . . **BUTLER,** Lawrence E . . . ***CANEDY,** Charles E . . . **CARTER,** William G . . . ***COUSLAND,** Walter C . . . **CROMWELL,** Raymond B . . . **DAVIS,** Ernest J . . . **DUKE,** Lee E . . . **ESPER,** Donald . . . **FOSTER,** Thomas G. II . . . **GAUGER,** Daniel M . . . **GREGG,** Edmund F. Jr . . . **HAAS,** Richard J . . . **HADAWAY,** Joseph L . . . **HART,** William J. Jr . . . **HAUMERSEN,** John P . . . **HAUSER,** Ferdinand H . . . **HILTY,** Paul R. Jr . . . **HOAR,** William J . . . **ISLEY,** George H. Jr . . . **JACOBS,** Ernest F. Jr . . . **KNOTTS,** Noel D . . . **KROGH,** Richard V . . . ***LAWRENCE,** Richard D . . . **LYNCH,** Patrick H . . . **MAHAFFEE,** Joseph W . . . ***McGOWAN,** Robert S . . . **McLEAN,** Richard P . . . **MILLIMET,** Stanley . . . **MUSCARI,** Abraham F . . . ***OTIS,** Glenn K . . . **OTIS,** Paul H . . . **PAGEL,** Donald J . . . **PENDERGRASS,** Alva W . . . **PHILLIPS,** Charles D . . . **PHILLIPS,** James H. Jr . . . **PHILP,** Peter L . . . **PORTER,** Edward J . . . **REED,** James B . . . **RICHARDSON,** Philip . . . **RIGGS,** Theodore S. Jr . . . ***ROUSSE,** William C . . . **ROWE,** James W . . . **RUSSELL,** Albert L. Jr . . . ***SCHWEITZER,** Robert . . . ***SEIGLE,** John W . . . **SEVDY,** Lawrence M . . . ***SHEA,** John M . . . **SHERIDAN,** Stan R . . . **SHILLINGBURG,** John . . . **SMARR,** Albert W. Jr . . . **STAFFORD,** Mebane G . . . **TAUSCH,** Roland D . . . ***ULMER,** Walter F. Jr . . . **VANCE,** James W . . . **VETORT,** Herman J . . . **WETHERINGTON,** Andreul J . . . **WIARD,** Seth Jr . . . **WILLIAMS,** Robert S . . . **WOODLEY,** Thomas R . . . **WOODMAN,** Richard T . . . **WOODS,** Chester A. Of 103 Armor officers considered for the first time, 53 (51.5 percent) were selected. The Army-wide selection rate was 47.8 percent.

ADVANCED MANAGEMENT COURSE

COL WEBB, William L., Pitt University . . . **COL WHITEHEAD,** Ennis C, Harvard University.

ARMY WAR COLLEGE

LTC(P) ARNET, Robert A. . . . **LTC(P) BACHINSKI,** Stephen . . . **LTC BAHNSEN,** John C. Jr . . . **LTC BURNETT,** Clark A . . . **LTC DeCAMP,** William . . . **LTC HEALY,** Thomas F . . . **LTC MARTIN,** David C . . .

LTC(P) SINGLETARY, Albert . . . **LTC SMITH,** Douglas S . . . **LTC(P) STAFFORD,** Mebane G. . . . **LTC SUNELL,** Robert J . . . **LTC(P) TAUSCH,** Roland D . . . **LTC(P) WHITE,** Kenneth H. Jr. . . . **LTC(P) WOODMANSEE,** John W.

NATIONAL WAR COLLEGE

LTC BROWN, Frederick J. Jr. . . . **LTC DOYLE,** David K . . . **LTC SMITH,** Tommie G . . . **LTC WOOLEY,** Wilson C.

ICAF

LTC(P) BIRK, Elmer L. . . . **LTC(P) LYNCH,** Patrick H.

AIR WAR COLLEGE

LTC(P) HAUMERSEN, John P.

NAVAL WAR COLLEGE

LTC BROOKSHIRE, Grail L.

FRENCH ECOLE SUPERIEURRE DE GUERRE

LTC MITCHELL, Corwin A.

BRITISH IMPERIAL DEFENCE COLLEGE

COL QUINN, Thomas G.

CLASS 50, AFSC

MAJ BURLESON, Willard M. Jr . . . **MAJ CRITTENDEN,** Oliver H . . . **MAJ FRANKS,** Frederick M. Jr . . . **MAJ GASPARD,** Glaudis P. Jr . . . **MAJ KREMER,** Alvin W. Jr . . . **MAJ LUCK,** Gary E . . . **LTC MEAD,** Dana G . . . **MAJ NATALE,** Matthew M . . . **LTC SMITH,** James A.

CLASS 51, AFSC

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AOB 4-71: **CPT HAROLD WILSON** . . . AOB 5-71: **2LT PHILIP E. POKRYFKE** . . . AOAC 3-70, Distinguished Graduate: **CPT DAVID J. MURRAY** . . . Honor Graduates: **CPT JOHN E. GRIGGS, III, CPT JOHN D. HARRINGTON, CPT JOSEPH C. ARNOLD, CPT DAVID O. TREADWELL** (who also won an Armor Association writing award) . . . **2d Armd Div** won 1970 DA Safety Award of Honor for Noncombat Area Division. Hell on Wheels also won same award in 1963.

AND SO FORTH

2d Bn, 34th Armor (LTC Don M. Stotser) formerly with 24th Inf Div in Vietnam was inactivated but is now included among units of the newly redesignated 4th Inf Div(M) at Fort Carson. Ivy Division's other Armor units are **4th Sqdn, 12th Cav** (LTC Anthony M. Solberg) and **4th Bn, 70th Armor** (LTC Zachery Whaley) both transferred from inactivated 5th Inf Div(M) . . . **7th Bn, 6th Inf, 2d Armd Div** (LTC Ira W. Black) was inactivated as **1st Bn, 50th Inf** (LTC Charles D. Utzman) returned to Hell on Wheels from Vietnam tour with the 173d Abn Bde. 1/50 Inf previously served with 2d Armd Div at Fort Hood from 1957 until 1968.

When **Secretary of the Army Stanley R. Resor** passed the five years and six months anniversary of service in January, he became the Secretary of the Army with the longest term of office. Only five Secretaries of War, as the offices was known from 1789 to 1947, served for longer terms. These were Henry Dearborn, 1801-1809; John C. Calhoun, 1817-1835; Edwin M. Stanton, 1862-1868; William W. Belknap, 1869-1876; and Henry L. Stimson, 1911-1913 and 1940-1945. Secretary Resor served as a field artillery officer in the 10th Armored Division during World War II.

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FROM THE BOOKSHELF

BANNER OF PEOPLE'S WAR: THE PARTY'S MILITARY LINE

by General Vo Nguyen Giap. Praeger. 1970. 118 pp. $5.50.

General Vo Nguyen Giap, North Vietnam's military leader and architect of victory over the French, has again issued some of his periodic strategic analysis of the Vietnam War. These pronouncements usually herald changes in North Vietnamese and Viet Cong strategy and thus have more than passing importance to American and South Vietnamese leaders, who should study them very closely. We Americans need pay close attention to this new book, which is really a consolidation of several articles published by Giap in North Vietnamese periodicals during 1969-70.

The English Edition published by Praeger has a preface by Jean Lacouture, and an introduction by Georges Boudarel, both Frenchmen with considerable experience with and knowledge of Vietnam, its history and its leadership. Both can and do provide valuable insights on Giap and his strategic thinking. Unfortunately, both have become apologists for Giap and the North Vietnamese cause, and neither has really first hand knowledge of the current political and military situation, as least, in South Vietnam. Thus, both demonstrate a clear tendency to accept at face value the great amount of propaganda that Giap mixes with the meat of his writings. For example, Boudarel correctly assesses that for Giap

> . . . victory is not to push the Americans into the sea but to destroy their plan to Vietnamese the war. One salient of his strategy is aimed at the cities; the other two remain directed toward the populous rural areas and the vast operational zone of the mountains.

However he goes on to say:

> Even if certain types of operations are likely to be abandoned . . . we would be deluding ourselves to forsee any decrease in the military action of the Democratic Republic of Vietnam and the Provisional Revolutionary Government of South Vietnam, since their position has been strengthened by the strategic blow delivered against the Pentagon during the Tet offensive of 1968. Although the tactical success of that operation is debatable, there is no doubt that the process of American withdrawal originated then, and that it operates in favor of the insurrection. Moreover, the discontinuation of the bombing of the North creates an essential condition for the conduct of protracted war; both the North and the South can increase the military potential of their revolutionary forces. . . .

This rosey picture of the North Vietnamese and Viet Cong situations is just not borne out of the facts. While the 1968 Tet Offensive was a considerable success in the United States and World arenas, this has been more than offset by the fact that it was an absolute disaster in South Vietnam. It will take years to replace the veteral political and military cadres lost. There has been no indication that the enemy has been able to rebuild the face and respect it lost during Tet. As a matter of fact, in South Vietnam both the North Vietnamese and Viet Cong have committed blunder after blunder since Tet, and they are still on the downhill slide. Faced with the increasing successes of Vietnamization, it is unlikely that they have the capability to do the sort of things that Boudarel and Giat predict.

Nevertheless, the propaganda content of Giap's writing in no way detracts from its value. One always has to read between Giap's propaganda lines. That is what makes it such tough reading—nothing to curl up with in front of a fire on a cold, winter night. One has to compare what he says now with what he said previously in *Big Victory, Great Task* and *People's War People's Army*. Giap's strategy, like Mao's, follows certain revolutionary principles, but it evolves with the situation. To detect this evolution, it is necessary to see where the changes of emphasis are.

As Georges Boudarel says, the North Vietnamese obviously intend to pursue the struggle—which is a surprise to nobody. However, perhaps not so obviously, they intend to place renewed emphasis on urban areas and support by the Communist World.

Curiously, Giap places far less emphasis then heretofore on the Indochinese War with the French and much more on the World War II period which culminated in what the North Vietnamese call the "August Revolution of 1945" to seize the administration of the country. Giap stresses that the August Revolution of 1945 "was a general uprising of the entire population" in which the "revolutionary masses under the Party's leadership arose as one in the cities and the rural areas, in both the north and south" and "smashed the ruling yoke of the Japanese fascists and pro-Japanese administration . . . and founded the Democratic Republic of Vietnam (DRV) throughout the country."

He has obviously substituted the "general uprising" for the "general offensive" as Phase III of the revolutionary war strategy. It is an interesting change and provides a good hint as to what the North Vietnamese have in mind for South Vietnam. Of course, the key point where I part ways with both Giap and Boudarel is the likelihood for the strategy's success.

The book is valuable reading, and a fine basis upon which to draw your own conclusions. COL JOHN J. MCCUEN, USAWC.

The reviewer, a member of the faculty of the US Army War College, is the author of the widely read book The Art of Counter Revolutionary War.

PROBLEMS OF MODERN STRATEGY

Published by the Institute of Strategic Studies. Praeger. 1970. 217 pp. $7.50.

This book belongs on the shelf of every officer who aspires to, or foresees, Pentagon duty. It is a "must read" item for any officer who is assigned to an "active" desk and it is highly recommended reading for all professional officers.

A relatively short book, it is a revision of papers presented by nine authorities at the Oxford Meeting of the Institute for Strategic Studies in 1968. The essays completely cover the various strands of strategic thought from 1945 to that date; even the article entitled "The Classical Strategists" is focused not on Clausewitz but on Liddell Hart, Vanniver Bush, Bernard Brodie, Robert Osgood, Henry Kissinger, and many other of the giants of the post-World War II period.

The essays fit together like blocks in a tank track, excepting only Professor Boulding's brief excursion regarding modern methods of behaviorial research into international relations problems. Ignoring this non-substantive chapter, the book is of the highest value because of its sponsorship by the prestigious Institute for Strategic Studies, its authorship by six strategic theorists from France, England, Germany, and Australia, and its comprehensiveness in examining all aspects of the new factors of nuclear war, deterrence, reappraisal of limited war and the strategic implications of revolutionary war. The objectivity of the presentation by these diverse authors gives rise to a dust jacket claim that the "mold of the great classical strategists has been broken." The claim may be correct to the extent that these modern authors are taking account of modern weaponry and the new international balances.

This book is a potential text at the US Army War College. The only additional requirement to round out a complete course in strategy is more treatment of the specific current strategies of the main powers. COL J.G.K. MILLER, JR. USAWC.

THE SUPREME COMMANDER: The War Years of General Dwight D. Eisenhower

by Stephen E. Ambrose. Doubleday. 1970, 732 pp., glossary, index, maps. $10.

The author, a former associate editor of the *War Papers of General Eisenhower,* has produced a very valuable contribution to the study of World War II. It contains an account of the general's activities from Pearl Harbor to VE Day as related to his contribution to defeating Nazi Germany.

In the very beginning of the book, it is obvious that General George Marshall considered Eisenhower as his alter ego both while the latter served in the Pentagon and later while in Europe and North Africa. Also, the deep respect toward Marshall by Eisenhower during this period is evident. Such mutual respect continued throughout the war.

The main theme of the book is the continuous problem that Eisenhower had in maintaining military unity among the Western Allies during the war in Europe. Throughout the period 1942-1945 Eisenhower was plagued with directing his energies to correcting activities, although related to the war, outside of actual military operations. Eisenhower was one of the few that had patience and understanding with De Gaulle. Despite Roosevelt's stubborn opposition to the French general, Eisenhower was able to reach some sort of a mutual understanding and working relationship with the French

leader. The British Chief of the Imperial General Staff, General Alan Brooke's continuing prejudice against Americans—especially Eisenhower—did not contribute to the war effort nor did Montgomery's failure to perform in a manner satisfactory to many in SHAEF. Disagreements with Churchill added to factors which detracted from the tasks at hand.

Eisenhower was patient and loyal to those under him when he believed they were of value to overall victory. This was especially true in the case of Patton. It is obvious that Eisenhower "stuck his neck out" for him but it was justified. In fact, Eisenhower was later criticized for not giving Patton more support when it was believed that Patton should have received the bulk of the gasoline, transport, and other supplies necessary to exploit his gains in late August 1944. Some observers contend it was a missed opportunity that may have cost the Western Allies a half million casualties and an earlier victory for them.

Eisenhower was determined to defeat Germany and end the war as soon as possible. In accomplishing this, he disregarded future potential political problems on the continent. These arose later with the Russians occupying the Balkans, Eastern Europe, and controlling the accesses to Berlin. The reasons for Eisenhower's adopting such a strategy are well explained.

Mr. Ambrose has produced a valuable description of Eisenhower which reveals the character of a man that is to be admired. It is a character which displayed humility, integrity, understanding, military know-how, and the ability to get along with others. Without such a character it would have been difficult for anyone to have accomplished what Eisenhower did in Europe during World War II. COL JAMES M. MCGARITY, USAWC.

THE MAKING OF ISRAEL'S ARMY.
by Yigal Allon. Universe Books. 1970. 270 pp. $8.95.

The title of this book speaks for itself. It is indeed the story of the creation and development of the Israeli Defence Army from the turn of the century to the present time. This extremely interesting and pertinent book is of value to military and civilian readers alike not only as an excellent addition to military history, but also as a source of general Middle Eastern political events during recent years. Authorship by the Deputy Prime Minister of Israel, who was also one of the participating military architects of this modern citizen's Army, gives the book added meaning and acceptability.

The book traces each stage of development of Israel's army from the early days of the Haganah and Palmach to the modern army of today. It vividly describes why Israel decided to concentrate on the development of the army as the primary defensive-offensive force supported by a hard striking air force rather than attempting to create a balanced army-navy-air force team the services of which neither individually nor collectively would have been capable of fulfilling Israel's military requirements.

While the author portrays the military situation

in the Middle East primarily from the Israeli viewpoint, he does mention the political problems which contributed to the escalating Arab-Israeli conflict culminating in the wars of 1948, 1956, and the Six Day War of 1967. The author clearly explains also the principles and application of leadership which is perhaps unique to the Israeli Army as well as the type training given its men, NCO's and officers. He goes into some detail about the influence of the British officer, Orde Wingate, on the effectiveness and traditions of the Israeli army.

One of the most interesting aspects of the book is a listing of the six contingencies under which, according to the author, Israel would be entitled and even obliged to go to war. Considered with alleged Arab objectives leading to the liquidation of Israel these explain the need for constant combat readiness on the part of the defense forces of Israel—"the nation with its back to a sea wall." Additionally, the author discusses the basic military-political positions which he believes the successful six-day war vindicated. These evolve around the concept that the Arab-Israel conflict is a clash between two conflicting social and political systems. Allon then seeks to justify the "anticipatory counter-attack" doctrine adopted by Israel for "the survival of this country and of the Jews as a nation."

Also included are descriptions of various specific battles and raids. The portion entitled Profile of a Commander is particularly interesting.

Overall, this book is recommended as a most interesting and vital portrayal of the successful application of those principles of war which have served so well to defend a hard pressed nation with a maximum of efficiency when a "second chance" most probably would not be in the offing. COL JOHN O. BATISTE, USAWC

MEN IN ARMS: A History of Warfare and its Interrelationships with Western Society
by Richard A. Preston and Sydney F. Wise. Praeger. 1970. 424 pp. $10.00.

Published in 1956, revised in 1962 and again in 1970, *Men in Arms* is a survey history of warfare from the Persians to the present, concentrating on major trends and developments. War is seen as a social institution in relationships between nations; its economic and political motivations are given equal treatment with its purely military aspects. This is a concise presentation with a valuable perspective of where the world stands today in the complex military-economic-political framework within which men and nations must make the difficult decisions which determine their destinies and the fate of the world. DAS.

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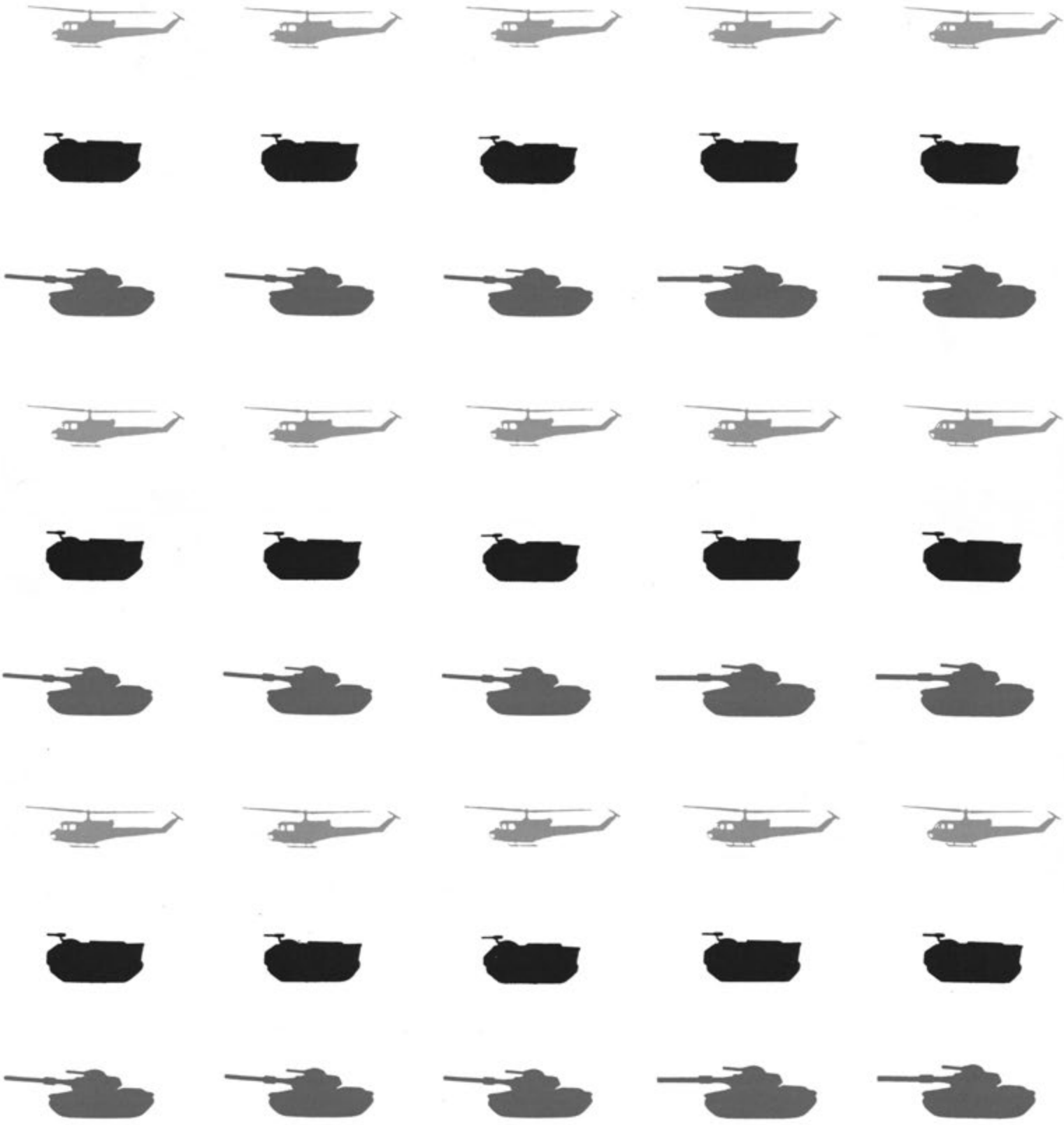

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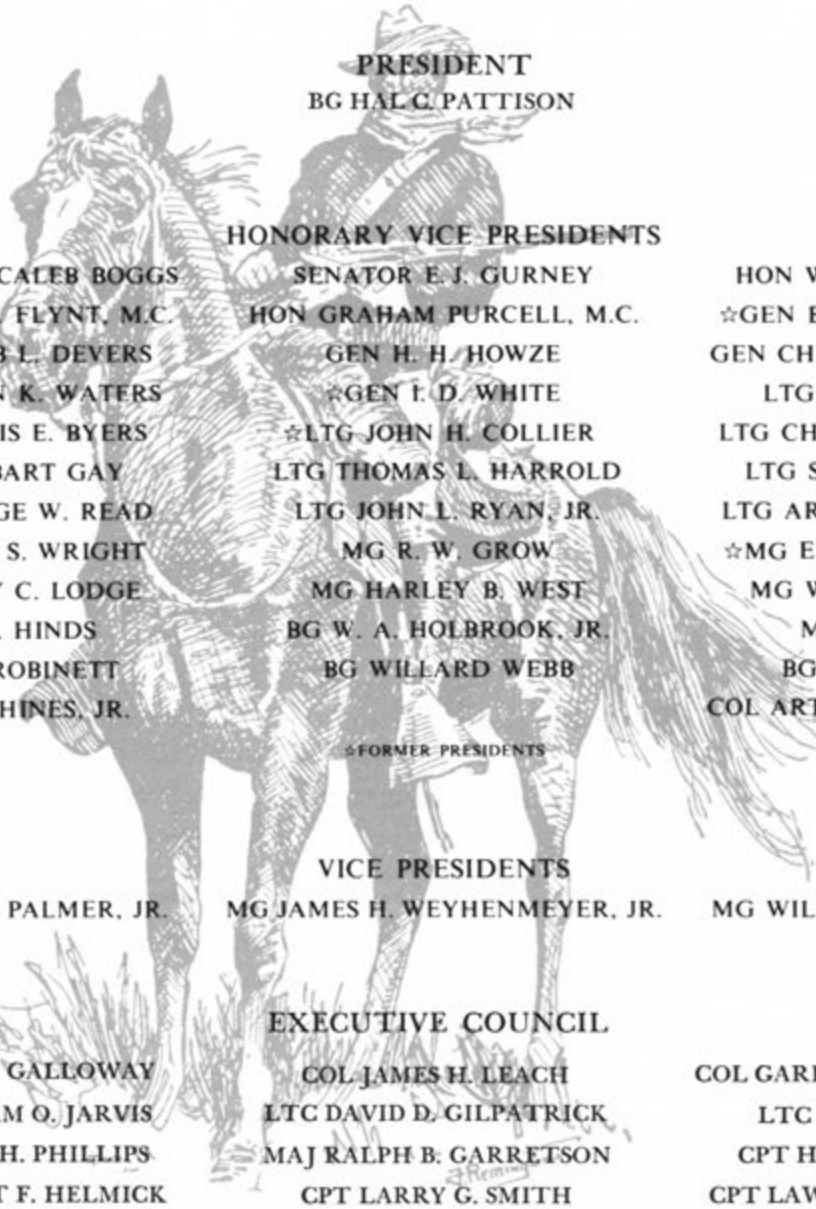

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ARMOR

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A NEW EDITOR

During the 1971 Annual Meeting, Major Robert E. Kelso will join the *ARMOR* Staff as Associate Editor. As many readers remember, this title is traditionally given to the officer assigned to be the next Secretary-Treasurer of the Armor Association and Editor of *ARMOR*.

He is uniquely qualified for the assignment having had well-rounded military and civilian experience. As an underage lad from Texas, he served in World War II combat in Europe where he was wounded. After the war was safely over, he was discharged for minority. Thereafter, he again served in the Regular Army as an NCO until he accepted a discharge in order to attend and graduate from the University of Tulsa with a BS degree and an ROTC commission in the Air Force Reserve.

After two years of active duty with the Air Force, he left the service to pursue successfully sales management for some five years. However, while doing so, his service affinity remained strong and he transferred to the Army Reserve where he served as an Armor lieutenant with a Reserve tank battalion until he entered on extended active duty in 1963.

Subsequently, he has been an instructor at both the Armor School and the Defense Information School. He has served in Vietnam as an information officer and as G3 advisor as well. He has been both S3 and executive officer of the 2d Squadron, 6th Cavalry. A 1970 CGSC graduate, he joins *ARMOR* from his second Vietnam tour.

THE REAL ARMOR PEOPLE

The tone of some of the letters bringing to our attention non-receipt of copies of *ARMOR*, etc. leads us to believe that the writers thereof, who are themselves usually Armor people, think we of the *ARMOR* Staff are a computer, or avaricious con artists interested solely in grabbing their money, or lazy sloths, or perhaps even something unspeakably worse.

Such is not the case. We six *ARMOR* staffers are people. And we are soldier people—Armor people. At present we are one colonel, one second lieutenant, one SP5 and three hopeful PFCs. Four of us are Regular Army, one is USAR on active duty and one AUS. In age we range from 22 to 47; in military service from less than one year to 27 years. All have a BA or BS; and one has an MBA. By academic discipline we are one journalist, one historian, two accountants, one businessman and one teacher. Three of us have moustaches and no one wears a toupee yet.

We like our jobs which are challenging and require more than a bit of ingenuity to accomplish. We like the readers; even the ones who complain. We especially like those who are paying readers. We positively adulate those who recruit more paying readers.

We are not clairvoyant. And, believe it or not, each of us sometimes makes a mistake. We are human. Write us human letters and see if we aren't.

The Editor

Beyond The Call . . .

The President of the United States of America authorized by Act of Congress, March 3, 1863, has awarded in the name of the Congress the Medal of Honor to

Captain Harold A. Fritz
United States Army

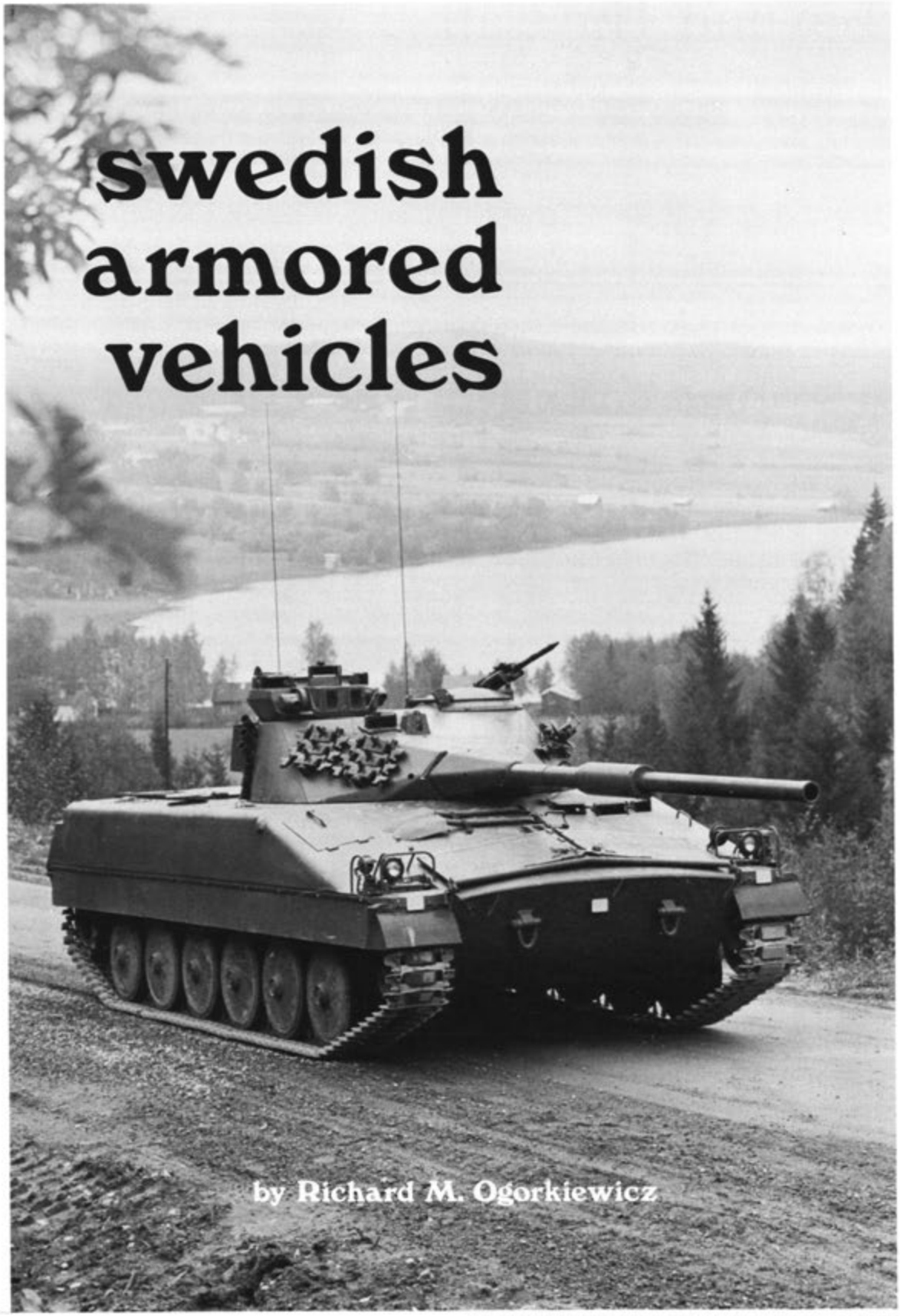
for conspicuous gallantry and intrepidity in action at the risk of his own life above and beyond the call of duty.

Captain (then First Lieutenant) Harold A. Fritz, Armor, United States Army, distinguished himself on 11 January 1969 while serving as a platoon leader with Troop A, 1st Squadron, 11th Armored Cavalry Regiment, near Quan Loi in Binh Long Province, Republic of Vietnam. Captain Fritz was leading his seven-vehicle armored column along Highway 13 to meet and escort a truck convoy when the column suddenly came under the intense cross fire from a reinforced enemy company deployed in ambush positions. In the initial attack, Captain Fritz' vehicle was hit and he was seriously wounded. Realizing that his platoon was completely surrounded, vastly outnumbered, and in danger of being overrun, Captain Fritz leaped to the top of his burning vehicle and directed the positioning of his remaining vehicles and men. With complete disregard for his own wounds and safety, he ran from vehicle to vehicle in complete view of enemy gunners in order to reposition his men, to improve the defenses, to assist the wounded, to distribute ammunition, to direct fire, and to provide encouragement to his men. When a strong enemy force assaulted the position and attempted to overrun the platoon, Captain Fritz manned a machine gun and through his exemplary action inspired his men to deliver intense and deadly fire which broke the assault and routed the attackers. Moments later a second enemy force advanced to within two meters of the position and threatened to overwhelm the defenders. Captain Fritz, armed only with a pistol and bayonet, led a small group of his men in a fierce and daring charge which routed the attackers and inflicted heavy casualties. When a relief force arrived, Captain Fritz saw that it was not deploying effectively against the enemy positions, and he moved through the heavy enemy fire to direct its deployment against the hostile positions. This deployment forced the enemy to abandon the ambush site and withdraw. Despite his wounds, Captain Fritz returned to his position, assisted his men, and refused medical attention until all of his wounded comrades had been treated and evacuated. The extraordinary courage and selflessness displayed by Captain Fritz, at the repeated risk of his own life above and beyond the call of duty, were in keeping with the highest traditions of the United States Army and reflect the greatest credit upon himself, his unit, and the Armed Forces.

★ ★ ★

Captain Harold A. Fritz, a member of the Armor Association Executive Council, was commissioned through Officer Candidate School at Fort Knox, Kentucky, in 1967. His first assignment was to Headquarters and Headquarters Troop, 6th Armored Cavalry Regiment at Fort Meade, Maryland. In January 1968, he was assigned to Troop D, 1st Squadron, 11th Armored Cavalry Regiment in Vietnam, and later to Troop A, to which he was attached when he was involved in the actions which resulted in the Medal of Honor. He has been stationed at Fort Lewis, Washington, with the 3d Armored Cavalry Regiment, since April 1969. In addition to the Medal of Honor, he holds the Silver Star, Bronze Star Medal with "V" Device and First Oak Leaf Cluster, and Purple Heart with First Oak Leaf Cluster. He was first elected to the Executive Council as a second lieutenant, in 1967, serving one year. He was reelected in 1970. Captain Fritz entered the service from Wisconsin.

swedish armored vehicles



by Richard M. Ogorkiewicz

PHOTOS COURTESY AB HAGGLUND & SONER, SWEDEN

At one time the northern region of Sweden would not have been considered suitable for the employment of armor. Much of it lies inside the Arctic Circle and in the summer, turns into marshland. Times have changed however. This is clearly shown by the development in Sweden of a new armored combat vehicle to support the special brigades organized for the defense of the northern territories, or Norrland, as well as regular Swedish infantry brigades.

The vehicle is the *IKV91*, which was revealed in prototype form in November 1970 at the Swedish Armored Center at Skövde. It was designed to fulfill a requirement for a highly mobile vehicle capable primarily of effective combat against hostile tanks. It is essentially a light tank. However, the initials IKV stand for *infanterikanonvagn*, or infantry gun vehicle, which is the designation given to it by the Swedish Army in keeping with its intended role of supporting the infantry brigades.

The requirement which led to the *IKV91* was issued by the Swedish Army in the mid-sixties. In response to this, three different Swedish companies submitted no less than 14 alternative designs. Evaluation of the competing designs reduced their number down to three from which the final choice was eventually made. The design which was chosen came, appropriately enough, from the world's northernmost manufacturer of armored vehicles, the AB Hagglund & Söner of Ornsköldsvik. As a result, in 1968 Hagglund was awarded a development contract. By the end of 1970 two protypes of the *IKV91* had been produced. Recently, the writer had the privilege of examining these and observing them in action.

Hagglund designed the *IKV91* drawing on its successful experience in the development of other light armored vehicles and in particular of the *Pbv302*, the amphibious armored personnel carrier which they have been producing for the Swedish Army since 1966. The design of the *IKV91* is, in fact, closely related to that of the *Pbv302*. Not surprisingly, it incorporates so far as possible automotive components which are commercially available or already produced for the *Pbv302*, or both. However, the hull of the *IKV91* is peculiar to it alone and so is its 3-man turret which mounts a 90mm gun.

The 90mm gun has been especially developed for the *IKV91* by the Bofors Company, world-famous for its naval and artillery weapons and more recently for the *S-tank*. It is a 54-caliber long, low-pressure gun which fires fin-stabilized shaped charge projectiles with a muzzle velocity of 2750 ft/sec. In addition to its HEAT projectiles, which are capable of penetrating the frontal armor of battle tanks, the 90mm gun is also provided with fin-stabilized high-explosive shells.

The advantage of the low-pressure gun is that, in spite of its 90mm size, it could be mounted in a vehicle weighing only 15 metric tons, or 33,000 pounds, combat loaded. It also affords a high degree of accuracy with fin-stabilized projectiles. In addition, the 90mm low-pressure gun offers the advantage of reduced flash, which makes the *IKV91* more difficult to spot. So too, it produces less obscuration because of its low muzzle pressure.

The effectiveness of the 90mm gun installed in the *IKV91* is greatly increased by the fire control system to which it is coupled. This not only increases the first round hit probability but also significantly reduces reaction time. This makes it possible for the *IKV91* to get the all-important first round off more quickly and to engage successive targets more rapidly.

The fire control system has been developed for Hagglund by Honeywell and incorporates an optical range finder, a number of sensors and a ballistic computer. The computer determines the superelevation required by the gun from information about the range to the target (which is usually fed automatically into it by the rangefinder or alternatively, manually by the gunner or the commander), information from the trunnion cant sensor and a number of manual inputs for nonstandard muzzle velocity, ambient conditions and cross wind. If the target is moving and the gunner is tracking it, the computer is fed additional information about the rate of turret traverse and the gun elevation from two sensors. This enables it to compute the lead angles. Servos convert the computer solution into a deflection of the gunner's line of sight. However, the gunner does not lose the target even when the lead angles and the superelevation are changing due to an automatic correction of his sight picture at the same time the tube is being aligned for a target hit.

The rangefinder, which is of the coincidence type and has a base of 65 centimeters is combined with a 10-power binocular and is mounted in the commander's rotating cupola. As a result, the commander can acquire a target and range without the gun pointing in the direction of the target. Then, by using a target designation button, the commander can swing the turret around at a high speed to align the gun and the gunner's sight with his optics. While the turret is swinging round the electrically powered cupola is counterrotating, which is one of its three modes of operation. Alternatively, it can be locked in align-

ment with the gun or released so that it can be turned by hand.

In addition to the 90mm gun, the *IKV90* is also armed with two 7.62mm machineguns. One is mounted coaxially with the gun in the usual way; but the other is externally mounted on a low loader's cupola which can be manually traversed through 360°. This eminently sensible arrangement means that the commander is not expected to reduce himself at any time to being a mere machinegunner and can, therefore, concentrate on his proper function, which is to command the vehicle.

Because the *IKV91* has to be relatively large it can carry a relatively great amount of ammunition, which makes for a sustained combat capability. In fact, it has stowage space for no fewer than 68 rounds of 90mm gun ammunition. Its large size has also made possible a large turret ring so that the turret is roomy. This is particularly advantageous when it comes to operation by crews wearing Arctic clothing. At the same time the turret is commendably low, so that the height of the *IKV91* from the ground to the turret roof is only about 85 inches and even to the top of the commander's cupola the overall height is a modest 95 inches. All this makes for a low vehicle silhouette and a more difficult target to hit. Yet, in spite of the low turret, the gun of the *IKV91* has the usual depression of 10 degrees. In addition to being low, the turret also has a very well profiled front from the ballistic point of view. The turret has no rear overhang. In this respect, it differs from the turrets of all recently built Western tanks but resembles Soviet tanks, whose designers have long managed to dispense with the overhang and thereby reduce their vulnerability at the cost of some turret unbalance.

The hull of the *IKV91* is conventional, with the driver at the left front and the engine and transmission compartment at the rear. However, as already indicated, the hull is relatively large for a light tank. Its overall length is, in fact, 252 inches and the overall width 119 inches.

One reason for the relatively large size of the *IKV91* is the need to have a large area of track in contact with the ground in relation to its weight, in order to reduce the ground pressure and thus make it capable of operating more easily over snow and soft, marshy terrain. In this respect the designers of the *IKV91* have been highly successful since its nominal ground pressure is only 5.7psi. This is no more than half the ground pressure of current battle tanks and considerably less even than the ground pressure of light tanks such as the *M551 Sheridan.*

Another reason for the relatively large size of the *IKV91* is the requirement for it to be amphibious, in

Brobv 941 Bridgelayer

IKV91

order that it can cross the rivers and lakes in which Sweden abounds with but a minimum of preparation. In fact, the only preparation it requires to swim across inland water obstacles is the erection of the trim vane which is carried folded down on the front glacis plate.

In water, as on land, the *IKV91* propels itself by means of its tracks. At first sight these appear to be of the conventional, single-pin type with rubber bushed pins and rubber road pads. However, on closer examination they prove to differ from other tracks of this type in having a much shorter pitch, which makes them significantly quieter. They are also claimed to have a considerably longer life and to give better propulsion in water. Other parts of the running gear are conventional and basically the same as those of the *Pbv302* carrier. In particular the road wheels are the same, although there are six of them per side instead of five, and so is the wheel suspension system which consists of trailing arms and transverse torsion bar springs.

Like the *Pbv302*, the *IKV91* is powered by a commercial Volvo-Penta 6-cylinder, in line, water-cooled, turbocharged diesel. The model adopted develops

Bgbv 82 Recovery Vehicle

330 horsepower, which gives a power-to-weight ratio of 22 horsepower per metric ton (or 20 per short ton). This makes the *IKV91* as good in this respect as the best of the current battle tanks and better than the *M551 Sheridan*. Combined with its exceptionally low ground pressure and amphibious capabilities, its high power-to-weight ration gives the *IKV91* outstanding cross-country mobility. A measure of its performance is provided by its maximum road speed of 42mph and a maximum speed in water of 5mph. At the same time it carries sufficient fuel to cover 375 miles on roads before it needs to be refueled.

The outstanding mobility of the *IKV91* is matched by two other closely related armored vehicles developed by Hagglund for Swedish Armor. One is an armored recovery vehicle, the *Bgbv82;* the other is an armored bridgelayer, the *Brobv941*.

The armored recovery vehicle resembles the *Pbv302* from which they are all derived most closely. However, it is wider and longer, having six instead of five road wheels per side. As well as being larger it is also considerably heavier. While the *Pbv302* weighs 13.5 metric tons (29,600 lb), combat loaded, the *Bgbv82* weighs 24.5 metric tons (54,000 lb). Its heavier weight is in keeping with the requirement to which the *Bgbv82* was developed, namely that it should be able to recover tanks weighing up to 40 tons. To meet this requirement it is fitted with a powerful winch and heavy ground anchor spades. The winch is driven by a high torque hydraulic motor which enables it to exert a maximum pull of 44,000 pounds and the two hydraulically operated spades mounted at the rear of the hull are fully capable of absorbing it.

In addition to its winch the *Bgbv82* is also fitted with a high capacity lifting crane and a bulldozer blade, both hydraulically operated. The crane is intended mainly for use in carrying out major field repairs, such as the replacement of engines in battle tanks, but its auxiliary winch with a pull of 2000 pounds is also used for pulling out the heavy cable of the main winch.

In spite of its heavier weight the *Bgbv82* is amphibious, like the *Pbv302* and it has the same one-man turret with a 20mm automatic gun. It can, therefore, cross water obstacles with a minimum of preparation and defend itself against light armored vehicles, attack helicopters and other threats while it carries out its missions.

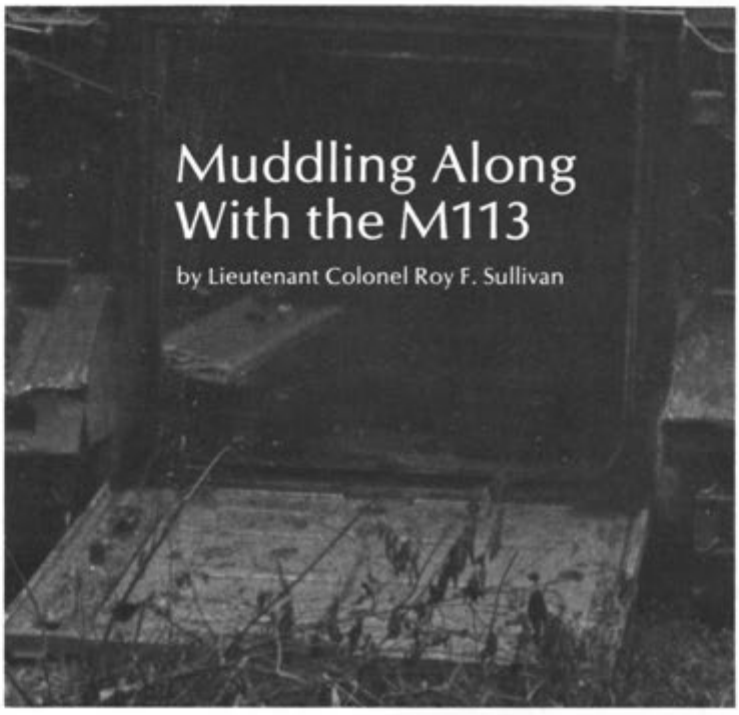
The bridgelayer looks similar to the recovery vehicle, except for its lack of the gun turret and anchor spades. However, it is manned by a crew of four, instead of three. In place of the winches and crane it has a hydraulically-operated cradle for the bridge and a telescopic cantilever beam which is used to lay and to recover the bridge. The bridge itself weighs approximately 13,000 pounds and is capable of carrying vehicles weighing up to 50 metric tons while spanning rivers or gaps up to about 45 feet wide. The bridge is of the single-span type and the method developed by Hagglund for laying it is original. In essence, it amounts to extending a telescopic beam over the gap to be bridged, sliding the bridge over it and then withdrawing the beam while the bridge rests first at the far end and then at the near end of the gap it spans. This avoids raising any part of the bridge above its normal transport position, in contrast to the folding, scissors-type assault bridges or the "flip-over" method of laying single-span bridges, which are much more conspicuous in action.

The bridge can be picked up, from either end, by reversing the laying procedure. All handling of the bridge is done hydraulically and controlled by one or two men from within the vehicle where they are protected by armor. The whole operation of laying or picking up the bridge takes no more than three to five minutes.

Without the bridge the *Brobv941* weighs 20 metric tons (44,000 pounds) and like the *Bgbv82* can swim with a minimum of preparation. The bridge also has sufficient buoyancy to float and it can therefore be towed across water obstacles wider than its span by the amphibious bridgelayer. Thus, when the bridgelayer and the armored recovery vehicle come into service with Swedish armored battalions all their armored vehicles will be capable of crossing water obstacles unaided, since their *Pbv302* carriers are already amphibious and the *S-tanks* can be made amphibious by means of the collapsible flotation screens which they carry.

The ability of all the armored vehicles of Swedish armored battalions to swim represents a significant advance in the mobility of armor. It will enable Swedish armor to operate even more effectively than it has in the past. The new *IKV91* will enable armor to be employed more widely, even under conditions and in places where it was previously considered incapable of operating.

RICHARD M. OGORKIEWICZ, Senior Lecturer in Mechanical Engineering at the Imperial College of Science and Technology in London, is widely recognized as a leading authority on armored fighting vehicles. His books, *Armoured Forces* and the *Design and Development of Fighting Vehicles*, together form the basic English language library in the field. This is Mr. Ogorkiewicz's 54th article for *ARMOR*.



Muddling Along With the M113

by Lieutenant Colonel Roy F. Sullivan

In mid-1959 the Army placed its first order for 900 *M113* armored personnel carriers with the FMC Corporation. The *M113* was a smaller, lighter and less expensive version of its predecessor, the *M59*, which had been in production since 1952. This article outlines the Army's search for a suitable replacement for the *M113* and its diesel twin, the *M113A1*, during the more than 10 long years following the acceptance of the *M113*. In the course of this decade, the *M113* and *M113A1* (both hereafter called simply the *M113*) have been subjected to the most rigorous form of testing—combat in Southeast Asia. Despite the years and the combat experience the Army has yet to find a replacement for this resilient pair.

MICV REQUIREMENTS

What would be required of the *M113's* replacement was spelled out by the announcement of the mechanized infantry combat vehicle (MICV) concept in late 1964. This specified that riflemen would fight either mounted in the MICV or dismounted from the vehicle. The MICV was to offer some protection from mines, shell fragments, small arms and automatic weapons fire. It was also to allow the infantrymen inside the carrier to dismount rapidly under cover from flat trajectory fire forward of the vehicle. The MICV must accommodate the mounting and employment of a fully protected, rapid fire weapons system. Presumably this meant an automatic weapon larger than the .50 caliber machinegun which was to be completely enclosed in a cupola.

The MICV must have mobility compatible with the Main Battle Tank 70 (XM803), must swim currents having speeds of at least 5½mph, must negotiate a 36-inch high vertical obstacle and must be transportable by air. The cruising or operating range required of the MICV was curiously defined by a time rather than by a distance criterion. It must be able "to perform missions of at least 24 hours duration without maintenance or resupply." As well as allowing the infantrymen the capability to see and fire their individual weapons from the vehicle interior, the MICV was also required to have an integral smoke and chemical grenade launcher. As if all this were not enough, the MICV had to equal or exceed the reliability, maintainability and durability characteristics of the *M113*.

THE XM701

The year following the MICV doctrine announcement, Pacific Car and Foundry offered five pilot models of its new *XM701*. This vehicle looks like a stubby-fronted *M113* and sports a 20mm cannon and cupola in the middle of the deck. The *XM701* develops a top speed of 38mph and a remarkable cruising range of 400 miles. The *XM701*'s height of 113 inches and combat loaded weight of over 27 tons makes it a considerably larger vehicle than the *M113* whose respective characteristics are 98 inches and 12 tons.

Unlike the *M113*, the *XM701* has a 20mm cannon and a coaxial 7.62mm machinegun as well as seven hull firing ports. It can climb a 36-inch berm, is amphibious and boasts two self-recovery capstans as well as NBC protective devices and navigational aids. Despite its several strong points, the *XM701*

was discarded because of inadequate mobility which became apparent during engineering and military potential tests held in 1965.

THE XM734

The next contender was an *M113* modified by the addition of 10 firing ports in the sides and rear ramp. This model was dubbed the *XM734*. Other than the 10 firing ports, the *XM734*'s features included a gasoline-powered Chrysler engine and a cupola enclosing twin 7.62mm machine guns. The extra weight adversely affected some of the original characteristics of the *M113* so that the *734*'s speed, range and gross horsepower/tonnage ratio were slightly less than those of its progenitor. The *XM734* was introduced experimentally in Vietnam. However, the hull firing ports proved unpopular in operations during which the infantry usually rode on, and fired its weapons from, the deck of the APC.

XM765

Another experimental model, the *XM765*, was briefly introduced in the May-June 1969 issue of *ARMOR*. Essentially, it was an *M113A1* modified by the addition of one ton of steel applique to the front and sides plus a 20mm cannon and 10 firing ports. A later version of the *XM765* (whose characteristics are displayed in the accompanying chart) was lighter. A .50 caliber machinegun was substituted for the 20mm cannon. The *XM765* is a notable progression toward the MICV configuration as it is the first vehicle having sloped sides. This improvement would obviate the often-heard criticism about the boxiness of the *M113*'s hull.

THE PRODUCT IMPROVED M113

The latest model of the *M113*, publicized as the product improved (PI) version, embodies the several innovations of its predecessor experimental models. Sloped sides, vision blocks and five firing ports, from which riflemen can see and shoot, identify the (PI) *M113*. Electrically driven fans evacuate firing fumes from the vehicle interior. A 20mm cannon can be fired by the gunner protected inside the (PI) *M113*. This weapon station can accommodate a larger weapon such as a 25mm cannon, or a smaller such as a .50 caliber machinegun. Other features of this model are removable armor plates, a turbocharged diesel engine of 260 horsepower and a torsion bar-in-tube spring assembly which is said to increase

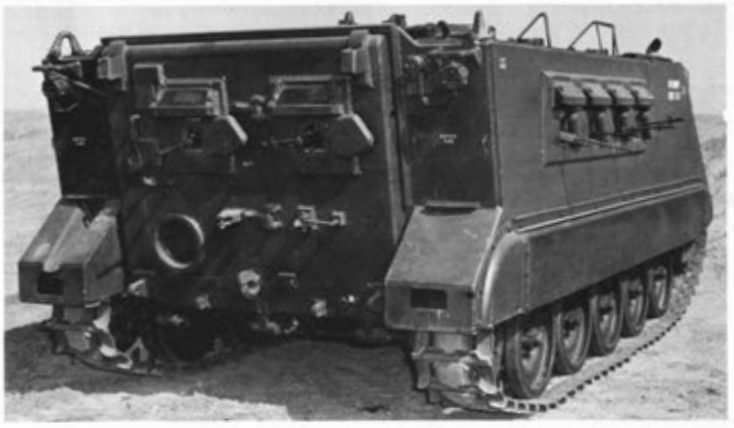
COMPARISON OF THE CONTENDERS

	XM701	XM734	XM765	M113 (PI)
GHP/Ton	15.7	17.3	16.5	18.5
Height	113in	101½in	102in	105in
GVW	54,149	24,188	25,660	28,000
GHP	425	209	212	260
Max Speed				
Land	37.8mph	39.6mph	41.5mph	40.5mph
Water	unkn	3.3	3.6	3.8
Range	400mi	235mi	230mi	305mi
Armor	steel	alum	alum steel	alum steel
Max Trench	93in	66in	66in	67in
Vertical Obstacle	36in	24in	24in	25in
Crew and Infantry	12	12	12	12
Primary Weapon	20mm cannon	2-7.62mm MGs	.50 cal MG	20mm cannon
Firing Ports	7	10	10	5
Engine and Fuel	GM diesel	Chry gas	GM diesel	GM diesel
Air Transport	no	yes	yes	yes

XM701

PACIFIC CAR & FOUNDRY CO.

FMC CORP.

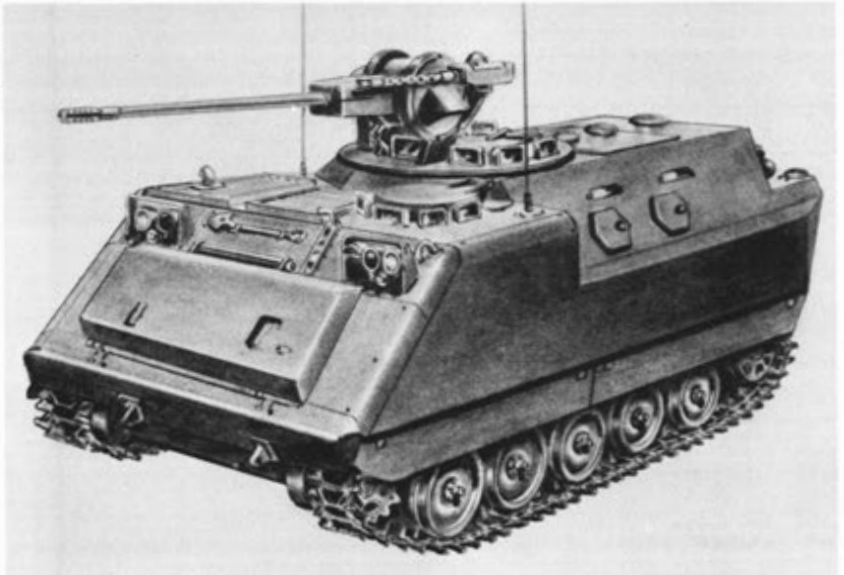


XM734

XM765

FMC CORP.

FMC CORP.



M113 (PI)

road wheel travel from six to nine inches as well as improving reliability and maintainability.

The commander's station behind the weapon system location is another innovation allowing observation, fire direction and direct communication with the infantrymen in the troop compartment. Fuel for the *M113* (PI) is carried in two armored cells located over the rear fenders. Some 90 percent of the repair parts required for the upkeep of the PI model are common to the *M113* or other standard Army vehicles.

COMPARISON TO THE MICV REQUIREMENTS

It can be seen from the foregoing and the characteristics chart that none of the models discussed meet all the MICV standards announced in 1964. The weight of the *XM701* prohibits its being air-transported by most aircraft. The *XM*734 and *765* fail the MICV vertical obstacle requirement and probably the cruising/operating range criterion as well.

Despite the numerous improvements, the (PI) *M113* fails to meet the stringent MICV requirements for the same reasons as the *734* and *765*. However, it as well as all other models could be fitted with a grenade launcher or smoke dispenser system.

COMPARISONS TO RETURNEES RVN EXPERIENCES

One further set of comparisons might be made: those recommendations for the improvement of the *M113* made by returnees from Vietnam who claimed first hand combat experience with the *M113*. Several such improvements representing a consensus were set forth in the author's article "The APC in RVN" which appeared in the January-February 1970 issue of ARMOR. The four most persistent suggestions for improving the *M113* advocated:

- more armor and firepower for the APC
- better cross-country mobility
- the capability to see and shoot from the vehicle
- a multifuel engine

The *XM701* bears more armor than does the *M113*, as is evidenced by its gross vehicle weight which is about twice that of the *M113*. The *XM701*'s armament is consistent with the recommendation for more firepower and its firing ports allow small arms firing from the *701* interior. However, the *XM701* did not display acceptable mobility during testing in 1965.

Although the *XM734* does not have any more armor nor armament than the *M113*, it has 10 firing ports in the sides and ramp. Its other capabilities are either identical to or slightly less than those of the *M113* from which it was adopted. The *XM765* version is similarly undistinguished when compared to the above four recommendations except for that of the see and shoot capability. The *XM765* has 10 firing ports as does the *734*.

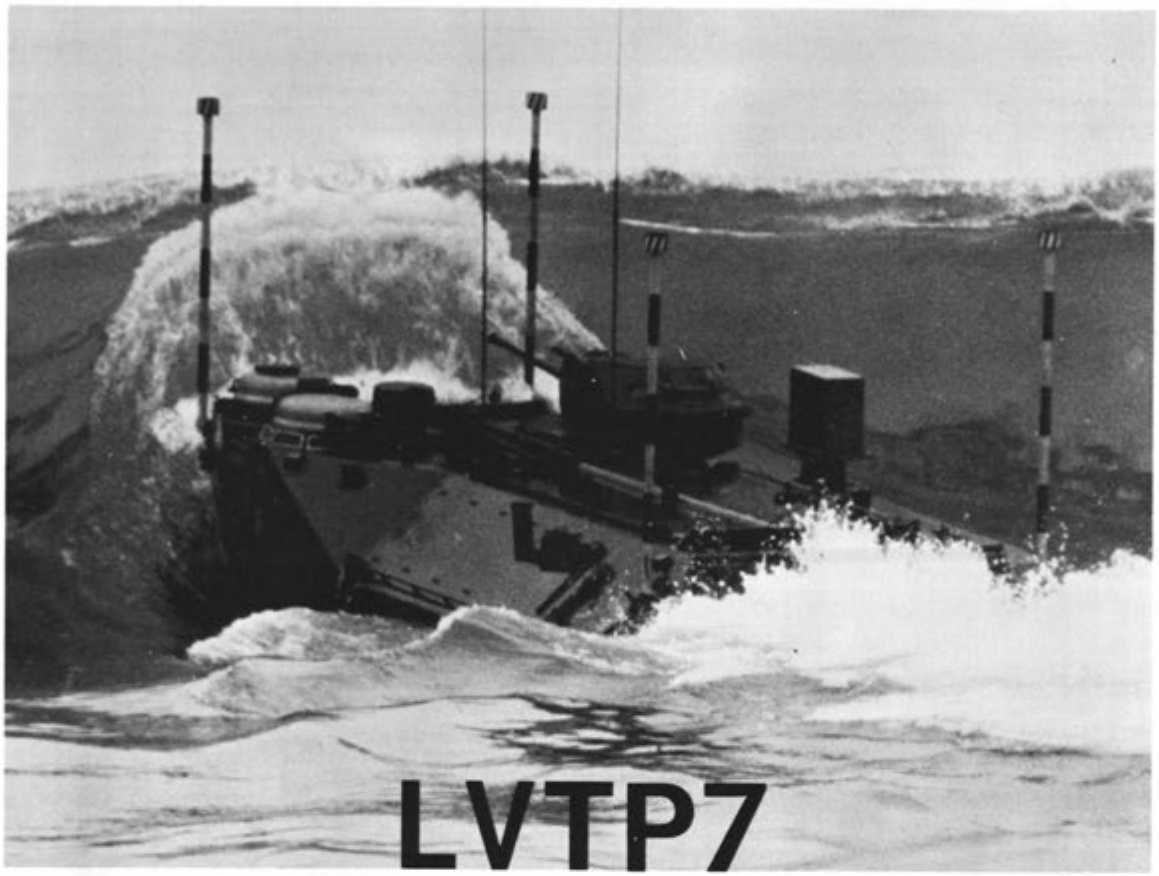
The product improved *M113 (PI)* embodies several of the suggestions made by RVN returnees: increased armament with the 20mm cannon and increased armor plating of the bolt-on variety. Better cross country mobility should result from the increased horsepower, improved suspension reliability, better shock absorbers and a one-inch higher ground clearance. The product improved *M113*'s firing ports and vision blocks enable on-board troops to engage targets from the interior of the carrier. Neither the *M113 (PI)* nor the other models discussed has a multifuel capability.

SUMMING UP

Efforts are being aimed at designing an austere version of the MICV which will be compatible with the likewise-austere *MB70 (XM803)*. The austere MICV must offer the needed degree of combat effectiveness at less cost than possible with the models previously discussed. Lack of funds, not know-how, is cited by the Army Materiel Command as the primary reason that we have no approved MICV development program.

We have a set of MICV criteria which has not been met in all respects by any of the contending experimental models notwithstanding several years of effort. Despite a decade of time, sophisticated development and procurement systems and valuable combat experience in Vietnam, we are without a replacement for the *M113*. Lacking such replacement, is the *M113* to become the .45 caliber pistol of our armored vehicle inventory?

LIEUTENANT COLONEL ROY F. SULLIVAN, AGC(GS) first became interested in APCs as an Infantry Officer with the 3d Armored Division in Germany. While a student at the CGSC he surveyed his Armor and Infantry classmates on their views of the APC in Vietnam. He reported on these in the January-February 1970 ARMOR. LTC Sullivan is now assigned to ACSFOR on the Army Staff.



LVTP7

Amphibious Armor for Marines

by David Wray Jr.

PHOTOS COURTESY FMC CORPORATION

LVTP7 is the Marine's new amphibious Landing Vehicle Tracked (LVT). It outperforms its predecessor, the *LVTP5A1*, in every way, yet costs less than half as much to produce. This new LVT is lighter, provides more armor protection, has less than one-half the horsepower, yet goes faster on land and in the water. It is also more reliable and much easier to maintain.

The LVT's mission is to carry troops and cargo from ship to shore through rough seas and plunging surf, across difficult beaches, and inland over cross-country terrain, in support of amphibious assault landings.

The secret behind this new vehicle's performance is efficiency of design. Powered by a 400HP diesel engine, its dual waterjets propel the vehicle at 8.4 mph in the water. It can turn quickly on its own axis, providing the control needed to get through the surf. Waterjets are more than twice as efficient as the track propulsion of previous amphibians. Equipped with an all new four-speed power shifting transmission, the 25-ton vehicle travels at speeds up to 40mph on land. The transmission's efficient hydrostatic steering system provides smoother control than previous clutch controlled systems. The hull is constructed of 5083 aluminum and armored to about the same protection level as the *M113*. Each vehicle will be equipped with an enclosed, powered weapon station mounting the .50 caliber *M85* machinegun.

Major improvements have also been made in the suspension with bar-in-tube springs and a new, 21-inch wide track demonstrating twice the life of the *M113* track. *LVTP7* carries either 25 combat-equipped troops or 10,000 pounds of cargo in addition to the driver, commander and gunner.

Designed and developed by FMC Corporation, the builder of the *M113*, the *LVTP7* is now type classified and production is underway with first vehicles to be delivered this fall. Engineering development began in February 1966, and the first of 15 prototypes was running 17 months later. These

prototypes were extensively tested at Fort Greely, Yuma, Aberdeen Proving Ground and Panama. High surf tests were conducted at Camp Pendleton and Monterey, California, and three vehicles were durability tested for 10,000 to 12,000 miles each at Camp Pendleton.

LVTP7's combat effectiveness is enhanced by three related vehicles built on the same chassis. These are: a command vehicle, the *LVTC7*; a recovery vehicle, the *LVTR7*; and an engineer vehicle, the *LVTE7*.

LVTP7 is a front-drive, rear-ramp vehicle with the driver located well forward on the left side. The commander is located just behind him in his own station; both are equipped with direct vision blocks providing all-around visibility. The weapon station is mounted forward on the right side. Engine, transmission and cooling system are located forward between the commander and gunner. Removable ballistic grilles allow the entire power pack to be removed in 30 minutes. It can then be operated outside the vehicle for check out.

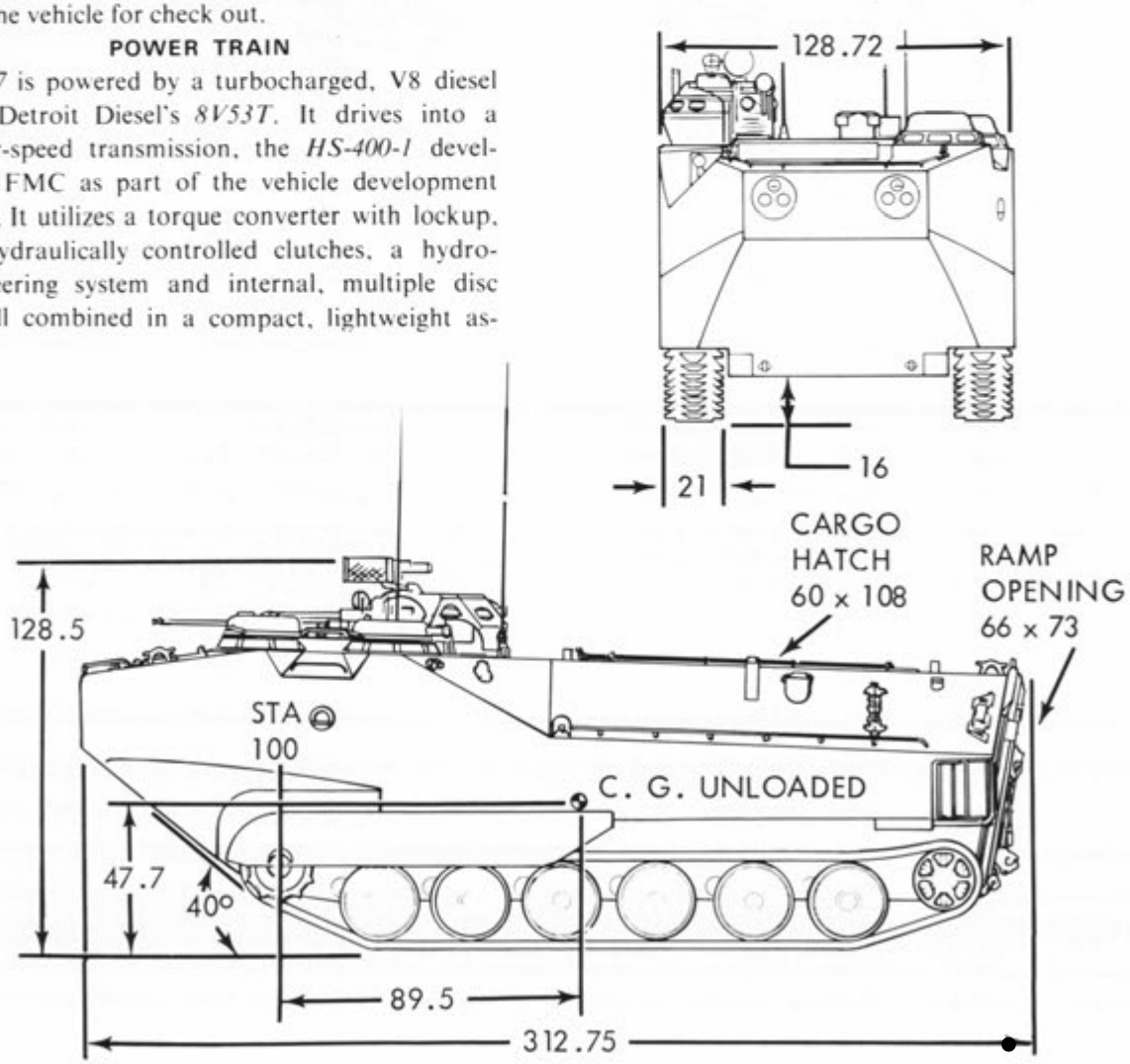
POWER TRAIN

LVTP7 is powered by a turbocharged, V8 diesel engine—Detroit Diesel's *8V53T*. It drives into a new four-speed transmission, the *HS-400-1* developed by FMC as part of the vehicle development program. It utilizes a torque converter with lockup, electro-hydraulically controlled clutches, a hydrostatic steering system and internal, multiple disc brakes all combined in a compact, lightweight assembly.

A power take-off (PTO), mounted on the converter housing, supplies power to the waterjets and cooling fan through electro-hydraulically controlled clutches. This PTO, which can transmit full engine power, also drives the hydrostatic steer unit. For ease of maintenance, the transmission is constructed with five separable modules: converter section, speed changer, left and right steer sections and the externally mounted steer pump and motor. These modules are interchangeable from one transmission to another.

From the transmission, power is delivered to the front drive sprockets through a hull-mounted, spur gear final drive. The waterjets receive power from the PTO through sponson-mounted, right-angle gearboxes and drive shafts extending to the rear. Tracks and jets can both be driven when required; for example, when coming through the surf, exiting a river bank, or negotiating shallow water.

The waterjets, located in the sponsons at the rear, are aluminum, mixed flow pumps with special ex-



haust nozzles to maximize thrust. Each pumps 16,500 gallons of water per minute, producing a static thrust of 3000 pounds. A hinged steering deflector on each pump is positioned relative to the steering wheel by a simple electro-hydraulic control. When fully closed these deflectors reverse the direction of the jet, propelling the vehicle in reverse at 4.5mph, faster than most amphibians can go forward. By turning the steering wheel hard left or right, the driver can spin the vehicle about its own axis.

On land, engine and transmission cooling are accomplished by a conventional fan and radiator mounted above the power pack. Air is drawn in and discharged through ballistic grilles. Hydraulically actuated closure doors, below the grills, seal off the air openings for water operation. Engine and personnel aspiration air then enters through a float-actuated air valve mounted on the deck to the driver's right. All cooling then takes place in the contact cooler, an integral part of the hull bottom plate. Manually actuated coolant valves can by-pass the contact cooler in the event of hull damage or when the power-pack is removed.

The driver uses the same steering wheel and gear selector for water and land operation. A mode control switch gives him three options: land, water-tracks and water-jets. In switching to either of the two water modes, the air grille doors are automatically closed and the cooling fan is turned off. Moving the mode switch to the "jets" position engages the PTO clutch delivering power to the waterjets and turns on the water steering controls. The tracks can be stopped by putting the transmission in neutral.

HULL

Constructed with 5083 aluminum armor, the *LVTP7* hull provides about the same ballistic protection as an *M113*. The unique bow shape evolved from numerous 1/12 scale model tests conducted early in the development program. Forward sponson fairings greatly reduce turbulence, and help reduce hull resistance to less than half that of shapes based on earlier amphibians. The requirement to negotiate 10-foot plunging surf also influenced the hull form, dictating substantial reserve buoyancy forward and very little stern surface area to minimize the force of overtaking waves when coming in through the surf. Under high surf conditions, the *LVTP7* often becomes completely submerged for 10 to 15 seconds as waves pass over the vehicle. During these periods, the engine draws on the air available within the vehicle. Pressure reduction within the vehicle is noticeable but does not injure the embarked troops. Surfing thus places stringent design requirements on the hull structure and the seals on all closures.

The *LVTP7* hull accommodates 28 Marines, with separate stations for the driver, commander, and gunner and three benches for the embarked troops. A 9-foot by 5-foot overhead opening is sealed by

CHARACTERISTICS

GENERAL

CREW	3
TROOPS	25
ARMAMENT	.50 caliber machine gun M85
COMBAT WEIGHT (w/10,000 lb load)	52,148 lb
GROUND PRESSURE at combat weight	8.2 psi
FUEL CAPACITY	180 gal

PERFORMANCE

RANGE, land @ 25 mph	300 mi
water @ 8 mph	7 hours
SPEED, land	40 mph
water	8.4 mph
FORWARD SLOPE	70%
SIDE SLOPE	60%
TRENCH CROSSING (width)	96 in.
VERTICAL OBSTACLE (height)	36 in.

ENGINE

MAKE & MODEL	Detroit Diesel 8V53T
DISPLACEMENT	424 cu in
HORSEPOWER	400
TORQUE	825 ft-lb

TRANSMISSION

MAKE & MODEL	NavShips HS-400-1
SPEED RANGES	4 speeds forward, 2 speeds reverse
SHIFTING CONTROL	Manually controlled, full power shifting
STEERING CONTROL	Hydrostatic, axis steer
BRAKES	Mechanical

WATER PROPULSION

PRIMARY	Water jets
SECONDARY	Tracks

CARGO COMPARTMENT

LENGTH	168 in
WIDTH	72 in
HEIGHT	66 in

three torsion-spring-balanced armor hatches. The two side hatches can be used by the troops but the center hatch is opened only for loading cargo through the top deck. The *LVTP7* can carry 10,000 pounds of cargo with the seats folded and stowed. The hydraulically closed rear ramp has a personnel door similar to the *M113*. All 180 gallons of fuel are carried in a single integral tank filled with reticulated foam and located over the left sponson. Walls of this tank are only 1/8 inch thick and are attached to the armored hull with a built-in offset to allow the tank to flex with the hull.

LVTP7's suspension has a front drive sprocket, 6 dual 26-inch diameter roadwheels, and a raised, adjustable rear idler. The upper run of track is supported on the tops of the roadwheels. Sprocket noise is minimized through the use of small steel pads, adjacent to the sprocket teeth, that contact the upper rubber surface of the track. These pads replace the sprocket tire used on the *M113*. The roadwheels are forged aluminum with a replaceable steel wear ring and bonded rubber tire. The steel idler wheel is swing-mounted and is positioned for track adjustment by a grease-filled hydraulic cylinder. Each roadwheel is supported by a steel roadarm assembly and a concentric torsion bar-in-tube spring. Externally mounted shock absorbers are located at front and rear wheels. The bar-in-tube spring results in a 10-inch vertical wheel travel at relatively low bar and tube stresses—no failures were experienced during the entire vehicle test program. Inserted from one side of the hull as a sealed assembly, this spring design greatly reduces suspension maintenance.

A new lightweight forged steel track was developed for the *LVTP7*. It is a 21-inch wide, 6-inch pitch, single pin, rubber bushed track with molded rubber top surface and replaceable road surface pad. On the *LVTP7* it weighs 1,500 pounds less than an equivalent length of the 21-inch wide *T91E3* track used on 25-ton Army vehicles. In spite of its light weight, it has demonstrated twice the life of *M113* track during development testing consisting of 70,000 miles on 15 vehicles.

WEAPON STATION

Each *LVTP7* mounts a fully enclosed, electro-hydraulically powered weapon station armored to the same level as the vehicle. It mounts the *M85* .50 cal. machine gun and 1000 rounds of ammunition; 400 in a ready position. The weapon can elevate from −15° to +60° and rotate continuously in azimuth at a maximum speed of 60°/sec. It is equipped with an automatic clearance system to elevate the

weapon over deck obstacles. With the weapon mounted in a sealed compartment, fumes are discharged outside the vehicle with the links and spent cases. A simple direct feed system is used, requiring no ammunition booster. The station is mounted on a 34-inch diameter bearing, the same one used for the Army's *M27* station.

The periscopic sight has both unity and 6-power monocular vision with a projected reticule. Direct vision blocks fill in 360° of overlapping vision for the gunners. As with the hull, sealing against the surf presented a real design challenge. A watertight boot is used over the rotor and an inflatable seal is used around the azimuth bearing.

LVTP7 FAMILY OF VEHICLES

LVTR7—In addition to its recovery role, maintenance operations through third echelon can be performed in the field with this vehicle. A two-speed, 31,000 pound, line-pull, recovery winch is mounted on the top at the rear of the cargo compartment. A hydraulic crane, mounted on top of the vehicle, can load up to 9500 pounds through the vehicle top hatch and has a maximum extension of 21.5 feet. An arc welder for both aluminum and steel, and oxy-acetylene equipment, are carried aboard the vehicle. An engine-driven, 120 volt, 60 cycle generator provides power for standard electrical tools. A vehicle-stowed maintenance shelter can be used for field work under blackout conditions. Cabinets and work benches inside the vehicle make the *R7* a highly mobile shop to keep the LVTs operating.

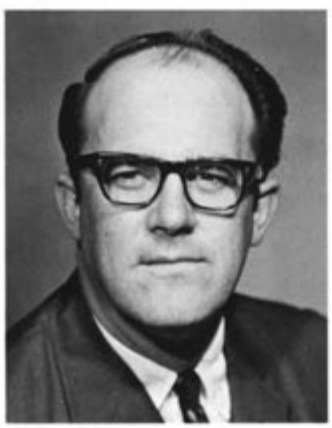
LVTC7—The command post vehicle, *LVTC7*, carries a three-man crew, five communications operators and a five-man command staff. It carries the command and control equipment needed by the unit commander and provides communication between tactical supporting arms and logistical units. An auxiliary generator powered by a small gasoline engine furnishes electrical power for a number of radio transceivers, telephone switchboards and related equipment. A blackout shelter carried on the rear of the vehicle increases work space. Electric fans provide 3000cfm of ventilation in the vehicle and, when in use, the blackout shelter. The command vehicle uses the same hull as the *LVTP7*, thus minimizing any distinctive signature.

LVTE7—The engineer vehicle is intended primarily for mine clearance operations. A hydraulically controlled launcher mounted in the cargo area fires three rocket-towed line charges from the vehicle at sea or on land. The *LVTE7* launches its first charge from the surf, clearing a path across the beach. Subsequent charges can be launched from shore to extend the cleared pathway. Thus the *LVTE7* enables a commander to clear a 900-foot long path through a minefield by sympathetic detonation of the mines. A 150-foot nylon snubbing line enables the vehicle to remain well clear of the minefield and the exploding line charge. A hydraulically operated, front-mounted utility blade can be used for leveling the cleared path, filling craters and other light earthmoving tasks.

SUMMING UP

The new *LVTP7* amphibian family offers superior performance in all Marine Corps applications. Compared to its *LVTP5A1* predecessor, it is 33 percent faster on land, 24 percent faster in the water, travels 110 miles further on less fuel and weighs 18 tons less. It is less expensive to buy and maintain, has significantly improved protection and armament, and is easier to operate.

Many significant innovations and state-of-the-art improvements are embodied in the *LVTP7*. The transmission and weapon station represent major design efforts in themselves and set new levels of design effectiveness. Use of waterjet propulsion makes this big carrier a real amphibian—fast and maneuverable in the ocean, as well as a workhorse on land. The torsion bar-in-tube suspension gives the *LVTP7* the ability to travel quickly and smoothly on unfamiliar, rough terrain as well as on surfaced roads. The 21-inch wide track is setting new standards for track life. These developments could prove to be of more than passing interest to the Army since many of the *LVTP7's* characteristics tally closely with those of the MICV.



DAVID WRAY JR. is manager of preliminary design engineering at FMC's Ordnance Division. He was graduated from San Jose State and has done graduate work in engineering mechanics at Stanford University. He was technical program manager for the *LVTPX12* during research and development.

Aerial Armored Reconnaissance Vehicle

by George R. Stack

ILLUSTRATIONS COURTESY SIKORSKY AIRCRAFT

Gathering information in a hostile environment for the development of intelligence is a challenging mission. The collection of data regarding enemy location, capabilities, movement, vulnerability, activity and likely courses of action are basic to reconnaissance. The resulting intelligence makes the enemy highly vulnerable to subsequent operations. Basic to the entire cycle is the Scout.

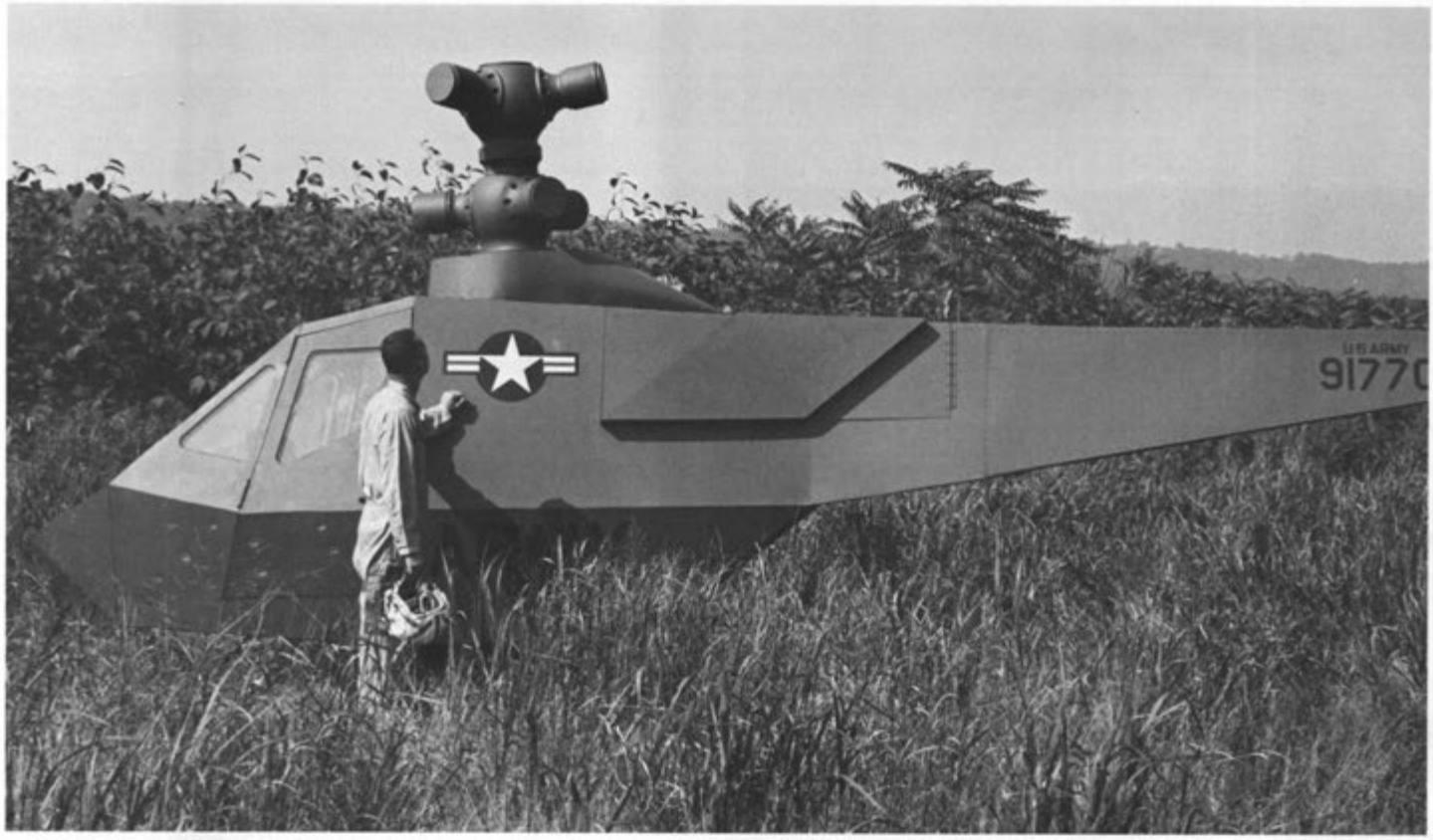
Mobility of the scout—adequately protected—is the key element of his mission effectiveness. The ground scout vehicle adequately protects the crew, but mobility is severely limited. An effective scout must move rapidly but ground vehicles often can be easily defeated by irregular and demanding terrain. Above all—over open terrain, on water, or even down a paved highway—the ground scout vehicle is unacceptably slow.

In the low intensity conflict in Vietnam, a major step forward was realized by employing the helicopter in the scout mission. The differential speed advantage of the helicopter over ground vehicles was exploited. Optimized mobility was provided, but it was a costly step forward. The price of mobility was inadequate protection for the crew and the vehicle. The Light Observation Helicopter (LOH) has done a fine job in this role, despite the fact that it was not designed for the scout environment. As a result, the attrition rate has been unacceptably high.

What is the answer then? A vehicle must be provided that offers the mobility of the LOH combined with the protection afforded the ground scout. Ideally this vehicle would be even more mobile than the LOH, provide protection against even a higher threat than the ground scout vehicle, eliminate concern for land mines, do away with the need for revetments, allow forward basing, and be simple in design, compact, rugged, easily maintainable, and cost effective—and it must save lives and provide mission effectiveness. Quite a challenge!

Sikorsky Aircraft believes it has an answer in the vehicle called the Aerial Armored Reconnaissance Vehicle (AARV). The helicopter, like any weapons system, cannot be stagnant—bold new approaches must be explored.

The ability to provide a solution to today's scout requirements was created by two major advances in technology. One is the advanced helicopter rotor system called the ABC (Advancing Blade Concept) developed by Sikorsky. The other is the development

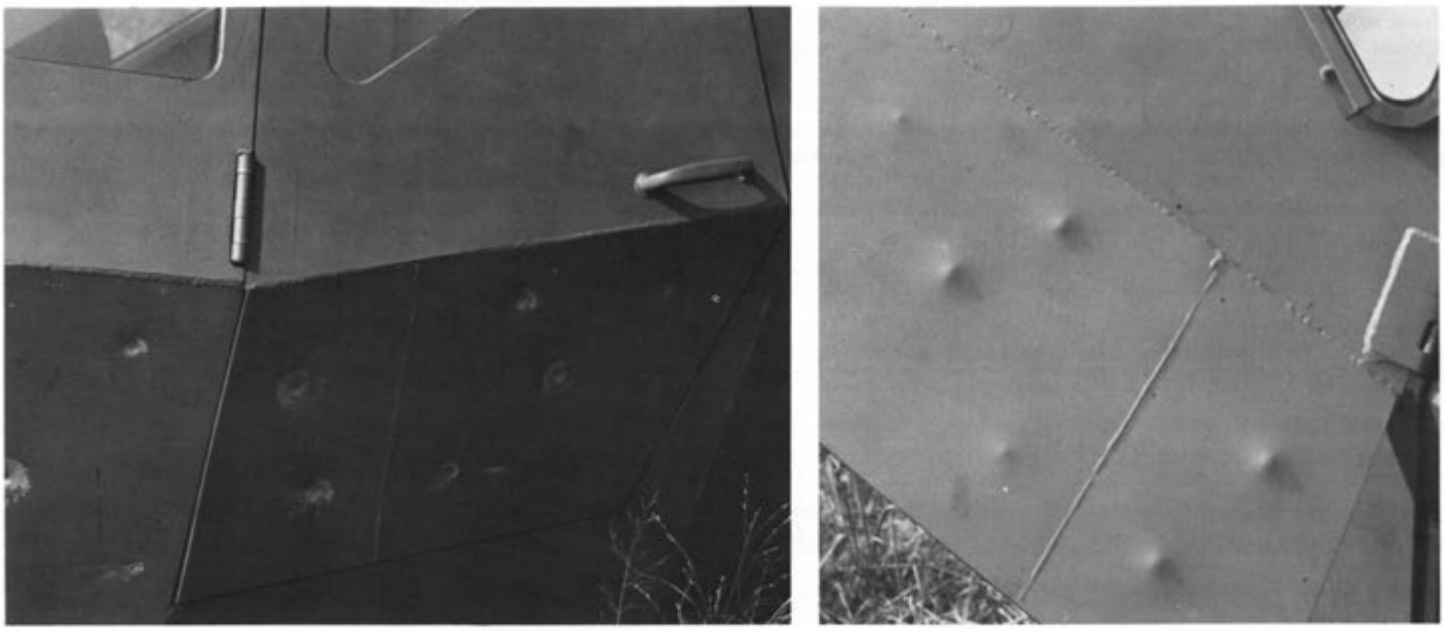


of dual-hardness steel armor plate by the Army Materials and Mechanics Research Center (AMMRC). The marriage of these two major elements makes possible an aircraft specifically designed to fulfill the requirements of the scout mission in its normally hostile environment.

ABC rotor system development was initiated in 1965 and represents a substantial investment of funds. ABC is a rotor system that eliminates two major constraints associated with all other existing helicopter rotors—advancing blade tip Mach number effects and retreating blade stall. The ABC is an extremely rugged, rigid coaxial system that uses the full lifting capability of the advancing blade on each side of the rotor. A 40-foot diameter rotor has a static tip deflection of only 3/8 of an inch. Successful wind tunnel testing was conducted at NASA/Ames last spring on a full-scale 40-foot diameter rotor. These tests included a forward speed of 180 knots (207 mph), the maximum capability of the tunnel. By reducing rotor rpm, a simulated forward speed of 300 knots (345 mph) was attained. Loads and stresses were as predicted, and vibration and noise were lower than anticipated.

But why is the ABC rotor system ideal for an aerial vehicle designed for this rugged mission? The ABC is a coaxial rotor. Therefore, it does not require an antitorque tail rotor, tail gear box, intermediate gear box, or associated shafting. This results in an extremely compact system with few parts and little maintenance. The less obvious reason for selecting the ABC for the AARV is that, due to the high bending loads transmitted through the blade spar and rotor shaft, the material requirements to accept these stresses are substantial. For instance, both the spar and rotor shaft are fabricated from titanium. The root end of the blade spar has a wall thickness in excess of one inch, and the wall of the rotor shaft varies in thickness from 3/8 to 3/4 of an inch. Consequently, as a fall-out of the basic design, we have a rotor system that is virtually invulnerable to small arms fire. This, of course, represents an ideal solution for an aerial scout vehicle.

In early Sikorsky design efforts on the fuselage, we solicited the aid of the Army's Ballistic Research Laboratory in determining a design threat. By examining, sorting out, and reorienting available data, we selected an initial design threat for the AARV. (The term "design threat" is used here



The fuselage of the mock-up of an AARV was hit with a .30 caliber ball and armor piercing ammunition at zero degrees and 30 degrees obliquity. Only denting resulted, according to Sikorsky.

because a distance of zero meters, muzzle velocity, was selected for the .30 caliber ball at zero degrees obliquity based on a near-zero probability of penetration. By selecting this magnitude of severity, the armor material will defeat higher threats, depending on distance and obliquity.)

The Army's development of dual-hardness steel armor and its bank of data on this subject are

The craft's low profile allows easy inspection and maintenance of the major subsystems.

allowing the AARV to happen. The airframe is designed as a unitized prismatic shape, using armor plate as basic structure. AMMRC's development efforts on transparent armor also allow us to incorporate cockpit windows that can defeat the same threat as the armor hull. Hence, the crew and all dynamic systems—including engine, subsystems, and fuel—are protected completely by armor plate.

This aircraft would allow the Army to reinstitute the original doctrine established by the Howze Board and the 11th Air Assault Division during the validation of the airmobile concept in 1963, which dictated flying low and slow or nap of the earth. This doctrine was later abandoned in Vietnam due to high attrition. The AARV could be employed in the much-needed scout role flying into the face of small arms fire without undue risk. This tactic eliminates or minimizes exposure to the higher threats associated with radar and heat-seeking missiles.

Application of the concept to a mid-intensity conflict was also considered. Although the tactics may vary, it is reasonable to assume that the basic threat to the aircraft would be unchanged. This aircraft also has a better capability to survive in the environment of high-intensity warfare, since its rugged construction would withstand overpressures and radiation better than conventional thin-skinned versions.

In summary, this entire program has been oriented toward reduction of risk while affording maximum mission effectiveness at minimum cost. The ABC rotor system, for instance, has completed development through the NASA/Ames wind tunnel on a rotor larger than that designed for the AARV. The Ames rotor was 40 feet and the AARV is 35.4 feet. Fabrication techniques for the armor fuselage have been demonstrated in a full-scale armor steel mock-up of the AARV and of a larger troop carrier version as well.

The next step in demonstrating the feasibility of the Aerial Armored Reconnaissance Vehicle is flight.

GEORGE R. STACK is program manager for the Aerial Armored Reconnaissance Vehicle (AARV) at the Sikorsky Aircraft division of United Aircraft Corporation. He joined Sikorsky in 1967 as deputy program manager of the *CH54 Flying Crane* project. Before joining Sikorsky he was manager of US Army programs on the *CH47* at the Vertol division of the Boeing Company. He served in this capacity for four years. From 1959 to 1963 he was president and general manager for the West Fabrication Laboratory, producer of components for aerospace products. Prior to that he had served in several engineering capacities at Doman Helicopters. Mr. Stack holds several patents in the aerospace and other fields. He received his bachelor of science degree in aeronautical engineering from the Aeronautical University, Chicago.

THE CASE FOR AN ARMORED DUNE BUGGY

BY LIEUTENANT COLONEL BURTON S. BOUDINOT

Why not an "armored dune buggy," or Light Armored Recon Vehicle (LARV), for Armor? In essence it would be a scout vehicle based on the experience gained with off-the-road vehicle configurations popular in the sporting and recreation fields.

What exactly is a LARV as compared to the currently proposed Armored Recon Scout Vehicle, or ARSV? First, there are two distinct philosophies involved here, popularly summarized as the hider versus fighter. As now conceived, the ARSV is a fighter, being a fully armored, rather sophisticated track or wheeled vehicle mounting an automatic cannon with armor defeating capability. It is designed to be a fighting vehicle, giving the scout crew the requisite mobility, firepower and acquisition capability to seek out and engage an enemy in a high intensity combat environment. The cost of the ARSV could run from $50,000 to more than $150,000 each, depending upon the configuration selected. Of course, there are vehicles in the current inventory which could be adapted or modified to become desirable fighter scout vehicles. However, the cost of these is in the same expensive price range.

The LARV would be basically a hider since it would be only partially armored and not heavily armed. A four-wheel drive vehicle carrying a crew of three, it would not be much larger than a 1/4-ton truck. However, it would have far greater mobility

A model of his concept constructed by the author.

and enhanced performance due to its unique construction. Viewed as a scout vehicle, it is a "skinny Indian" in relation to the ARSV concept. The LARV is proposed to be a high-speed, highly mobile mount for the scout at a cost of $10,000 to $15,000. Such a vehicle is not intended to be a fighter. However, various light weapons systems can be mounted on it to give the scout crew sufficient means to carry out their intended role—recon and security.

And this brings us back to the scout vehicle dilemma (see *ARMOR* Sep-Oct 1970). The real controversy appears to be over the various roles the scout might be expected to play during the next 10 to 20 years. If this could be resolved, then we would know whether the scout requires an expensive vehicle or whether he should, and can, accomplish his roles effectively with a vehicle far less sophisticated and certainly less expensive than is now planned.

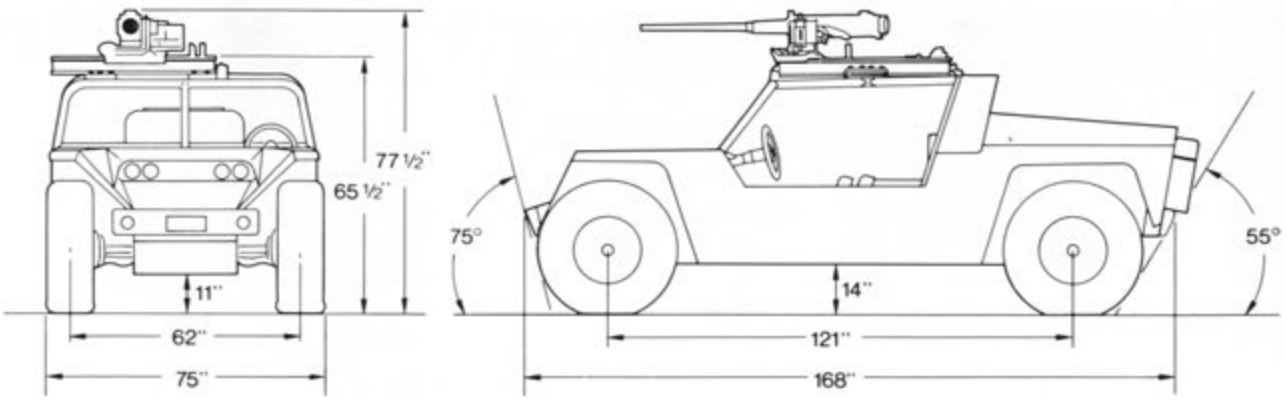
The author became interested in the military application of the dune buggy concept of off-the-road mobility about three years ago. The endurance record of these vehicles in cross-country racing and sporting events has been impressive to say the least. It appears that official interest in what is being accomplished along the Baja Peninsula has now been taken by various Army agencies.

Apparently, industry has not overlooked the military potential of the dune buggy. The *XR311* designed and manufactured by FMC Corporation is a test-bed which appears to be a step in the right direction toward achieving a low-cost, high-mobility military vehicle. Earlier investigation by FMC revealed that a car called the "Baja Boot" had won the Baja 1000 race and many others during the past few years. The Baja Peninsula, south of California, is purported to be some of the most torturous terrain for vehicles in the entire world. The "Boot" appeared to have the desired mobility characteristics and had adequate capability to carry a military payload. After several months of concept work attempting to match its general configuration with that of a reconnaissance type vehicle, it was determined that a chassis built on the "Baja Boot's" running gear could result in a highly mobile military configuration. Only the crew compartment, rather than the entire vehicle, has been armored. The characteristics and general date of the *XR311* are shown in the accompanying chart. It is recognized that a speed of 80mph is not really required for a scout vehicle. A high-torque, lower output engine does not appear to be a problem.

The *XR311* was recently demonstrated at Fort Knox. However, the vehicle has to be driven cross-country to be fully appreciated. The *XR311* is only a test bed, but it introduces a new dimension into the search for a solution to the scout vehicle dilemma.

There are a number of considerations which seem to favor the LARV concept over the ARSV concept:

- The role of the scout is not going to change to any great degree. If he is armor protected and up-gunned to the point of decreasing his mobility or responsiveness, someone else will have to be found to accomplish the basic scouting mission. He must be able to hear, see and dismount easily. The armor scout must remain highly mobile and be discouraged from engaging in decisive combat.
- The cost of a scout vehicle is important. There is a high density requirement for scout vehicles in the US Army. Many of these vehicles are destroyed in



FMC CORP.

The XR311

FMC CORP.

extended combat operations. In addition, some are damaged and have to be abandoned because of the conditions under which scouts operate. It appears that five to 10 LARVs could be procured for the cost of one ARSV.

- A LARV would make available a vehicle capable of long road marches and high mileage endurance on patrol routes or convoy escort duty. Scout elements need about 80 percent of their mission time on road nets. Moreover, such a vehicle is far less fatiguing to the crew than a track vehicle.
- A LARV would require less maintenance and less crew training than scout vehicles currently in inventory.
- The LARV would be extremely quiet and easily concealed from enemy observation. Because it would be an insignificant target, hostile forces might be reluctant to expose firing positions of direct fire weapons by engaging a LARV vehicle. This would be especially true when LARV mounted scouts were overwatched by gunship helicopters.
- The LARV could use its inherent floatation for crossing inland waterways.
- The LARV would be a natural for pre-positioning, airlift or reinforcement by airdrop. In fact, it could be lifted by medium helicopters.

A LARV concept vehicle, if adopted, would not change the doctrine or organization of the current armored cavalry scout platoon. On the contrary, it should improve a lagging capability in Europe caused by the aging *M114*. With the LARV, however, the role of the scout would be locked in as a hider. However, the mission would be accomplished with far less costly procurement, maintenance and training than if an expensive fighting vehicle is developed and adopted for scouts. The model scout of history is far closer to being a Pawnee on a mustang pony than a knight on an armored waler.

XR311 AT A GLANCE

GENERAL

Passengers	3
Weight:	
Net	3800
Payload	1800
Gross	5600
Fuel Capacity	32 gal
Engine	V8, 318 cu. in, 215HP
Transmission	automatic, 3 speeds forward, 1 speed reverse

PERFORMANCE

Speed, Maximum	80mph
Gradeability	
Forward/Reverse Slopes	60%
Side Slope	50%
Vertical Obstacle	20in
Fording Depth	30in
Cruising Range	300mi

LIEUTENANT COLONEL BURTON S. BOUDINOT, Armor, has written frequently for *ARMOR*, especially on the subject of armored scout vehicles. His "Approach to the Scout Vehicle Dilemma" appeared in the September-October 1970 issue of the magazine. Since his commission in 1953 he has served in armored cavalry assignments in Korea, Germany and Vietnam. He is currently assigned to the CDC Armor Agency.

Future Tank Destroyers

by Lieutenant Colonel John H. Phillips
and Major Howard J. Stiles

Zooming down the autobahn just inches off the ground at speeds approaching 100 knots, an airborne stabilized platform (ASP) quickly climbs to treetop level and unleashes a tank killing fire-and-forget missile. The ASP then disappears in the fog and haze, as the weather is 300-foot ceiling with one-half mile visibility. The scene is Western Europe.

In light of the success of airmobility in the Republic of Vietnam, the thinking of key Army planners is shifting to more sophisticated environments such as that of Europe. This naturally raises many questions. One of the more important is "Will the helicopter be a tank killer?"

This article seeks to answer this question with what is, admittedly, somewhat farout thinking.

Although radical departures from today's thinking, certain solutions posed herein could help solve the sophisticated battlefield dilemma. Major General Allen M. Burdett, Jr., former Director of Army Aviation, has encouraged each of us to have "an eye to the future." To do this we must brainstorm various ideas to ensure the equipment we have to fight with in the future is the product of today's best and most imaginative thinking.

The stark realities of the moment are that we have aging *UH1Bs* equipped with wire-guided optically tracked *M22* missiles to counter a tank threat. Our experience with this weapon is limited. Effectiveness relies heavily on operator training. The necessity for optical tracking will contribute to vulnerability in a sophisticated environment. As currently configured, the AH1G, HueyCobra does not have a tank killing capability. Industry has proposed an advanced *HueyCobra* having highly accurate antitank missiles. Introduction of an advanced aerial fire support system (AAFSS)—possibly the *AH56 Cheyenne*, lies in the future.

Just what is the nature of the threat in Europe? Opposite NATO is a large Warsaw Pact tank force. This force also has a sophisticated antiaircraft capability which is deployed far forward. This opposing force is offensive minded and will strive for advances of at least 50 kilometers per day. Can the helicopter of today or the AAFSS of tomorrow survive in this environment?

In a computer study done by the US Army Infantry School at Fort Benning, Georgia, and described in the May-June 1970 *Infantry* magazine, *TOW* (tube-launched, optically tracked, wire-guided) missile-equipped *AH1Gs* performed fairly well when two mechanized forces were pitted against each other. However, when the friendly armored personnel carriers (APC) with their caliber .50 machineguns and natural armor protection were removed, the tide changed. Losses became unacceptable when helicopters had to be used to extract the beleaguered Infantry.

And the enemy tanks rolled on. The Combat Developments Command and independent research organizations have both conducted similar studies,

ILLUSTRATION BY PRIVATE CROWLEY

such as Airmobility in Mid/High Intensity (AMHI), with basically similar results. The problem is that one gets out of a computer what one puts in. We're not sure we really know what will happen; however, the realities of life appear to be the enemy tanks. The mission then is to stop tanks dead in their tracks!

Our proposal to counter the enormous tank threat is to flood the sophisticated battlefield with one-man tank destroying airborne stabilized platforms capable of firing fire-and-forget missiles.

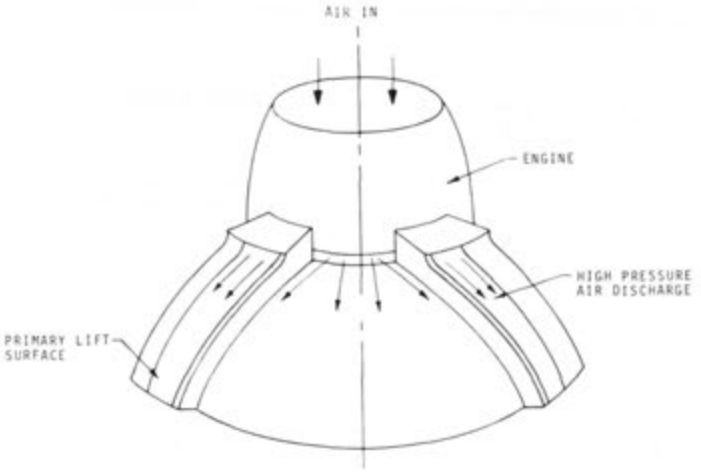
Each ASP will be operated by one man with a majority of the fleet flown by enlisted personnel. The proposed ASP will be an economical trade off with a minimum of controls and black boxes. Great numbers can be procured at relatively low cost. This would allow for sufficient aircraft to be on station to contribute to our overall deterrent effort in Europe. If assets are not in Europe if and when the balloon goes up, conceivably they might never arrive.

We propose to organize an aerial tank destroyer troop with 30 ASPs. It would be commanded by an armor major. The executive officer/operations officer would be a captain as would the four platoon leaders. There would be 24 enlisted operators. A tank killer team leader would be a staff sergeant. Enlisted aerial platform operators would be in the program for three years. At that time, if they so desired, they would be guaranteed an opening in flight school as a warrant officer candidate.

We envision that the unit would be assigned to all Army divisions. This tank destroyer troop would also be assigned to the armored cavalry regiments which have border surveillance missions. It would rely on other units for messing and maintenance.

The ASPs in the Scout and Acquisition Platoon would use sensors to find and fix the enemy. The Tank Destroyer Platoon would destroy the aggressor with its fire-and-forget missiles. The Support Platoon would have one clerk, two operations specialists, one supply specialist, and six sensor and armament specialists.

What type bird will do all this tank destroying? We've said an airborne stabilized platform. (ASP) It should be easier than a jeep to operate and maintain. Its weapons system must be of the fire-and-forget type and more reliable and accurate than a rifle. The ASP will not have a fancy instrument panel. In fact, it will not be equipped for instrument flight. Speeds will not be in excess of 100 knots, nor will altitude be expected to exceed 100 feet. (We feel a machine such as that described can survive the antiaircraft threat with ease when compared to



BASIC LIFT VEHICLE CONFIGURATION

larger aerial weapons platforms on the drawing board.)

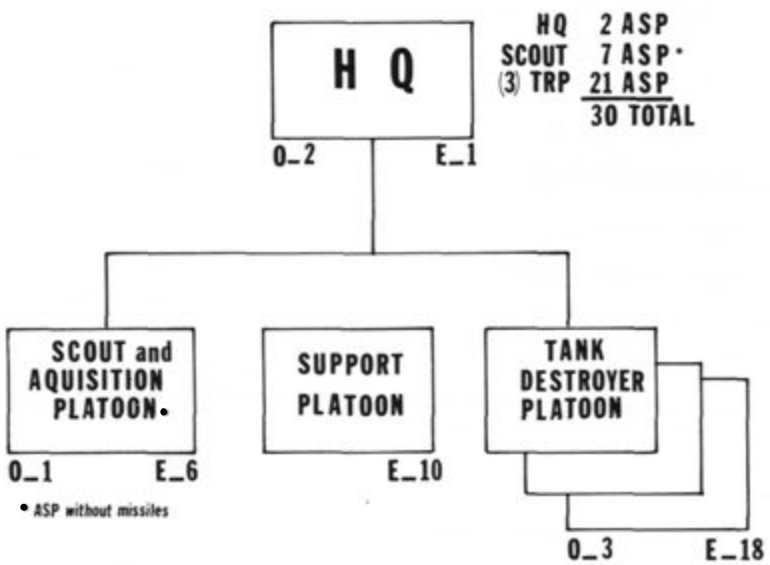
We can also hear the Surveillance Target Acquisition and Night Operation (STANO) folks clamoring for a night vision device. Our answer is to leave the heavy black boxes out and equip the aerial platform operator with low-level-light goggles until a light weight, low cost night vision device is devised. (In this proposed simple form, the ASP should be able to operate during more than 90 percent of the weather conditions encountered in Central Europe.) The addition of currently available weather and night acquisition devices would not add much in mission availability and would likely detract from its overall effectiveness.

This tank destroying ASP would use the techniques of supersonic boundary layer control to generate lift and attitude control forces. The lifting forces would be created by the flowing of supersonic air over cruciform lift surfaces. A gas turbine engine with an oversized compressor would provide the necessary air. Attitude control would simply be a matter of venting ambient air into the low pressure regions created on the lift surface by the supersonic air flow.

Control of pitch, roll and yaw could be effected through a conventional aircraft stick. The throttle mechanism which changes total lift forces for effecting climb or descent could be incorporated into the stick or be provided as a separate throttle. Instrumentation need not be much more exotic than an oil and fuel gage, engine exhaust temperature, operating RPM, magnetic compass and an attitude indicator.

This ASP does not have a rotor system. The absence of a main rotor, transmission, drive shafts, gear boxes and tail rotors not only eliminates weight, but also allows fewer parts and reduces maintenance headaches. This should allow the enlisted operator to perform his own maintenance. The tank destroyer

TANK DESTROYER TROOP



would be compact, and could be easily concealed. It also could be transported by a variety of means as the need arises, i.e. low boy, truck, helicopter, air transport, or ship.

An important consideration is that this tank killer is ready to fly immediately upon delivery. One does not have to wait to replace a rotor head. In bad weather, quite typical of Western Europe, the ASP could literally drive down highways, trails, or streams and rivers. It could also creep along at treetop level ever ready to unleash its tank destroying rockets.

Since this machine does not have a rotor system, you might wonder what happens when the engine fails. If we may borrow from NASA and the Apollo program, we can employ a series of solid propellant retro rockets situated on the under carriage of the airframe. They would perform two functions: (1) blow the fuel cell clear of the vehicle, and (2) provide an effective, controlled retardation to decent. An air bag inflated by an inert gas supply will provide an energy absorber upon ground impact. The bag will burst at a predetermined pressure. An ejection seat might also be provided.

Tactics for the employment of the ASP would not vary much from proposed doctrine already established for a sophisticated battlefield. Altitude would literally be at or below treetop level. Airspeeds would be in the 50 to 100 knots range. Nap of the earth flying, employing popup tactics coupled with stand-off techniques and mutual team protection would afford this proposed machine a high measure of survivability.

The proposed tank destroyer troop would be an elite group. Its heritage would be traced to the tank destroyer units of World War II. This bird would have world-wide application and could also satisfy our requirement for a one-man lift device. It could be used for a multitude of missions at the company and battalion levels.

When considering the firepower one is able to launch in relation to one sophisticated black box machine, we feel the trade-off advantages warrant thinking along these lines. Considering the magnitude of the armor threat, it appears imperative that to counter this threat friendly forces must flood the sky with tank-killer helicopters. This tank destroyer force would give us an alternative to massive retaliation with nuclear weapons.

Let's stop and think. It's time to reassess. As we cast an eye to the future, let us not dream of exotic aircraft, with all the black boxes an aviator could dream up, clutter our vision. Before we get too involved in complex sophisticated equipment, let us now establish an R&D effort to investigate the one-man airborne stabilized platform concept.

Major Howard J. Stiles, Infantry, was commissioned in 1959 from the U.S. Military Academy. He is a graduate of the Infantry Career Course and the Airborne and Ranger Courses, and will attend Command and General Staff College this year. He is both fixed and rotary wing rated. His assignments include tours with the 3rd Infantry Division, 2d Armored Division, and 1st Aviation Brigade. He recently commanded the 335th Assault Helicopter Company in RVN. He presently is Deputy Director, Directorate of Personnel and Community Activities, Fort Rucker, Alabama.

Lieutenant Colonel John H. Phillips, Armor, was commissioned in 1952 from Armor Officer Candidate School at Fort Knox, Kentucky. He is a graduate of both the Airborne Course and the Armor Career Course. In Korea he served as a Platoon leader in the Recon Co. 40th Infantry Division. His assignments include tours with the 11th Airborne Division, 3d Infantry, 82d Airborne Division, 101 Airborne Division, 4th Armored Division, 11th Air Assault Division, 1st Cavalry and 1st Aviation Brigade. He commanded the 37 Aviation Battalion at Fort Benning, Ga. After graduation from the Armed Forces Staff College he commanded the 3d Squadron 17 Cavalry in RVN. He is now serving as Director of Doctrine Development, Literature and Plans at the Aviation School, Fort Rucker, Alabama.

ARMOR
and
CAVALRY MUSIC

Part II

by Major Verne D. Campbell

The April 1930 edition of the *Cavalry Journal* announced that a new regimental march and song for the 13th Cavalry, then at Fort Riley, had been tentatively completed and was ready for a public hearing. The lyrics were composed by Sergeant William Christy of the regimental band, and set to the tune of the "Jolly Coppersmith" by the regimental bandmaster, Warrant Officer Wheeler W. Sidewell.

Here comes the Thirteenth Cavalry,
none better you will find,
There's not a man among us from the
Colonel down the line,
Who will not fight for what is
right and shout 'It shall be done,'
From the early light of morning
'til the setting of the sun.

CHORUS
From the Sunflower State to the
plains of Mexico,
Up and down the Texas border you
could see us gaily go.
Here we are, all spick and span, as
you can plainly see,
When we come 'It shall be done,' by
the Thirteenth Cavalry.[25]

A total of nine verses comprise the entire song, most of which were composed during World War II after the 13th Cavalry became the 13th Armored in July, 1940. The verses describe the locations, training, and operations of the 13th through the early part of 1944.[26]

The regimental march of the 14th US Cavalry (now the 14th Armored Cavalry), "Boots and Saddles," was written by Franz G. Nierlich and copyrighted in 1943. This march should not be confused with the other "Boots and Saddles" march by M. W. Lusk. The 14th Cavalry's "Boots and Saddles" is "Dedicated to its Commanding Officer Lieutenant Colonel John T. Pierce, the Officers and Men of the Regiment." Lyrics have been included in the trio of the march:

With creaking leather, clanking hoofs,
At Boots and Saddles call;
It's 'Follow Me' to victory,
You troopers one and all.
We ride, dismount and fight on foot
With pep, esprit de corps;
To horse then, get under way, men,
Fourteenth Cavalry.[27]

A survey of the 12th and 17th Cavalry fails to disclose a song or march specifically identified with these regiments which still maintain elements in active service as cavalry units. It is safe to assume that, as is the case with most armor and cavalry organizations, songs associated with other regiments have become favorites with these organizations as well. The frequency of permanent changes of station insures that today's armor and cavalry trooper carries the most popular songs from unit to unit.

During the period just before and after the Spanish-American War, the excitement of the cavalry apparently struck a responsive chord in the creative imagination of several composers of that era. The archives of the Library of Congress reveal the composition of a couple of obscure piano solos written around the theme of "cavalry." Additionally, two songs were written for baritone voice which will never endure as classics, yet possess lyrics which express the verve and excitement of the cavalry. "Cavalry Song" with music by Horatio W. Parker and words by Edmund Clarence Stedman was copyrighted in 1891:

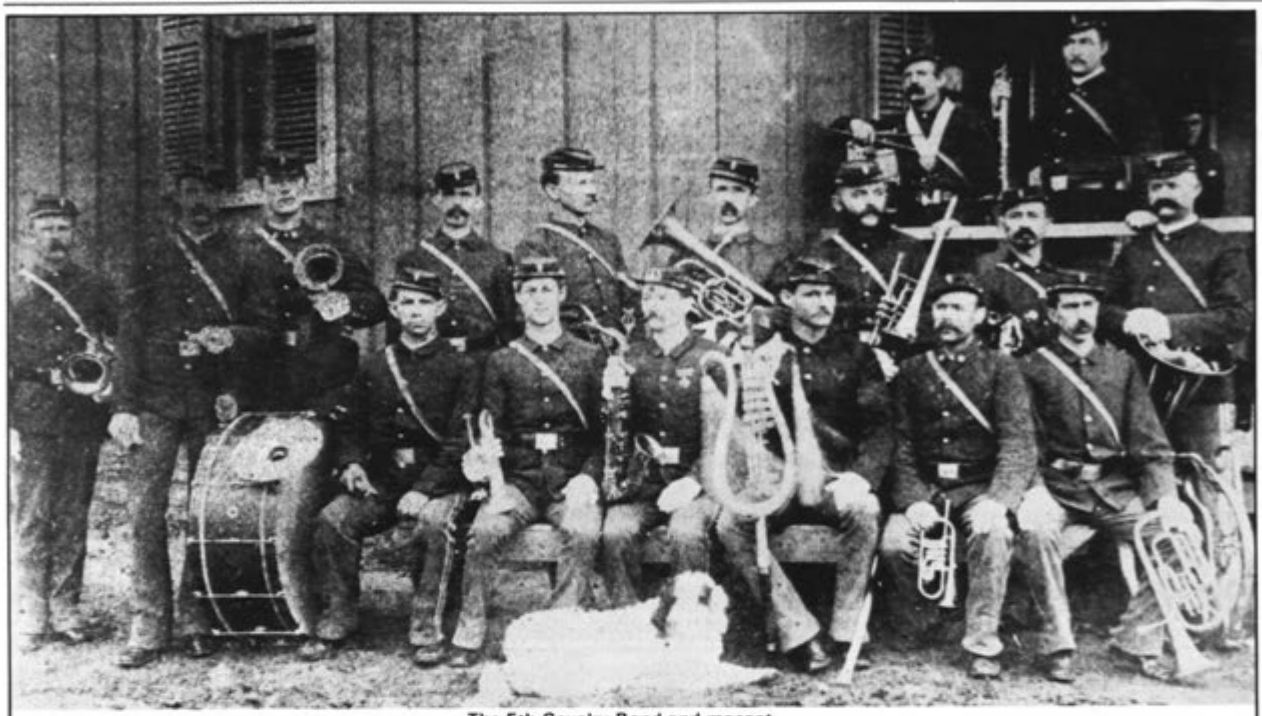
Our good steeds snuff the evening air,
Our pulses with their purpose tingle,
The foeman's fires are twinklin there,
He leaps to hear our sabres jingle.
Halt! Halt! Each carbine sends its whiz-
zing ball,
Now, cling! clang! cling! forward all!
Cling! clang! cling! forward all! Into
the fight.

Dash on beneath the smoking dome,
Through level lightnings gallop nearer,
One look to heav'n! no thoughts of home;
The guidons that we bear are dearer.
Charge! Charge! Cling! clang! forward
Heav'n help those whose horses fall.
Cling! Clang! Cling! Clang!
Cut left and right.

They flee before our fierce attack!
They fall! They spread in broken surges.
Now, comrades, bear our wounded back,
And leave the foeman to his dirges.
Wheel! Wheel! The bugle sounds the
swift recall!
Cling! clang! cling! backward all!
Cling! clang! cling! backward all!
Home, and goodnight!
Home, Home, Home, and goodnight.[28]

A second song for baritone voice, "The Cavalry," was copyrighted in 1907 with music by James H. Rogers and words by Alfred Damon Runyon:

Now look away, you doughboy men,
an' stick to them trenches right,
Peek, if you wanter, over yer dirt
and see a purty fight,
Look to yer cinches, one an' all, here
goes th' fightin' crew,
Hoo-ki! Hang onter yer hat—th'
cavalry's comin' through!



The 5th Cavalry Band and mascot

CHORUS
It's rat-tity-tat on th' dusty road,
Here's where th' devil'll git a load—
Hoo-ki! an th' air is blue
When th' cavalry's comin' through.

There's some wot likes th' doughboy
line, some likes th' battery,
Some is stuck on th' engineers— for
mine th' cavalry,
With yer legs a-straddle a good ole
horse—a horse wot's kind and true,
Then it's hoo-ki! Hang onter yer hat—
th' cavalry's comin' through!

CHORUS
Clackety-clack, spit out th' dust,
Foller yer leader if you bust—
Wee-ow-wow! There's a hulla-baloo
When th' cavalry's comin' through.

This 'fight on feet' ain't just my style,
feel safer on a horse,
When I feel him quiver beneath my
knees an' the captain shows th' course.
Sing, gun in hand, an' a yell in my
teeth, then I knows what ter do,
Hoo-ki! Hang onter yer hat—th'
cavalry's comin' through!

CHORUS
Ta-ta-ra th' bugle sings—
Feel's 'if you was on wings—
Yee-ow-ow! An' then wa-hoo,
When th' cavalry's comin' through.[29]

Dolph's book, *Sound Off*, provides the music and words to two songs which apparently were popular with cavalrymen around the turn of the century and in the years immediately following. The first of these is "The Cavalry Song," which Dolph reports was written during the Boxer Rebellion in China by a surgeon who was later killed in the Philippines.

"Come, listen unto this my song,
I'm as happy as can be;
I'm a masher and a dasher in the U.S.
Cavalree.

CHORUS
So fill your glasses to the brim,
And brace your courage with sloe gin.
I tell you all it is a sin
To belong to the Infantry.

I stand up straight with legs apart,
Bowed slightly at the knee,
With folded arms across my breast;
'Tis the pose of the Cavalree.

CHORUS
I'm a cavalryman so fierce and bold,
I'm a soldier through and through;
I ride a horse because, of course,
It's the proper thing to do.

I wear my spurs both day and night
So that everyone may see
Whatever else I might have been,
I'm not in the Infantry.

CHORUS
We went to fight the Chino horde,
With saber, horse, and gun;
We met him and we beat him,
Just the way it should be done;
But we left our horses, corn, and hay
Down on the ships in Taku Bay,
And consequently had to stay
While—the doughboys hiked away.

CHORUS[6f]

The second song is "The Cavalry Remount," which probably originated during the period 1907-1919 when the Cavalry School at Fort Riley was known as the Mounted Service School. The lyrics are sung to the tune of Kipling's "The Ladies," and vividly describe the woes of a cavalryman in trying to cope with less than desirable remounts!

I've taken the nags as I've found them,
I've 'eeled and I've peeled in my time;
I've had my pickin' o' remounts,
An' four o' the lot was prime . . . .
One was a 'arf caste devil,
One was a 'orse but in name,
One I 'arf 'alted in Ogden, Utah,
One fell in a ditch and went lame . . . .

When I was a young one at Riley,
Tender as 'ell to begin,
Annie Austin they gave me,
And Annie was clever as sin.
Jumper they classed her at Riley,
Said she could go six feet nine;
She went up to a jump and came down
on her rump—
Nurses are not in my line.

Then I was given a draft horse,
Schooled in the West Riding Hall;
Splendid four-gaiter they called him—
A walk, trot, stumble, and fall.
He wasn't so agile and supple,
But yet he could manage somehow
To turn at a trot in a four-acre lot,
So now he is hitched to a plow.

I've applied tannic acid diluted
To places not mentioned in print,
I've tumbled and fallen as you have,
I've worn all my limbs in a splint,
But now I've a nice new remount,
And wonderful things he can do;
So because you're my friend and have
something to spend
I'd like to sell him to you.[6g]

Three marches, two of them by John Philip Sousa, were written during World War I and in the years immediately following, and have endured to become important contributions to the overall lore of American marches. The first of these was "The Cavalry Soldier" by J. O. Brockenshire, written in 1917, and still in frequent use by military, high school, and university bands throughout the country. As previously mentioned, Brockenshire had been a chief musician with the 7th Cavalry Band.

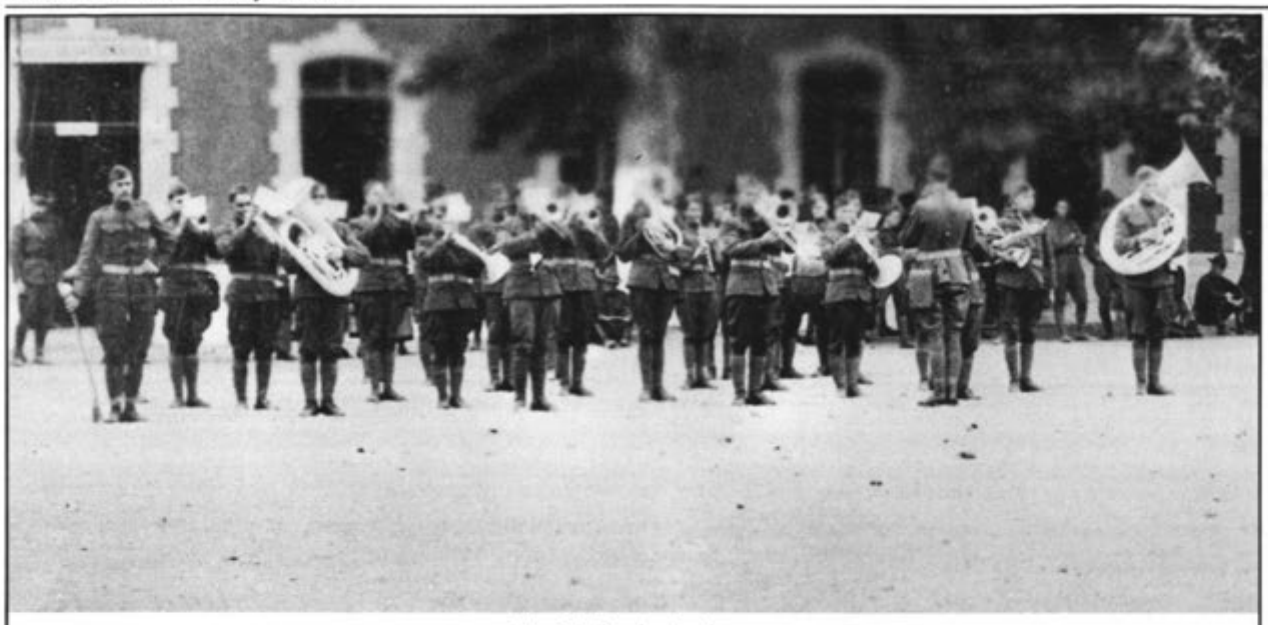
A favorite with cavalrymen for many years, "Sabre and Spurs" was written by Sousa in 1918 while voluntarily serving as a Navy Lieutenant in charge of band training at Great Lakes Training Station, Illinois. He dedicated this famous march to the 311th Cavalry, one of the short-lived National Army (temporary) regiments organized in early 1918 and converted in August of that year to field artillery. The resultant field artillery regiments were subsequently demobilized in January-February 1919.[1b]

Some controversy surrounds the dedication of Sousa's "Black Horse Troop" march written in 1925. The individual instrumental parts indicate that the march is dedicated to Troop A, Cleveland, Ohio; but whether this dedication applied to a US Army cavalry troop is not clearly specified by Sousa biographers. Some believe that it was written for the Black Horse Troop of the United States Military Academy at West Point, which is now non-existent. Others feel that it was written for the Horse Troop at the Culver Military Academy in Indiana. Unquestionably, however, the march has been a favorite with many armor and cavalry units which have requested its frequent performance during ceremonies.

In the years following World War I, cavalry still reigned supreme, even though armored vehicles had been introduced during the war. In 1925 a one-step march entitled "The Dashing Cavalree" was introduced to the public as a vocal solo with an appeal on the sheet music to "ask for this number on your favorite roll or record." The music is by D. Scotti and the lyrics by Joseph G. Garrison.

I love the Cavalree,
I love my trusty steed.
My life is hail and free,
O'er hill and plain I speed,
Of bit and spur I'm king—
My sabre's clean and bright
I'll do most anything,
Ho! I'll dance or sing or fight:

CHORUS
Ho! a song—of the dashing Cavalree,
I will sing with spirit bold and free,
I'm a daring careless Cavalier—



The 6th Cavalry Band

And ne'er forget my loved ones far and near.
When "To Arms"—the drum and trumpets call—
I will mount with sabre, gun and all—
On my charger I will ride with glee,
For I'm a son of the dashing Cavalree.

In golden days of old,
When chivalry was new.
They tell of warriors bold,
And many tales are true,
In silver hued today
My cavalree, I'm proud
I mount my charger bay,
Ho! And ride with head unbowed:

CHORUS[40]

The spirit of armor began to assert itself in the 1930s. A contributing factor was "The Tank," Marching Song of the Tanks, with music by Warrant Officer John A. Dapp, Bandmaster, 1st Tank Regiment, and words by Sergeant M. M. Lyle, Tank Corps. The 1st Tank Regiment eventually became the 66th Armored Regiment. "The Tank" was published by Warrant Officer Dapp at Fort George G. Meade, Maryland, in 1930 and "respectfully dedicated to the Officers and Men of the Tanks."

O' she's a slashing, crashing terror, Day or night.
She's a raging, roaring demon, Full O' fight.
Over the top in no man's land,
Bellowing doom on ev'ry hand,
She's a rolling battering ram,
Is the Tank.
O' the Tank, Tank, Tank, Tank, Tank, Tank, Tank,
She's a grinding, blinding devil,
Is the Tank.
Rushing, crushing, Hell a rat'ling,
Machine gun nests a helter scattering,
You will always find her bat'ling,
That's the Tank.

O' You can lay your bottom dollar, Two to one.
When she starts out for a clean up, Things will hum.
Making the Gods O' War awaken,
Making the earth feel all ashaken,
While she's bringing home the bacon,
That's the Tank.
O' the Tank, Tank, Tank, Tank, Tank, Tank, Tank,
She's a bloody, blooming war'ior,
Is the Tank.
Over traps they laid to bait her,
Over dugout, pit or crater,
Rolls a rambling fire eater,
That's the Tank.

O' where there's fighting to be done, She is found.
No Man's Land or over dugouts, Underground.
Where a thousand shells are pouring,
Thru the Gates o' Hell aroaring
There you'll find her onward boring,
That's the Tank.

The 7th Cavalry Band at Camp Columbia, Cuba circa 1899

O' the Tank, Tank, Tank, Tank, Tank,
Tank, Tank,
She's a bloody, blooming war'ior,
Is the Tank.
Ever onward smashing wire,
With her guns all spouting fire,
She's a soldier's heart's desire,
Is the Tank.[31]

With a few exceptions the formation of armor regiments did not produce the number of meaningful and enduring regimental songs which were so much a part of the American Army's horse cavalry heritage. Several military historians attribute this lack of musical creativity to the greater mobility and faster pace of modern warfare following World War I, in which the soldier has little time to sit with his comrades and reminisce or ponder the day to day aspects of Army life. In any event the majority of songs and marches which emerged with the advent of armor are not, for the most part, directly associated with a particular armor regiment. In fact many of the tunes composed during World War II were written by professional songwriters inspired with patriotic fervor, many of whom never rode on a cavalry horse or an armored vehicle!

Two armor regimental marches or songs have retained some historical significance, and one of these is still occasionally used. The "47th Armor Regimental March (Hussars)" was written by Arthur Carr and dedicated to Colonel E. L. Harrison. This undated march is still maintained in the library of The United States Army Band. The bandmaster who wrote the 13th Cavalry regimental march, Warrant Officer W. W. Sidwell, also wrote the "67th Armored Regiment Song" in 1941.[32]

A marching song which has endured as a favorite with cavalrymen and tankers is "Hit the Leather" by the American composer Meredith Willson, who in later years achieved lasting fame as the composer of the "Music Man." "Hit the Leather," which contains references to both horses and tanks in the lyrics, marks the transition from the horse cavalry to armor, and is humorously described in Willson's autobiography, *And There I Stood With My Piccolo.* Shortly after World War II began, Willson began writing songs for the various services with varying degrees of success. Just after discovering that the song that he had written for the Chemical Service Corps had not been "officially" adopted, he received a visitor:

> Just then the doorbell rang and there was Sandy Cummings, who used to work on the old 'Good News' show, only now he was a Captain in the cavalry with boots you could see your face in, and spurs, and jeepers, it gave you the old whips and jingles just to look on him and you know, before he got out of there, I had written 'Hit the Leather' for the cavalry. Captain Cummings took it back to Fort Riley with him and I got a wonderful letter from his commanding officer and a phonograph record from the whole gang, and two weeks later the good old horse cavalry, as such, was mechanized and that was that.[33]

The title, "Hit the Leather" is attributed to Captain

Sanford Cummings, Cavalry, A.U.S., and is dedicated to the Cavalry School at Fort Riley, Kansas. Willson served during the war as an officer with the Armed Forces Radio Service before going on to achieve renown as one of America's most popular songwriters. Meredith Willson's words to "Hit the Leather" are as follow:

It's a far cry from San Juan Hill
To the gallant Twenty-sixth at Bataan
Now the spurs blend their jingle with the clank of a tank;
Our scouts reconnoiter to protect the Yankee flank;
Our mechanized security is money in the bank!
It's the Cavalry rolling on.

CHORUS

We're gonna HIT THE LEATHER and ride,
Take it all in our stride,
HIT THE LEATHER and ride all the way,
And though we're glad to know the Infantry's behind us;
They'll have to eat Cavalry dust to find us.
Let every son of a gallopin' Yank
Jump in a saddle or tank,
HIT THE LEATHER and ride all the way.
Tho' some are mechanized, you'll recognize the outfit,
We're ridin' hell-bent for leather today.

Let your spurs dig in!
Let the charge begin!
Let the order to rally
Roll through the valley like the roll of drums.
Let the hoofs ring true in a wild tattoo!
Colonel Teddy and Custer know how we'll muster when the great day comes.

REPEAT CHORUS[34]

It's interesting to note that the sheet music for "Hit the Leather," published in 1943, recommended substituting "hard-bent" for "hell-bent" if performed over the radio!

In addition to several other service songs, the noted choral conductor and composer, Fred Waring, wrote a song for the Armored Forces in 1942 entitled, "Roll Tanks Roll," with words by Jack Dolph.

Oh, It's ROLL TANKS ROLL, ROLL TANKS ROLL,
There's a goal, goal, goal ahead for the men of the armored forces.
And it's leap, Jeep, leap; leap, Jeep, leap;
There's a heap, heap, heap ahead, it's a job for the old steel horses.
(the above line is changed when the song is repeated a second time: Every beep and peep and son of a jeep give a leap with the old steel horses.)
Oh you can have the Cavalry, and the Infantry.
And you can have the Air corps, and the Field Artillery.
But when I've got to hit the line for democracy,
A half back on a half track is good enough for me.
So it's ROLL TANKS ROLL,
Leap, Jeep, leap,
ROLL TANKS ROLL, to the last long goal, with the fight and the men, and the might of the armored forces,
ROLL TANKS ROLL.[35]

1942 was also the year that Larry Sherwood wrote "Men of Iron," subtitled the U. S. Armored Force Marching Song, with lyrics by W. R. Mason. The tune became the theme song of a motion picture produced by Westinghouse, "Fire Power With The Victory Wallop." In addition to a band arrangement of the march, a piano-vocal arrangement was published. "To the 'Men of Iron' of the U. S. Armored Force, this marching song is respectfully dedicated. May it serve as a source of pleasure, pride and inspiration to our fighting men of the Armored Divisions and to their leaders."

Through the mud and the sands
Of a dozen foreign lands
U.S. Tankers are fighting the foe.
Men of Iron take the bumps
And a million jarring thumps
But the tanks keep on fighting the foe.
So its roll, roll on, on to Victory,
Let the enemy feel our might! Hi!
We'll roll, roll on, on to Victory
For the Tankers are first in the fight.

Through the shot and the shell
Of the battles raging hell
U.S. Tankers are fighting the foe.
Men of Iron stiff and sore
Give 'em hell and give 'em more
As the tanks keep on charging the foe.
So its roll, roll on, on to Victory,
Let the enemy feel our might! Hi!

The 7th Cavalry Regiment Band at Fort Riley, Kansas in 1927

We'll roll, roll on, on to Victory
For the Tankers are first in the fight.
Hi![36]

One of the best known marches which survived after World War II was written by Beatrice Ayer Patton, wife of General George S. Patton, Jr. "The March of the Armored Force," now the official "2nd Armored Division March," was written in 1941 and contains certain touches which must have been suggested by her husband since it is scored to open with the wail of a tank siren and the firing of guns. Mrs. Patton was an excellent musician, an accomplished pianist, and could play practically anything by ear after hearing it once.[37] She also provided the following words to "The March of the Armored Force:"

We're Uncle Samuel's men of the great fighting forces
You'll hear from us now and then we're the New Armored Corps
We move to the fight like the stars in their courses
And all we required to know is where is the war!

Armored cars the fighting tanks,
The new armored corps;
Manned inside and out by Red Blood Yanks, come join us if you want to go to WAR!

Glorious! Glorious! In War we're ever victorious,
We move right in and fight like sin,
In the great Armored Corps.[38]

The unit history of the 701st Tank Battalion, later reorganized as the 317th Tank Battalion, contains three songs associated with armor units during World War II. The first of these is the "Tankers' Song," sung to the tune of "Clementine:"

I'm a tanker, I'm a tanker,
Glory be to God on high.
Where there's danger, there you'll find me,
Always ready, always steady.

I'm a rough guy, I'm a tough guy,
There is nothing that I fear.
That's the way, Sir, to tell a tanker,
That's the reason we are here.

Roll 'em tanker, roll 'em tanker,
Roll 'em on into the fray.
And I'll wager when it's over,
That the tankers saved the day.

Always ready to fight and die,
That's the kind I'm said to be.
Where there's trouble, we're on the double,
To keep this land forever free.

We are tankers, we are tankers,
And when we throw life's mortal track,
All the angels up in the heavens,
Will greet the tankers, welcome back.

A second song entitled "Far Away" has also been referred to as "Yellow Ribbon," or "She Wore A Yellow Ribbon," and has been popular with armor and cavalry units for many years.

In her hair she wore a yellow ribbon,
She wore it in the springtime and the merry month of May,
And when I asked her why, oh why the hell she wore it,
She wore it for a tanker who was far, far away.

CHORUS
Far away, far away, O she wore it for a tanker who was far, far away.

Around the block she pushed a baby carriage,
She pushed it in the springtime and the merry month of May,
And when I asked her why, oh why the hell she pushed it,
She pushed it for a tanker who was far, far away.

CHORUS
Behind the door her pappy kept a shotgun,
He kept it in the springtime and the merry month of May,
And when I asked him why, oh why the hell he kept it,
He kept it for a tanker who was far, far away.

CHORUS
On his desk the sheriff kept a warrant,
He kept it in the springtime and the merry month of May,
And when I asked him why, oh why the hell he kept it,
He kept it for a tanker who was far, far away.

CHORUS
And in her heart she had a secret yearning,
She had it in the springtime and the merry month of May,
And when I asked her why, oh why the hell she had it,
She had it for a tanker who was far, far away.

CHORUS

A third song which was frequently sung in the 701st Tank Battalion is also mentioned in a book of GI songs edited by Edgar A. Palmer in 1944. Not all of the verses of "When They Tried To Make A Tanker Out Of Me" are contained in either reference, but borrowing several verses from each provides a reasonably complete version of the song. Verses six and eight of the following are extracted from the song as published in the 701st Tank Battalion unit history, and the remainder, to include the final chorus, are derived from the works edited by Palmer. The song is performed to the tune of "Battle Hymn of the Republic."

1. *They sent my horse to Riley and they shipped me off to Knox,*
Oh, they sent my horse to Riley and they shipped me off to Knox,
They sent my horse to Riley and they shipped me off to Knox,
When they tried to make a tanker out of me.

CHORUS
Glory, Glory, what a helluva time we had,
Glory, Glory, what a helluva time we had,
Glory, Glory, what a helluva time we had,
When they tried to make a tanker out of me.

2. *They handed me a rifle and a rod to clean it with.*
Oh, they handed me a rifle and a rod to clean it with,
They handed me a rifle and a rod to clean it with,
When they tried to make a tanker out of me.

CHORUS

3. *They sent me up Snow Mountain just to teach me how to drive,*
Oh, they sent me up Snow Mountain just to teach me how to drive,
They sent me up Snow Mountain just to teach me how to drive,
When they tried to make a tanker out of me.

CHORUS

4. *We were coming down Snow Mountain when the damn thing threw a track,*
We were coming down Snow Mountain when the damn thing threw a track,
We were coming down Snow Mountain when the damn thing threw a track,
When they tried to make a tanker out of me.

CHORUS

A 751st Tank Battalion awards ceremony at Fanglion, Italy, 1949.

5. *The air was full of cussing when the Sergeant found it out,*
Oh, the air was full of cussing when the Sergeant found it out,
The air was full of cussing when the Sergeant found it out,
When they tried to make a tanker out of me.

CHORUS

6. *Oh, they put me on the garbage truck to teach me double clutch,*
Oh, they put me on the garbage truck to teach me double clutch,
Oh, they put me on the garbage truck to teach me double clutch,
When they tried to make a tanker out of me.

CHORUS

7. *They sent me to the Radio School to teach me dits and dots,*
Oh, they sent me to the Radio School to teach me dits and dots,
They sent me to the Radio School to to teach me dits and dots,
When they tried to make a tanker out of me.

CHORUS

8. *Oh, they sent me to Cooks' and Bakers' School to teach me how to cook,*
Oh, they sent me to Cooks' and Bakers' School to teach me how to cook,
Oh, they sent me to Cooks' and Bakers' School to teach me how to cook,
When they tried to make a tanker out of me.

CHORUS

9. *They sent me to mechanical school to teach me nuts and bolts,*
Oh, they sent me to mechanical school to teach me nuts and bolts,
They sent me to mechanical school to to teach me nuts and bolts,
When they tried to make a tanker out of me.

CHORUS

10. *They sent me to the gunnery school to teach me how to sweep,*
Oh, they sent me to the gunnery school to teach me how to sweep,
They sent me to the gunnery school to teach me how to sweep,
When they tried to make a tanker out of me.

FINAL CHORUS
All I ever did was bolo,
All I ever did was bolo,
All I ever did was bolo,
And they never made a tanker out of me.[39, 40]

"A Yank and A Tank," Song of the Armored Command, by Everett G. Bentley, was written in

Courtesy 2d Armored Division

The division band plays the "2d Armored Division March" during a November 1970 ceremony at Fort Hood. Note siren player.

1943, and dedicated "In honor of the gallant men of the armored services." It was introduced to radio fans on Red Skelton's program and sung by Bing Crosby on the Kraft Music Hall show, in addition to being performed on other network programs. Due to a shortage of shellac during the war years, this composition was not recorded and, therefore, did not receive the wide-spread use hoped for by the composer. However, "A Yank and A Tank" is assured of permanency as part of the lore of armor music. Copies of the arrangement for male voices and band score were presented to the Armor School Library in 1965 on behalf of Mr. Bentley, and are now a part of the historical files of the Armor School.[41]

From all the states, and islands too,
Our boys are on their way,
But the way our dads won fame before
Is not the same today;
It's the armored command in a swift attack
That will make them break and run;
And our tanks will throw that final shot
When the last hard battle's won.

REFRAIN

Oh! A YANK AND A TANK is a team that can't be beat,
We fight with all our might till our enemies retreat,
Our brothers in arms on the sea and in the air,
Are darned glad to know that the tankers are in there,
Where big cannons roar and the shells go whistling by.
The guidons fly bright against the sunny sky,
No matter what the odds may be,
The Yanks in the tanks roll along to victory.

REPEAT OF REFRAIN

Sure, the clank of a tank is a dreadful sound to hear,
The Nips and Nazis know that the time to quit is near.
When Shermans and Grants rumble up into the line,
The guns start to bark and the shells begin to whine
The armored command has the stuff to see it through.
No man will fail in the fighting tanker crew,
So ring a cheer up to the sky,
The Yanks in the tanks go a-rolling on in high![42]

A march, "By Deeds Alone," refers to the 4th Armored Division motto, "They Shall Be Known By Their Deeds Alone," uttered by Major General John S. Wood, commanding general, in June 1942, at Pine Camp, New York, as the division was being formed and trained. Composed by Chief Warrant Officer Ernest K. Hoch, the division bandmaster, this march was played for the first time in January 1964, during the ceremony honoring Lieutenant General Hugh P. Harris as he departed Seventh U.S. Army to become

Commanding General, U.S. Continental Army Command. CW4 Hoch added words to his march which proclaim the proud history and esprit of the division:

Known by deeds alone, known by our deeds,
We fought for victory against the mighty foes,
Now we stand for peace, ever alert,
Fourth Armored men of steel, we're known by deeds alone. [43]

Dr. Harold W. Arberg, former Director of Soldier Music for the Department of the Army, will long be remembered for adapting "The Caissons Go Rolling Along," and providing new lyrics to create "The Army Song." Dr. Arberg was also a Major in the United States Army Reserve, and, during the summer of 1962, served a two-week active duty stint at Fort Knox. While there he attended several rehearsals of the Fort Knox Soldier Chorus, and was inspired to write a composition for Armor which he entitled "The Armor Song," and dedicated to the choral group.

The Army is a team that tackles any job that's tough,
But when the land is rugged and the enemy is rough,
Who do they call to make him say, 'I quit! I've had enough!
Nobody but the ever rolling ARMOR!
An Armored force with fighting men to man a tank and gun
Will make the opposition turn and take off on the run.
Who's the gang that moves along until the vict'ry's won?
Nobody but the ever rolling ARMOR!

Infantry, Artillery will always have their day,
But when they need the knockout punch the ARMOR leads the way!
So listen all you people to the truth that we do tell:
If you want to know who does a job and does it mighty well,
Who covers ground and has the stuff to really give 'em hell,
It's nobody but the ever rolling, Hit 'em again and keep it rolling,
Nobody but the ever rolling ARMOR!

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In noting this musical tribute to a proud arm, Major General Joseph E. Bastion, Jr., Commanding General of the Armor Center at that time, expressed the pride and appreciation of all Armor soldiers when he wrote to Dr. Arberg:

> . . . The Spirit of the words and music is symbolic of that esprit which is always found in Armor. You have so ably described in words and music those characteristics which have given to Armor the title of Combat Arm of Decision . . .[44]

In concluding a brief survey of armor and cavalry music, it seems appropriate to note that the history of music associated with armor and cavalry is not finished, any more than the arms concerned have reached their terminus. New music and lyrics will continue to appear as armor and cavalry units respond to Army missions around the globe. Hopefully, more ballads and marches from the past, particularly those of the armor regiments, will also return to prominence to add to the illustrious heritage and tradition of the "combat arm of decision." The songs of the American soldier, particularly those of the cavalryman and tanker, have left their permanent mark on the proud history of the United States Army.

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Presentation Sabers Awarded

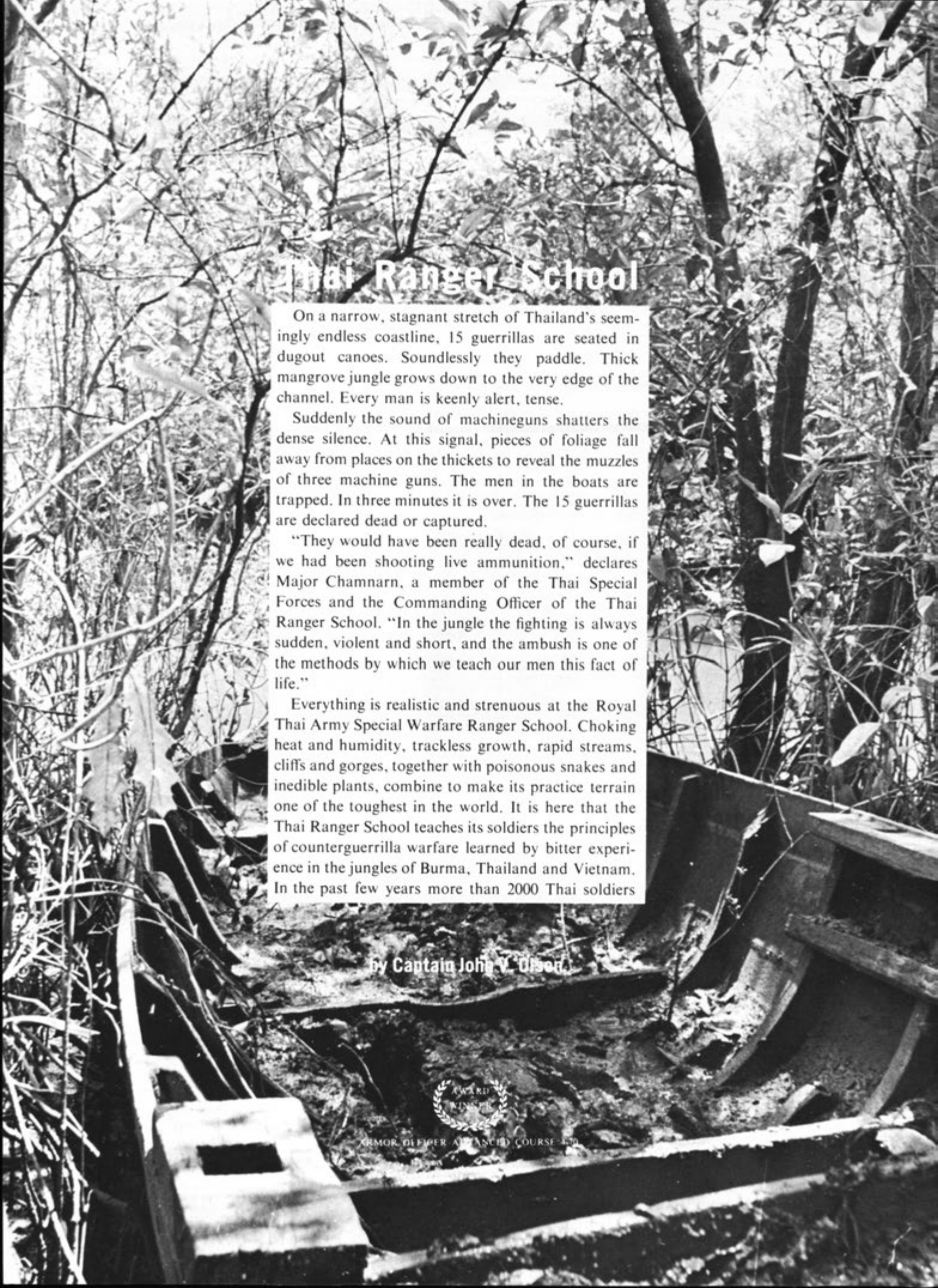
The United States Armor Association annually awards a presentation saber to each of the top two Distinguished Military Graduates of the Army Reserve Officer's Training Corps who receive Regular Army commissions in Armor. Recipients are chosen by Department of the Army, using the same criteria as for the Marshon Award. This year's recipients were First Lieutenant Peter J. Schoomaker, who received the award from Major General William R. Kraft Jr., Commanding General, USAREUR and Seventh Army Special Troops, at a ceremony at Wilkins Barracks, Kornwestheim, Germany. The other saber was awarded to First Lieutenant Robert Chinquina, who was killed in Vietnam in July 1970. Brigadier General Hal C. Pattison, President of the Armor Association, presented the saber to Lieutenant Chinquina's widow, Ramona, at a ceremony at Fort George G. Meade.

MG Kraft with Lieutenant Schoomaker.

Lieutenant Schoomaker received his commission through the ROTC program at the University of Wyoming. After completion of the Armor Officer Basic Course as 1st honor graduate, he attended Airborne and Ranger Schools. From there he was assigned to the 2d Battalion, 4th Infantry as the reconnaissance platoon leader and accompanied that unit when it was transferred to US Army, Europe.

BG Pattison with Lieutenant Chinquina's widow and parents.

Lieutenant Chinquina received a Regular Army commission in May 1969 after being named a Distinguished Military Graduate at the Pennsylvania Military Academy. He attended the Armor Officer Basic Course at Fort Knox, and after a short tour there, he volunteered for duty in Vietnam. He was killed in action 28 July 1970 while serving as a tank platoon leader with the 11th Armored Cavalry Regiment.



Thai Ranger School

On a narrow, stagnant stretch of Thailand's seemingly endless coastline, 15 guerrillas are seated in dugout canoes. Soundlessly they paddle. Thick mangrove jungle grows down to the very edge of the channel. Every man is keenly alert, tense.

Suddenly the sound of machineguns shatters the dense silence. At this signal, pieces of foliage fall away from places on the thickets to reveal the muzzles of three machine guns. The men in the boats are trapped. In three minutes it is over. The 15 guerrillas are declared dead or captured.

"They would have been really dead, of course, if we had been shooting live ammunition," declares Major Chamnarn, a member of the Thai Special Forces and the Commanding Officer of the Thai Ranger School. "In the jungle the fighting is always sudden, violent and short, and the ambush is one of the methods by which we teach our men this fact of life."

Everything is realistic and strenuous at the Royal Thai Army Special Warfare Ranger School. Choking heat and humidity, trackless growth, rapid streams, cliffs and gorges, together with poisonous snakes and inedible plants, combine to make its practice terrain one of the toughest in the world. It is here that the Thai Ranger School teaches its soldiers the principles of counterguerrilla warfare learned by bitter experience in the jungles of Burma, Thailand and Vietnam. In the past few years more than 2000 Thai soldiers

By Captain John V. Olson

have earned the coveted Ranger badge. These men form a powerful nucleus, working to defeat the insurgency movement.

However, the Ranger badge is not easily earned. One out of three volunteers who begin the grueling course has to be dropped. "The object of Ranger training is to instill discipline, confidence, leadership and professional skill, and to put the candidate under physical and mental strain to see if he can stand up to it," explains Major Chamnarn. "If he can't take it here, he can't take it on the battlefield. This is not meant to be a reflection on a man's courage or ability; some people just can't stand it or they don't have the physical strength," he declares.

Every new class at Fort Narai, the home of the Royal Thai Army's Special Warfare Center, is apprehensive. Whether he is a senior non-commissioned officer, a junior officer or a military academy cadet, the student volunteer is nervous but ready to try. Major Chamnarn's first problem is to break the men of their nervousness and their instinctive fear of the jungle. "The jungle is a strange place," he explains, "and frightening at first to those who have never lived in it. We teach our students to understand it and how to use its resources."

The soldiers' introduction to the jungle begins slowly, however. The course is divided into three phases. The first phase is conducted at Fort Narai in Lopburi, a city located 100 kilometers north of Bangkok. It is here that the students' transition to the jungle begins. They are prepared physically, mentally and emotionally for the training to follow in the next two phases. The location of the second phase is in the jungle 40 kilometers west of the town of Kanchanaburi, which in turn is 60 kilometers northwest of Bangkok. This is the actual Ranger training site. And finally, the third phase is merely a continuation of the second phase, except it is concerned primarily with waterborne operations. It takes place on the coast southeast of Bangkok between Sattahip and Chantaburi.

In the beginning the emphasis is on physical strength. In fact, the first thing that the Ranger students face is a PT test. They come to Fort Narai in pretty good shape. If they do not, they usually leave shortly thereafter because this initial PT test is followed by increasingly difficult weekly PT tests. If at any time a student fails a PT test, he is dropped from the school. There is no pampering of the students here. The extraordinary physical strength and endurance needed for the course are developed by daily calisthenics and reveille runs, hand-to-hand combat, bayonet drill and forced marches. However, physical training is not everything. The candidates receive plenty of classroom instruction too.

Throughout the course, all the instruction is geared to counterguerrilla warfare. The students are taught the basics of patrolling. They are also taught the essentials of demolition, land navigation and map reading, communication, raid and ambush techniques and guerrilla tactics. For an example, take ambushing. After the classroom instruction, the students are trucked to a suitable ambush site in the local area. Here they watch the cadre members occupy and prepare the ambush site, spring the ambush and then withdraw. Simultaneously, the instructor highlights important points. Next, the students are divided into small groups. Now they are required to demonstrate what they have learned. Under the watchful eye of the cadre, the students learn the correct ambush procedures. Motivation is high because all realize that later they will conduct similar ambushes. But it will be against a real enemy.

In order to prepare the students for that eventuality, the major portion of the instruction is on patrolling, a skill essential to a Ranger. This instruction is designed to ease the Ranger students into combat situations. First, the students are walked through an example patrol to refresh their instruction on the fundamentals of patrolling. Then the students conduct several short, easy patrols. These patrols are simple so that difficult land navigation, terrain, fatigue or darkness will not nullify the teaching points. A cadre member always accompanies the students and assists, corrects mistakes on the spot, and enforces proper techniques. His job is to teach proper fundamentals. On later patrols he will be there to evaluate how well the students learned.

After five weeks of intensive training the end of the first phase draws near. There are a few final classes on first aid, small unit tactics, Ranger history and another PT test. Then, it is off to cope with the mountains and the jungle.

The second phase of Ranger School is conducted in a remote area west of Kanchanaburi, midway to the Burmese border. The dense forest and rugged mountains of this area combine to form a formidable wilderness. The soldiers invade this strange jungle quickly. Debarking at the nearest train station, they make a 30-kilometer forced march over tortuous trails enroute to the site of their base camp. At the base camp, they begin immediately to apply the elements of survival in the jungle. Using their machetes, they construct simple, two-man shelters from bamboo and jungle vegetation. Each hut has a floor two feet above the ground on which to sleep

and store equipment. Each man is taught the importance of taking scrupulous care of his body, his clothes and his equipment. "A careless, dirty man in the jungle is as good as dead," says Major Chamnarn.

Dirt on the skin or clothes attracts insects and germs. "If sloppiness is tolerated, it will not be long before one man and then the whole group becomes sick. And in the jungle that usually means death." Therefore, even in the jungle, strict inspections of men, uniforms and equipment continue. The Ranger students quickly learn that there is a purpose for everything done here.

Other survival lessons stress the need for alertness and attention to detail in order to exist in this forbidding environment. Within a week the students learn how to catch a snake, lizard or monkey and how to clean and prepare such things into a sustaining meal. They are taught to recognize the kinds of trees and vines from which potable water can be tapped. Major Chamnarn also maintains a zoo with almost every small animal found in the surrounding jungles. Here the students learn to identify poisonous reptiles, especially the cobra, and what to do if bitten.

By the end of the first week in the jungle, the men know that if they are watchful and careful they can be relatively safe. However, things get tougher. The patrols begin. Living in the jungle is one thing; moving through it is an entirely different matter. Now the students must not only apply their knowledge of patrolling to lead patrols, but also negotiate trackless brush, scale and descend steep cliffs, cross broad swift streams. They must be able to carry a maximum amount of equipment and move fast.

In doing this, a rope will be their biggest aid. The Ranger students, therefore, receive several hours of instruction on knot tying and rope bridge construction. In fact, the first real test of a student's courage is the mountaineering technique called rappelling. Loaded with his pack and weapon, he must let himself down a sheer 200-foot cliff face. He is trained by gradual stages, first on a 50-foot board wall, then on a 100-foot drop. Over and over he practices wrapping the rope correctly so that he can brake his descent with an easy movement of his arm. This one feat greatly increases the student's confidence in himself and his equipment.

Another test of courage is crossing a river on the suspension traverse. This is a rope slide. The cadre stretch a rope across the Kwai River from the top of a huge 75-foot tree, high on the bluff near the water's edge on the far bank. Then one soldier at a time slides down, holding onto a pulley hitched to the taut rope. It sounds simple, but it takes iron nerve. The soldiers, loaded with pack and rifle, must release the pulley just at the right moment to land in the shallow water near the far riverbank just right, without sustaining a broken ankle or worse.

A double-rope or single-rope system is used on narrower streams. On the single-rope bridge, the soldier hangs by his arms and legs and simply pulls himself across. On the two-rope bridge, he walks on one rope like tightwire walker, holding onto another above him.

Another stream-crossing technique involves no rope. The students learn to build simple rafts out of two rubber ponchos stuffed with jungle grass. They load these rafts with their rifles, ammunition or supplies and swim, pushing the rafts across the river.

Navigating through the jungle bush, like everything else done in the jungle, is harder. Everything looks alike and visibility sometimes extends only a few yards. One thinks he has gone a mile and finds he has gone only a few hundred yards. Gradually the soldiers acquire a sense of distance and an unswerving faith in their compasses. In a short time, most of them can find their way to a designated spot several miles away thru the most difficult of thickets.

Up to this point, all the training has merely complemented patrolling the basic theme of the Ranger school. Now, the soldiers are given a wide variety of patrol missions, ranging from reconnaissance to aerial resupply to ambush or raid. Various students are selected to be the leaders. They plan, rehearse and then conduct their patrols. Later the leader role is rotated among the other men. The patrols vary in size and length. For example, the first patrol is squad-size and it covers a route of only 15 kilometers. The last patrol is company-size and it covers 70 kilometers in four days. The terrain is rugged, the vegetation is dense, and the patrols are conducted without regard for the weather or darkness. Thus the patrols present a real challenge to the students. To add further realism and to force the patrol leaders to make decisions and to take action, aggressors are used against the patrols. Cadre members accompany the patrols to observe closely the actions of the patrol members. Upon the completion of the exercise, they give detailed critiques on the patrols' performance. These patrols develop the self-confidence, leadership and skill that are the hallmarks of a Ranger. The realistic combat situations teach the soldiers to overcome mental and physical obstacles, to cope with hunger and fatigue and to develop physical and mental endurance. In short, this segment of the training is the culmination of everything they

have been taught; they are expected to survive, move and fight in a combat environment.

At the end of three weeks, the students' final mission in the jungle is to raid a railroad station 40 kilometers to the north. When this exercise is completed, the second phase is over. Everyone takes the train back to Kanchanaburi. From there the class is trucked to the Royal Thai Navy Base at Sattahip. This break provides a welcome respite to the students.

After a few comparatively easy days to recuperate, the Navy takes over. The Navy instructs the students on sea survival and amphibious operations and also acquaints them with the various ships that the Thai Navy uses for shore patrolling. Additionally, the Ranger students' strenuous physical conditioning continues. Every morning there are runs on the beach followed by long swims in the surf. The high point of the sea survival instruction is a five-mile swim to shore with a life jacket on.

Again, as in the jungle phase, the patrols are the important part of this phase. There are only two differences. The first difference is the terrain. In the Sattahip area the terrain is generally flat, coastal lowlands with gently sloping sandy beaches. Further to the east, near Cambodia, the coast is predominantly swampy. Second, the patrols involve amphibious landings. Following these landings, the patrols move inland to perform their missions, which once again, may range from merely surveillance to search and seizure.

Before the last week is over the Ranger students will have gone on 15 different patrols. The last patrol is the big one. The patrol boards ship at Sattahip, makes an amphibious landing midway between Sattahip and Chantaburi, and then finishes with a raid in the vicinity of the Chantaburi, 40 kilometers away. When this patrol finishes, the course is over. It is back to Lopburi, for graduation and celebration.

At the graduation ceremony, the commander of the Special Warfare Center congratulates them and pins the Ranger badge on their right pockets.

After the graduation party, they leave Fort Narai, taking a great deal more than their Ranger badge. They step out a little prouder, more confident, and more skillful—the kind of professional soldiers Thailand needs in its Army to successfully counter the Communist terrorist insurgency now festering in the hinterland.

CAPTAIN JOHN V. OLSON, Infantry, was graduated from the United States Military Academy in 1965. His first assignment was in Korea with the 7th Infantry Division. In 1967 he served in Vietnam as an advisor in the ARVN Airborne Advisory Detachment. Two years later, he served with the 46th Special Forces Company in Thailand, where he worked as an advisor to the Royal Thai Army Ranger School and as a C team staff officer.

1971 Association Annual Meetings

1st ARMORED DIVISION
19-22 August, Cincinnati
James Durkin, 26 Hamlin Drive, Cincinnati, Ohio 45218

2d ARMORED DIVISION
30 July-1 August, Miami Beach
R. F. Perry, P.O. Box 8116, San Antonio, Texas 78208

3d ARMORED DIVISION
29-31 July, Cincinnati
Cyprian Klamo, 505 Regent Dr., Middletown, Ohio 45042

4th ARMORED DIVISION
22-24 July, Watertown, N.Y.
Reginald Broome, 7665 Jefferson St., Pulaski, N.Y. 13142

5th ARMORED DIVISION
12-14 August, St. Louis
Mrs. Claire Watraus, 8549 Lowell St., St. Louis, Mo. 63147

6th ARMORED DIVISION
38-31 July, Philadelphia
Edward F. Reed, PO Box 492, Louisville, Ky. 40201

7th ARMORED DIVISION
16-21 August, Chicago
Irving Osias, 147-28 72d Rd., Flushing, N.Y. 11367

10th ARMORED DIVISION
3-6 September, Ft. Lauderdale
E.L. Loiacono, PO Box 1025, Langley Park, Md. 20787

11th ARMORED DIVISION
11-16 August, Cleveland
Roy S. Buch, PO Box 108, Pittstown, N.J. 08857

12th ARMORED DIVISION
1-3 July, Milwaukee
Harold Hendricks, Rt. 2, Box 176-A, Maple Park, Ill. 60151

16th ARMORED DIVISION
10-12 August, Harriburg
Lester Bennett, 5820 Recamper Dr., Toledo, Ohio 43613

1st CAVALRY DIVISION
19-22 August, San Antonio
Alfred E. Stevens, 1416 June St. NE, Albuquerque, N.M. 87112

LIEUTENANT GENERAL FREDERIC JOSEPH BROWN, JR. 1905-1971

The rugged northeast South Dakota country around Britton where "Ted" Brown was born on 9 July 1905 makes for hardy, resolute, practical and humble men. There one finds no place for sham nor pretension. Warmth toward, and respect for, one's fellow man and his Creator abound to this day. On graduation from Britton High School, this stalwart son of the plains entered West Point, from which he was graduated as a second lieutenant of Field Artillery in 1927.

Shortly thereafter, then Lieutenant Brown's unit, a part of the 6th Field Artillery, was temporarily unhorsed and given equipment necessary to become an element of the first combined arms mechanized force of the Army. He was never to serve with horses again; for a year, he even served as a regimental motor officer. From 1936 to 1941, he returned to his alma mater to teach physics.

Leaving West Point, Major Brown joined the 54th Armored Field Artillery Battalion of the newly formed 3d Armored Division. In September 1942, he left that command to head the Division Artillery which he then commanded throughout the division's World War II combat.

Upon graduation from the National War College in 1947, Colonel Brown was selected to remain there for three years as an instructor. Transferred to Headquarters, European Command in 1950, he served as Deputy G3 until his promotion to brigadier general in 1952, at which time he became Deputy Chief of Staff for Operations. Returning to the United States in 1955, General Brown held key positions in the Office of the Deputy Chief of Staff for Logistics at Headquarters, Department of the Army. By then a major general, he returned to Germany in 1958 to become Chief of Staff of United States Army, Europe.

In June 1959, he assumed command of the 3d Armored Division with which he had fought in World War II. He often remarked that his most rewarding years were those he spent as battalion, division artillery and division commander in the Spearhead Division. There followed a succession of commands—V Corps, Allied Land Forces Southeastern Europe and Sixth United States Army.

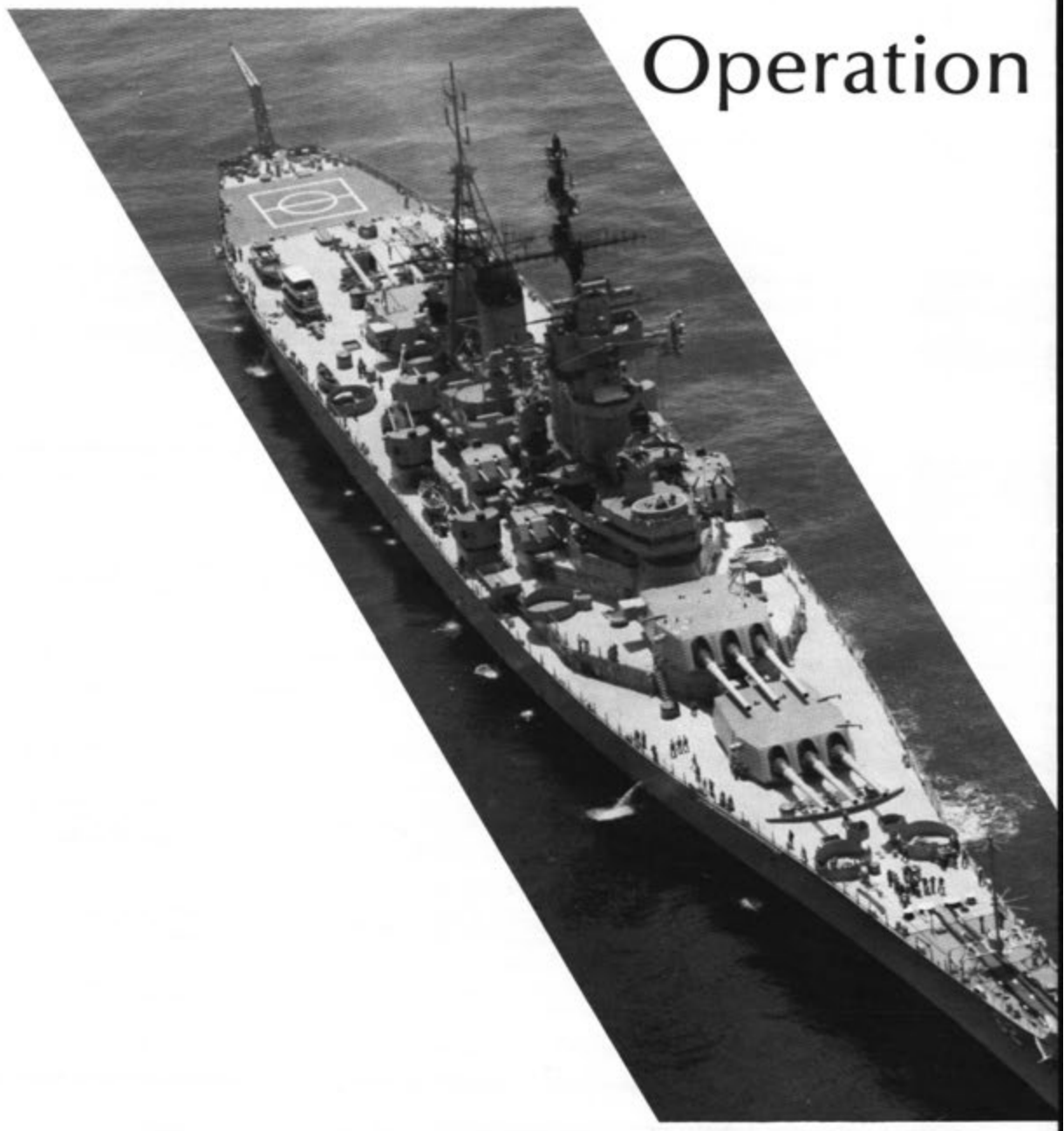
General Brown retired on 31 July 1965 but was recalled the next day to head the Army Logistics Systems Study Group, better known as "The Brown Board." The effects of the far-reaching recommendations of that board will underlie Army progress for many years to come. General Brown reverted to the retired list in May 1967.

In common with other field artillerymen who were pioneers of American armor—Generals Devers, Charles Palmer, W. B. Palmer, Burba, to name a few—General Brown maintained a lively interest in truly mobile ground warfare.

Ever young in his thinking, when he served as President of the United States Armor Association in 1965-66, General Brown emphasized the expansion of mobility and combat power brought about by the helicopter. He reminded the members of our Association that they must be alert to the possibilities of even newer weapons and never be closed-minded to the challenges and opportunities of a constantly evolving profession. It was General Brown who set in motion the constitutional changes which now guarantee that the younger and more junior Association members will be represented on its governing body.

General Brown was borne to his final resting place in Arlington National Cemetery on a horse-drawn caisson like those in his first battery. Fittingly, as taps played, the flap of rotor blades and the purr of engines were heard faintly in the distance. *OWM, Jr.*

Operation



New Jersey Shuffle

by Captain Robert H. Kelly

You're relaxing at the end of a long, tiresome day, trying to enjoy the unaccustomed quiet of the evening, and hoping Charlie doesn't spoil it with a rocket or mortar attack. You think of home, your wife, the kids. For a moment you're no longer in South Vietnam.

Abruptly, a Marine corporal—not Charlie—interrupts the dreaming. "Sir, the *New Jersey* is coming."

You lie there and let the statement sink in. He means the battleship *New Jersey*, one of the best psychological warfare tools in existence. You leap to your feet and begin firing questions. When will she be here? How long will she stay? What can she do for us? What targets do we have for her to fire on?

Then you realize that you are the Ninh Thuan Province psychological warfare advisor, and that it's up to you to get the answers and decide the details for the ship's employment. So you relax again, but this time it's with different thoughts in your head—thoughts about the battleship *New Jersey*.

The next morning you begin planning for the employment of the *New Jersey*. First you must decide where you want her to fire. When doing this, you must consider the various types of terrain in the province. Additionally, you must consider the enemy situation, based on intelligence reports, in the province.

Ninh Thuan province is located on the coast, bordered on the north by Cam Ranh Bay and on the south by Binh Thuan Province. Ninh Thuan Province consists of four districts: Buu Son, Thanh Hai, An Phouc and Du Long. Buu Son District, inhabited mostly by Vietnamese, is the most commercialized in Ninh Thuan. Thanh Hai District is the coastal district and is inhabited mostly by Buddhists with fishing as their main occupation. Ah Phouc District is the southernmost and is inhabited mostly by Chams. Their main occupation is farming. Du Long District is the northernmost and is inhabited mainly by Montagnard farmers. The terrain in Ninh Thuan Province ranges from high mountains with dense vegetation in the north and southeast, to flatland with little vegetation in the south and west.

The Government of South Vietnam controls most of Ninh Thuan Province. There are four areas, called secret bases, where the government has no control. One of the largest of these is in Buu Son District. Aerial observation of this area would mislead one to believe that it is just mountainous jungle wasteland; however, beneath the thick jungle canopy is a complete enemy community.

The exact number of people living there is unknown; however, it is known that the area contains a complete hospital, a training center and several housing communities. Not all these facilities are located above the ground. On one of their operations, the Korean Army discovered that the enemy made extensive use of the large caves located in this secret base area. It was believed that most of the enemy activities were located in these caves where local artillery fire would not affect them.

This is the primary reason you choose Buu Son District for the operation you name "The New Jersey Shuffle."

After completing your analysis of the province, you begin to get more facts about the *New Jersey*. You learn that the ship will be in the area for approximately three days and that she will only fire on targets that are out of the range of the smaller ships

ARMOR OFFICER ADVANCED COURSE 4-70

in the area. Additionally, the *New Jersey* will not fire on targets that could be neutralized by local artillery. This information confirms your selection of the cave complex in Buu Son District as a suitable target.

The next two weeks are spent preparing for the operation. First, you present a rough draft of the plan to the province senior advisor, and after receiving his approval, you begin detailed preparation. The PSYOPS Field Team, in support of the province from the 8th PSYOPS Battalion in Nha Trang, makes a tape in Vietnamese instructing the Viet Cong to rally to the Government of South Vietnam at the Tam-My Bridge Outpost located in Buu Son District. The tape also tells the Viet Cong that shelling by the *New Jersey* will begin two hours after the tape ends and that there is no escape from her devastating effects. In addition, the field team gets leaflets showing a picture of the *New Jersey* with a statement beneath it encouraging the Viet Cong to rally. Lastly, coordination is made with the 8th PSYOPS Battalion to furnish an aircraft for use during the operation.

When the *New Jersey* arrives offshore, you are prepared for the operation. You fly out to the ship with the PSYOPS Field Team and the Marine corporal to complete final coordination. The ship's skipper, Navy Captain Snyder, informs you that one projectile fired from the *New Jersey's* 16-inch guns weights in excess of 1900 pounds and is approximately six feet long. You inquire about the possibility of firing at the cave complex in Buu Son District, and Captain Snyder agrees that it would be an appropriate target.

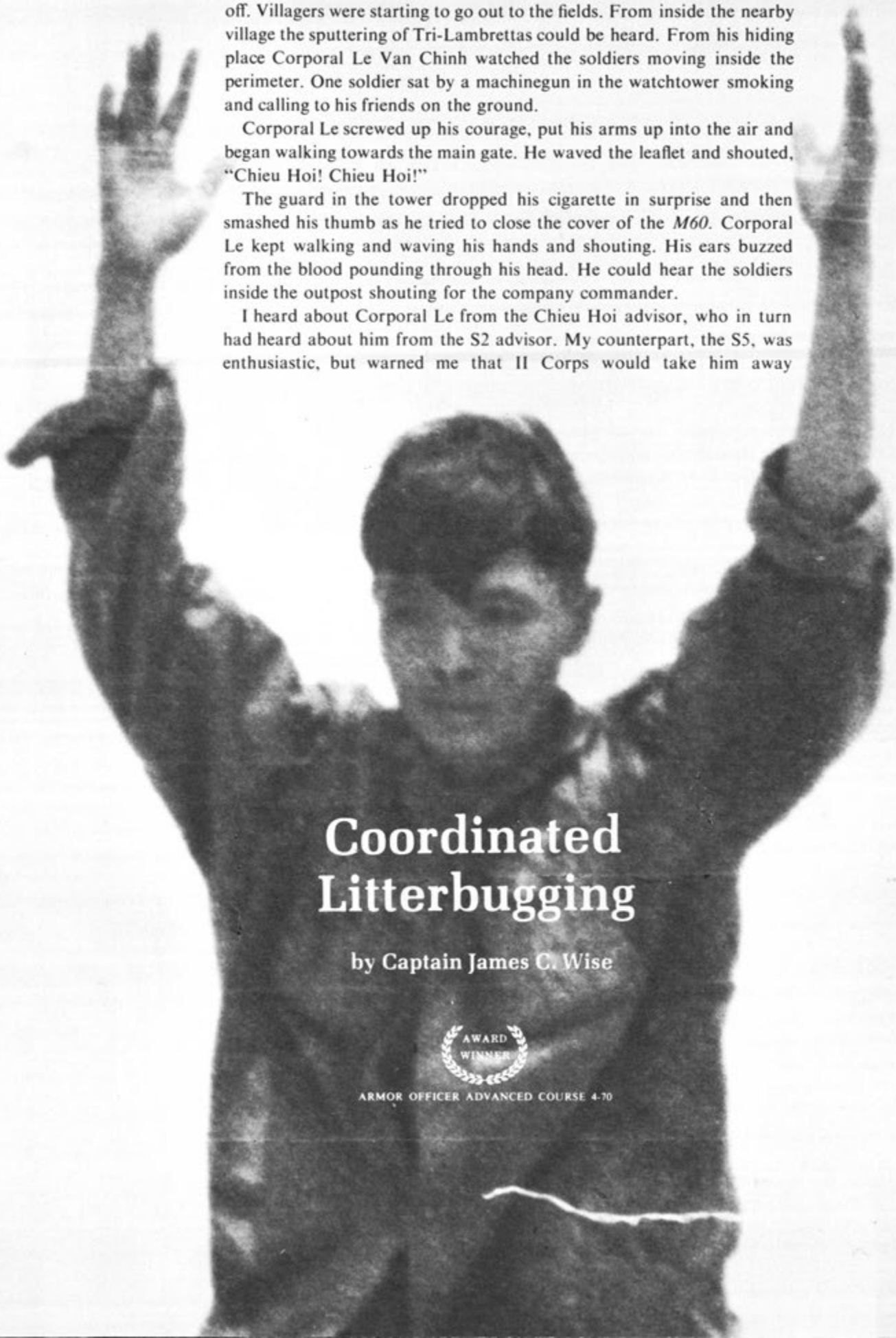
The day for the operation finally arrives. At 0630 you proceed to Phan Rang Airbase to meet the PSYOPS aircraft. At 0700 the *New Jersey* begins firing, continuing until 0900. As soon as it stops, the aircraft flies over the impact area and begins playing the tape and dropping leaflets. After two more hours of firing, the *New Jersey* stops again, and the plane goes back into action. This sequence continues until 1900. Now everyone waits for the results. But by the time you go to bed, at 2330, there are still no results from Tam-My Bridge.

The next day proves fruitless, as no Viet Cong surrender. By the time you go to the office Monday morning, you have given up hope for any positive results from the operation. About 1000 hours the Province S3 advisor walks in. "Congratulations," he says. Some Viet Cong have surrendered at the bridge. Immediately you go to Buu Son District Headquarters where the ralliers are supposed to be questioned. There you learn that five Montagnard Viet Cong have rallied. While questioning them, you learn that many more are on their way. During the next 24 hours, 18 more VC surrender.

You are proud of the outcome of "Operation New Jersey Shuffle"; but you realize you made one serious mistake. The rallying point was too far from the operation area. On the map it was only about 10 kilometers, but the terrain was mountainous with dense undergrowth. Consequently, travel time to Tam-My Bridge was two days. Those who turned themselves in at Tam-My say there was no safe place in the cave complex when the shelling began. They say it seemed as if the entire mountain were exploding. In addition, they say there was several persons who wanted to rally, but could not escape the Viet Cong guards and make the long walk to the rallying point.

The final known results of "Operation New Jersey Shuffle" are 23 ralliers, three weapons, and valuable intelligence about the enemy in the province. Although the results were favorable, you learn an important lesson—ensure that the rallying point for a psychological operation is close enough to the operation area to facilitate easy access for the intended audience. If you had not overlooked this important factor, the gains from the operation might have been doubled.

CAPTAIN ROBERT H. KELLY, Armor, enlisted in the Army in 1958 and served six years in the Military Police Corps. In 1964 he received his commission from Infantry Officer Candidate School, took Airborne training at Fort Benning, and later completed the Armor Officer Basic Course at Fort Knox. After tours in Korea and Germany, he returned to the United States for the Psychological Warfare School at Fort Bragg. He was then assigned to MACV Team 45 in Ninh Thuan Province, Vietnam. He later completed the Electronic Warfare School at Fort Huachuca, and is now assigned to the US Army Infantry School.



Coordinated Litterbugging

by Captain James C. Wise

AWARD WINNER

ARMOR OFFICER ADVANCED COURSE 4-70

Outside the company perimeter the ground fog was beginning to burn off. Villagers were starting to go out to the fields. From inside the nearby village the sputtering of Tri-Lambrettas could be heard. From his hiding place Corporal Le Van Chinh watched the soldiers moving inside the perimeter. One soldier sat by a machinegun in the watchtower smoking and calling to his friends on the ground.

Corporal Le screwed up his courage, put his arms up into the air and began walking towards the main gate. He waved the leaflet and shouted, "Chieu Hoi! Chieu Hoi!"

The guard in the tower dropped his cigarette in surprise and then smashed his thumb as he tried to close the cover of the *M60*. Corporal Le kept walking and waving his hands and shouting. His ears buzzed from the blood pounding through his head. He could hear the soldiers inside the outpost shouting for the company commander.

I heard about Corporal Le from the Chieu Hoi advisor, who in turn had heard about him from the S2 advisor. My counterpart, the S5, was enthusiastic, but warned me that II Corps would take him away

from us as soon as they heard about him. Corporal Le was a real prize. A NVA "returnee" was certain to be sent to Saigon and given special treatment. If we were to use him at all, we would have to move fast.

Corporal Le huddled inside the Regional Force Company Commander's hooch, smoking a Salem and shaking from nervous exhaustion. He was pale from malaria and shrunken by malnutrition. He said he had been separated from his company for two days and had waited all night outside the outpost before deciding to give himself up. He did not really believe what was on the leaflet, about amnesty and all that. He was just tired and sick and hungry.

I saw Corporal Le when the S2 brought him to Pleiku and into the Province Headquarters building. The G5 advisor at II Corps was already on my back to get Le up to them. My counterpart avoided his superiors at II Corps by staying away from his telephone. He borrowed my tape recorder and took over the interrogation from the S2.

The S2 was not really interested in Le because Le had no idea where his unit was nor what their plans were. The "K-6 Battalion" was what he called his unit. This information matched with some of our reports about the NVA battalion that was supposed to be in the area.

My counterpart pursued a much different line of questioning. He wanted to know about the morale of Corporal Le's unit. What was their general state of health? Who was the political officer and what had he been saying recently? Why did Le decide to come in? Had he read our leaflets? How often did mail arrive from his family? From Le's answers he determined the most profitable theme to pursue in a propaganda campaign.

I began touching base with PSYOP support units such as Company B, 8th PSYOP Battalion and the Air Force Special Operations Squadron that flew leaflet drops. I told them we had a returnee and that as soon as possible they would have a mission from me. I asked them to start feeding me everything they had on the K-6 Battalion.

At the same time the assistant S5 was pouring over the intelligence files trying to correlate side-looking airborne radar (SLAR) and infrared (IR) reports with agent reports. From this he began compiling target lists for leaflet drops.

I called the S5 at a nearby Special Forces Company and asked him if I could borrow his writer. He had an outstanding script and leaflet writer named Duc. I also asked him to let us have what he could find out about the K-6 Battalion, and to keep feeding us any new information that came in during the next few days.

Corporal Le meanwhile was eating everything that was put in front of him. My interpreter translated bits of the interrogation as I watched. I could tell that the S5 was having a difficult time. Le, still convinced that he would be treated as a prisoner, wanted to please. For example, he was asked, "Are all the men sick and hungry?" He answered, "Yes, Dai-uy, all the men are sick and hungry." The S5 then began the questioning all over again.

Strangest of all was how easily the propaganda slogans of South Vietnam came to him. "Yes," he'd say, "the communists are traitors to the people of all Vietnam. They are lackeys of the Red Chinese imperialists and seek only to deny the rightful aspirations of all Vietnamese peoples."

I have been told that the really well-indoctrinated North Vietnamese are not like Le. They are hardcore and will commit suicide to avoid capture; when captured, they will continue to mouth the doctrine of Truong Chinh, Giap and Ho for days. However, the less well-indoctrinated are often at a stage in their training where the political officers are still trying to shape their personalities. At this point their training simply encourages belief in the doctrine. And if the doctrine changes tomorrow, then tomorrow they will believe in the new doctrine.

Apparently to Corporal Le, the S5 was a new political officer, and Le was trying to learn the new doctrine as quickly as possible, thereby gaining favor.

He reminded me of one of Orwell's "unpersons."

Le readily agreed to make a tape for us to appeal to his former comrades. We took several pictures with a Polaroid, and Duc, the Special Forces man, began writing a leaflet based on the tapes from the interrogation.

By this time II Corps was pulling rank on both my counterpart and me. So we put Corporal Le in a jeep and sent him up to II Corps Headquarters.

"We have no way of knowing what sort of soldier this man was," my counterpart told me. "Perhaps he was a misfit, a malcontent. If so, it will be easy for them to counter our propaganda. But I do not think so. He would not be a corporal if he had not been at least a fairly good soldier."

We decided to kick off our campaign emphasizing Le's return and his good treatment. Later on we would blend in standard Chieu Hoi appeals.

By now, the assistant S5 had produced a target list based on the most recent available position reports. The draft of the leaflet was blocked out and

approved by the S5. I took the tape Le had made, the leaflet and the target list to B/8th PSYOP. On my way out I suggested to the S5 that he keep his assistant working on the target lists using all the sources of intelligence available. In the meantime I would try to tap into the American side and start getting information from neighboring units like the 4th Infantry Division and the Special Forces.

B/8th PSYOP produced an initial quantity of about 80,000 leaflets. By making their resources available we were able to get this first effort over the target about six hours after Corporal Le arrived at Province Headquarters.

The agencies contacted agreed to relay all information on the K-6 Battalion as it came in. At the same time I informed them of our plans and checked on any PSYOP they might be conducting in the same area. Everyone agreed to coordinate any PSYOP in that area with me before initiating operations.

The S5 contacted the Vietnam Information Service personnel and invited them to participate by designing posters and appeals to go out to all the villages in the target area. Although we didn't expect NVA soldiers to come in contact with the posters, we hoped that VC sympathizers and infrastructure members might be affected.

The Vietnam Information Service went to work immediately, and B/8th PSYOP was able to print the posters the following day.

The information that was beginning to come in was enough for me to ask the S2 advisor to lend me one of his men to assist in the analysis. The assistant S5 used his office to coordinate all the incoming information and to develop target lists.

The next day the S5 and I were able to relax for a while and examine the monster we had created the day before. By that time the map on the S5's wall was covered with little squares showing where leaflet drops had been made, or were planned. The assistant S5 had outlined on the map his opinion of the K-6's general area of operation. There was an overlay showing all the recent SLAR, IR, and agent reports, as well as the location of two small engagements that had been fought by an ARVN battalion in the area the week before. On his desk the S5 had the layouts for five more leaflets that had been developed by his men. He had also coordinated his proposed campaign with II Corps and had enlisted their support and cooperation.

The S5 proposed to use two of these leaflets in large quantities, as well as the standard national leaflets and Chieu Hoi passes. Initially we would hit every target we had, but after the first few days we planned to limit the drops to new sightings only. After we got things going, we would just wait and see what happened. We made estimates of how many leaflets we would need to have printed and the number of sorties we required to drop them.

Once completed, I sent the estimates up to B/8th PSYOP and the Air Force. They both agreed to give us all the support we needed.

It is very difficult to evaluate the effectiveness of an operation like this. Our campaign lasted three weeks. During that time no more NVA soldiers came in, so it did not cause an increase in defections. However, during those three weeks reports dropped off until we were getting none on the K-6 at all. Neither was there any contact by friendly units conducting operations in the area. It turned out that the battalion had withdrawn into Cambodia during the first week of our campaign. We liked to think that this operation was the reason for the withdrawal.

Psychological operations used as a form of combat support is a concept that is given a lot of lip service and very little real use. The rules of engagement for PSYOP frequently prevent timely and effective employment. However it can have devastating effects, or more subtle ones such as those described in this story. (The story, by the way, is generally true.) Unquestionably PSYOP is the least expensive form of combat support available, and it can, given a chance, greatly influence action on the battlefield.

CAPTAIN JAMES C. WISE, Infantry, was commissioned in 1963 from Stetson University. Before attending the Infantry officer's basic course in 1965, he received his master's degree from the University of Arkansas. He served in Vietnam in 1968 with Civil Operations and Revolutionary Development Support at 1st Field Force Vietnam Headquarters, and as a psychological warfare advisor in Pleiku Province. He was reassigned to the 3d Brigade, 5th Infantry Division (Mechanized) at Fort Carson in 1969, and in 1970 attended the Armor Officer Advanced Course.

SHORT, OVER, LOST or...TARGET

Other People Have Good Ideas

by Ex-Sergeant Wilbur Bolshevik

My old first sergeant, Horse-Butt Cavanaugh who never became wholly convinced that the Army had been right to swap horses for tanks, also didn't go along with the idea that Armor had all the answers, had had them first, or that the rest of the Army was falling behind out of step.

"You can learn from them dogfaces," he used to say. "Like, if you see them digging a lot of holes, it don't always mean they're looking for gold or arty-facts. It might be they're expecting to get shot at, and it's about time to haul *Posteriori Nostrium.*" Except, of course, he didn't really say *Posteriori Nostrium,* he being a man of few words.

Time, they say, heals all wounds, and I thought of Cavanaugh almost fondly when I recently had a chance to watch the Special Forces in their lair at Fort Bragg. The old sergeant, long since transferred to manage the NCO Club just off Fiddler's Green, would have felt perfectly at home at the Center for Military Assistance, and it wasn't at all hard for me to envision his face—scarred, battered, soldierly—under a green beret.

He would have liked it, too, and not only because it was sort of Irish-colored. He would have liked it because it was a badge of all-around military proficiency, a symbol that he was fully capable of performing well in at least three different military skills; that he was, as the Green Berets are, just a little bit better soldier than most other people.

I thought that the idea—if not the beret itself—of identifying especially well qualified troopers in Armor might not be a bad idea. Armor really has more of a right to the beret than anybody else, in a heritage sense, but the beret might be a bad idea, since it is now identified in everybody's mind as Special Forces property.

A number of other ideas come to mind. For example, a yellow scarf, an embroidered patch with crossed sabers to be worn on the breast or elsewhere; tanker's boots; even, wildly, an old-fashioned Cavalry mustache.

Any distinguishing item of insignia or uniform, field and Class A, that would readily distinguish the distinguished Armor soldier from the ordinary tanker.

It would require a lot of thinking and paperwork to get the idea going. First, there would have to be a good deal of thought to decide what makes up the training and experience of a superior Armor trooper or officer. It should be understood that being a first sergeant or company commander would not automatically confer the supertrooper status, and that, on the other hand, a kid could possibly qualify for it after basic, the NCO Academy, and some extra work.

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

And the status should confer some privilege, or recognition of ability, on the supertrooper. He should, for example, be excused from routine training so he would not, every six months, have to listen to someone tell him that the *M14* is a gas-operated, 20-shot, semi- or full automatic should weapon firing the 7.62mm cartridge. In lieu of this standard training, he should be allowed to take classes in other specialities. At the Armor School, this should pose no problem. He'd just be allowed to attend courses being offered to regular students, officer and enlisted. In the field, it would require some imagination and effort—send him to a nearby artillery unit to learn from them, for example, or to the Signal Corps.

Why go to all the trouble? Two reasons, I submit. First, that a superbly trained soldier makes a superb instructor. Once the prestige of a supertrooper was established, it's obvious that his students would pay far more attention to him as a man who really knows what he's talking about, than they will to the non-com who is the instructor that day because the roster had his name at the top of the list.

Second, I submit that the morale of the supertrooper would soar because there is a bona fide satisfaction in being recognized as someone special. And, he would be able to feel that he was really continuing to improve his professional knowledge, rather than just spinning his wheels waiting for his time in grade to roll around.

Such enthusiasm would be contagious. If prestige and privilege (and maybe even pay) came with being a supertrooper, there would be a lot of people trying to join the club.

I won't be so arrogant as to suggest what the standards should be. But I will suggest that Special Forces has the right idea. If they can turn out a medic, capable of delivering babies, who can also function as a demolitions expert, when he's not calling in fire with all the finesse of someone who's spent years at Fort Sill, and Armor can't turn out noncoms and officers with such diverse skills, then Horse-Butt was right: "Cavalrymen ain't what they used to be!"

Of course, the idea may not work. A lot of new ideas never do. If anybody had asked First Sergeant Cavanaugh, in 1939, what he thought about tanks becoming important in the Army, he would have really told them where to head in.

"WILBUR BOLSHEVIK" really is an ex-sergeant, well-known to a number of Armor people at that. In addition to harassing the Editor of *ARMOR* with complete week-ruining letters (there are so many good laughs that no work gets done as the staff clusters around for further reading), this great, if sometimes twitting, friend of the Army is a widely read author. (Make what you will of that last phrase.) *The Editor.*

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From the Armor Branch Chief . . .

PROMOTIONS

Beginning 1 July 1971, time in grade requirements for AUS promotion from first lieutenant to captain will be gradually extended. Field commanders will continue to make promotion announcements to AUS captain. The requirement to agree to remain on active duty for 12 months in the grade of captain or for a total of 36 months as a precondition for promotion will end on 30 June 1971. Officers who will have acquired such an obligation on or before 30 June 1971 must serve the full obligation unless they are sooner released by Headquarters, Department of the Army.

Revised Time-in-Grade Requirement
For Promotion from 1LT to CPT

Date of Rank	*Promotion Date*	TIG
1-15 Jul 70	1-15 Jul 71	12 mos
16-31 Jul 70	16-31 Aug 71	13 mos
1-15 Aug 70	1-15 Oct 71	14 mos
16-31 Aug 70	16-30 Nov 71	15 mos
1-15 Sep 70	1-15 Jan 72	16 mos
16-30 Sep 70	16-29 Feb 72	17 mos
1-15 Oct 70	1-15 Apr 72	18 mos
16-31 Oct 70	16-30 Jun 72	20 mos
1-15 Nov 70	1-15 Sep 72	22 mos
16-30 Nov 70	16-30 Nov 72	24 mos
1-15 Dec 70	1-15 Feb 73	26 mos
16-31 Dec 70	16-30 Apr 73	28 mos
1 Jan 71 and after	1 Jul 73 and after	30 mos

Beginning 1 February 1971, eligible first and second lieutenants are no longer being promoted while in a transient status. Eligible officers on leave or TDY enroute to new duty stations are to be promoted by the losing command.

Officers considered for *secondary zone* promotions who are not selected *will not* subsequently be reconsidered by a DA standby promotion board. Secondary zone consideration and selection will be based solely on the officer's records which were available to the DA selection board when it was in session. However, officers in a *primary zone* not selected who can show substantial error or omission in their records as reviewed by the DA board, still may be eligible for DA standby promotion board consideration.

The feeling of many that "I've missed the secondary promotion, thus I'm no longer competitive" is without basis. Though failure to achieve a secondary zone promotion may come as a disappointment, the overall record shows that many officers who were never promoted in the secondary zone at any time during their careers are promoted to colonel and selected to attend the war colleges.

PROMOTION SERVICE OBLIGATION AMENDED

DA Message 071522zJan 71 changed the promotion "lock in" policy of previously pertaining to colonels, lieutenant colonels, chief warrant officers 4, chief warrant officers 3, sergeants major, first sergeants and sergeants first class. The two-year obligation for service following promotion to these grades has been suspended until at least 30 June 1972. Once one has completed six months in his new grade, he is eligible to retire in the new grade at his option. Thus, he can apply for retirement on his promotion date and retire six months later if he is otherwise eligible.

MILITARY AND CIVIL SCHOOLING OBLIGATIONS

There is some confusion concerning schooling obligations, and, in particular, those for aviation courses. The confusion rests largely on the two words *concurrent* and *consecutive*.

For example, if an officer receives his wings on 13 June 1971, and immediately attends *AH1G* transition, he is obligated to serve four years until 13 June 1975 (i.e. aviation training obligation is three years plus *AH1G* transition training of one year equals four years total).

The maximum obligation that one can incur at one time is four years. If, for example, the hypothetical officer described above were immediately to attend another course that entailed an obligation he would not at any time be obligated beyond four years. If he were to wait until his original obligation was down to fewer than four years, his attendance at another course could at most simply raise his obligation back to four years.

One final note: Service obligations are not being satisfied while one is incurring another obligation. To illustrate, if an officer graduates from the advanced course and immediately enrolls in flight school, he receives no credit toward the one year advanced course obligation while he is attending flight school.

We strongly recommend that everyone, especially an aviator, review periodically his service obligations with Armor Branch or his unit personnel officer.

WANT AD

Majors and lieutenant colonels are needed for assignment to the Computer Systems Command. Selected officers will attend an 11-week ADP Course at Fort Benjamin Harrison. Those interested should contact Major McBride, CONUS assignment officer at OX31475.

CONSTRUCTIVE CREDIT FOR CGSC

After 13 January 1971, officers receiving constructive credit for Command and General Staff College schooling will no longer be eligible to attend resident courses of that level. This policy change does not pertain to officers selected to attend FY72 classes, nor does it apply to those officers previously notified by OPO that they had been awarded constructive credit.

ARMOR INNOVATIONS CENTER

THE SELF-PACED PROGRAM

Each Monday morning in the 7th Battalion, 2d Advanced Individual Training Brigade at USATCA a new group of recently graduated basic trainees begin their second "eight weeks." Their objective is to receive an administrative military occupational specialty, 70A10, general clerk; 71B20, clerk-typist; or 71H20, personnel specialist. Before earning the more specialized MOS 71B20 or 71H20 each trainee must master the requirements for 70A10.

What makes this training so unique? The program of instruction is "self-paced." The trainee may go through the course of training at his own rate of speed. In the self-paced program, instead of having a fixed eight-week training cycle with the knowledge gained varying with the individual's ability and effort, the knowledge is fixed, and the time it takes to absorb it varies with the individual's ability and effort. Some trainees may satisfactorily complete the course in four, six, or eight weeks; others may never complete it. For the latter few, assignment to another type of AIT is requested.

Here is how it works. The basic course consists of about 14 different subject areas in the administrative field. Some of these are: the Army functional files system, unit mail service, correspondence, unit orders, and safeguarding defense information. The student is given a programmed instruction text for the first subject. He is allowed to progress through the text for as long as he needs, getting assistance from the instructor if needed, until he feels he has mastered it. He is then tested on that subject by the instructor, using the programmed instruction text criterion test. If he successfully completes the test he is allowed to continue to another subject. This is repeated until all subjects have been covered. If he fails any one of the criterion tests, he is given time to restudy the text. However, he must complete each criterion test successfully before progressing to the next subject area. After all subjects have been studied and the student feels he is ready, he is allowed to go to the end-of-course testing committee. Here he is administered a comprehensive examination on all subject areas covered in the classroom. If he passes this exam he goes on to the 71B20, clerk-typist, or the 71H20, personnel specialist course. These courses are conducted in the same self-paced manner. If insufficient time remains for more training, he is awarded the MOS 70A10 and is ready for job assignment.

RESIDENT–NONRESIDENT ARMOR OFFICER BASIC COURSE

The Armor School's Department of Nonresident Instruction recently announced a change of procedure for all USAR school students enrolled in the Armor Officer Basic Course. For the 1970-71 school year, these students will be offered their summer training phases together with the reserve component officers taking the resident/nonresident AOB course C1. In the USAR school program students complete phases IA and IB at Reserve training center schools. They then take phases II, III, and IV in active-duty-for-training status at Fort Knox. Formerly the last three phases were taught by the USAR school instructors at the rate of one phase per summer. Thus it would take the student three separate summers to complete his active duty work.

Under the new concept, the resident Armor School faculty will teach the phases consecutively. Students may elect to take only one or two of them, or they may complete the entire set in a single, six-week period. This represents a considerable savings of active duty time when compared to the resident, nine-week Basic Course. The schedule for the active duty phases is as follows:

Phase	*Report*	*Start*	*Close*
II	13 Jun 71	14 Jun 71	26 Jun 71
III	27 Jun 71	28 Jun 71	10 Jul 71
IV	11 Jul 71	12 Jul 71	24 Jul 71

STABILITY OPERATIONS EXERCISE

When an officer, schooled only in tactics for use against a conventional enemy on the plains of Europe, has his first experience with stability or counterguerrilla operations, he immediately realizes that there are many differences in that world of no secure areas and war everywhere. One of the most obvious differences is the increased need for coordination. Coordination in itself almost becomes a key to suc-

cess. Not only does the commander have to coordinate with adjacent, higher and lower units, but now he must also coordinate with elements of the host country, both military and civil. The commander no longer "owns" his area of operation as he finds himself operating with, or in the same area as, other military forces. In order to provide the student with the most realistic means of exercising his knowledge of tactics in a stability environment, to include coordination with a host country, the Command and Staff Department is preparing a rather unique exercise for students of the Armor Officer Advanced Course. The exercise is three-sided, with US units, host country civil and military forces, and the guerrilla force represented. American officers will represent the US and guerrilla forces. Allied students will represent the military and civil leaders of the host country. The exercise will be free-play, similar to the three-day map maneuver on conventional tactics also presented to the students. The "winner" is determined by the best tactics, not by a school solution. The play of the exercise is organized in such a way that coordination-cooperation becomes an essential ingredient to success.

ARMORED VEHICLE CREWMAN'S UNIFORM

Specific armored vehicle crewman's uniforms for summer and winter wear are now approaching reality. A two-piece summer uniform was evaluated by USARV elements from April to June 1970 and was approved and classified Standard A. The two-piece summer uniform will be made available in Vietnam this Spring, with the remainder of world-wide requirements estimated to become available in September 1971.

The winter uniform, a one-piece coverall, was tested December 1968 to September 1969. It was the opinion of the test activity that the uniform met the technical performance requirements and safety characteristics well enough to warrant further development. During the test there were no deficiencies of the uniform but there were 11 shortcomings, primarily in the quality control area.

The requirements document for the winter uniform was returned to the Armor Agency for updating in November 1970, and the revision received the approval of the Armor Community, USAREUR, USARPAC, CONARC, USARAL, USARV and USAMC.

The revised document was resubmitted to DA in January 1971; approval is imminent. The winter uniform can be made available in 24 months from the time decision is made to issue.

Both uniforms will provide required environmental protection and permit maximum climatic protection and freedom of movement in the crew compartment. The uniforms are made of Nomex material and are designed to avoid bulk or any feature which will snag or catch on the many projections in armored vehicle interiors or hatch openings. The uniforms will repel water, give requisite fire protection and retard grease penetration. Additionally, a retrieving strap will be incorporated in the uniforms to facilitate the removal of injured crewmen in an upright position from the vehicle. It has been recommended that three summer and three winter uniforms be issued to each armored combat vehicle crewmember.

ASORC

During the academic year, members of various USAR and National Guard units attend the Armor Staff Officer Refresher Course (ASORC) at the Armor school. In many cases, a unit commander and most of his staff will attend this course as a group, to receive instruction in the latest Armor tactical doctrine. The Armor School has recently revised the ASORC Program of Instruction to include a two-day, two-sided free-play map maneuver. This exercise, similar to one presented to Armor Officer Advanced Course students, enables the commander and staff to perform all the functions of preparing estimates, issuing orders and supervising the execution of those orders. The fact that the group is opposed by a "live enemy," rather than a "school solution," presents a real challenge to the commander and his staff and is about as realistic as is possible short of actual conflict.

STANO TRAINING EXPANDED

Armor Officer Advance Course 501-71 will be the first class to benefit from the newly expanded Surveillance, Traget Acquisition and Night Observation (STANO) instruction. The Communication Department of the Armor School has been charged with the responsibility of presenting instruction on the unattended ground sensors currently available in the Army inventory, as well as on future trends foreseen for the development of such sensors. Acoustic, seismic, magnetic and pressure type sensors will be demonstrated and discussed in depth. Sensor nomenclature, capabilities and characteristics will be presented to the students using visual training aids, actual equipment and closed circuit TV. Live television will be used to point out fine detail on small items of equipment. Other departments will present instruction in thermal imaging, imaging, image intensification, vision optics, battlefield illumination and employment of STANO devices.

THE MARINES HAVE LANDED

The US Army Armor School, a pioneer in the development and conduct of combined arms instruction, is carrying the theme farther by hosting the officers of the US Marine Corps Command and Staff College.

Throughout the last few years a limited number of senior Marine Corps commanders and staff officers have been attending the Senior Officers' Preventive Maintenance Course (SOPMC) presented by the Army Maintenance Management Department. Due to the similarity of US Army and US Marine Corps equipment, the course has proven most beneficial to these Marine students. Their favorable comments attest to the value of the instruction they received. One specific testimonial of the course's impact was made by Lieutenant Colonel D. E. Gragan, USMC. Upon completion of the SOPMC, Colonel Gragan commented: "If I ever become Commandant, my first act will be to assemble every battalion commander or equivalent. . .and order them to attend this course."

In 1969, desiring to give more Marines the opportunity to receive this valuable maintenance instruction, Lieutenant General Raymond M. Davis, USMC, then Director of the Marine Corps Education Center, queried the Armor School about the possibility of presenting the SOPMC to students of the Marine Corps Command and Staff College, Quantico, Virginia. The request was received enthusiastically, and final approval was given willingly by CG, USCONARC. As a result, the 120 member FY71 class will travel to Fort Knox to attend the week-long course.

To insure pertinence of instruction, Captain Kurt J. Chandler, USMC, has been assigned to AMMD. Formerly an instructor in the Automotive Department of the Armor School, Captain Chandler has more than a year's experience teaching Army maintenance management subjects. In addition to teaching Army-related subjects, he will develop and teach Marine-related units of instruction to the special classes.

MECHANICS' TRAINING IMPROVED

A new method of training in the Armor School Track Vehicle Mechanic Course gives the student practical experience on removal, servicing and replacement of components on dead engines. Recently added is a practical exercise in which test equipment is used to adjust components on live engines.

The live engines give the student an opportunity to apply his knowledge and to gain experience as he develops skill in using test equipment and in adjusting and repairing track vehicle systems.

NCOC ENDS

The first noncommissioned Officer Candidate Course (recently eliminated) at Fort Knox began on 5 December 1967 and trained armor crewmen. The first class for armor reconnaissance specialists began training 30 January 1968.

Altogether 1276 NCOs in 30 classes were graduated to fill Armor crewmen vacancies. Twenty-nine classes produced 1337 reconnaissance-qualified NCOs. In addition 198 communications chiefs were graduated in four classes.

NEWS NOTES

BURBA MEMORIAL

In a recent ceremony at Fort Hood, the 2d Armored Division Gymnasium was dedicated to the memory of the late Major General Edwin H. Burba, the division's commander in 1963 and 1964.

In his remarks, Major General Wendall J. Coats, the present Hell on Wheels division commander, pointed up the tie-in between the gymnasium's current youthful users and General Burba's abiding interest in young people. General Burba, then Deputy Commander of First Army, was killed in an aircraft crash last fall as he was enroute to an ROTC ceremony. His funeral was noteworthy for the number of young men, to include a number of ROTC cadets from various universities, attending.

At the Fort Hood dedication, Mrs. Burba recalled the great enjoyment that General Burba had derived from playing volleyball in the gym and from watching many spirited contests there as well. She emphasized that General Burba always considered his time as 2d Armored Division commander to be the great moment of his 35 years of active military service.

General Burba was born and raised in Oklahoma and graduated from its university. It was never really very hard to figure this out. His drawl, quiet humor and evident pride in that state sort of sneaked up on one.

Starting as a CCC camp commander in 1935, he commanded many units—the 68th Armored Field Artillery Battalion, 1st Armored Division in World War II North African combat; CCB of the 8th Armored Division in Europe; the Seventh Army Training Center; and Prov MAAG, Korea. He served with distinction in a number of staff assignments—G3 and Chief of Staff, 2d Armored Division; Military Assistant to the Under Secretary of the Army; Executive Office to three assistant secretaries of the Army; Chief of Staff, 3d Infantry Division during Korean combat; and Deputy Director for Operations, J3, on the Joint Staff. He was Project Manager for the Main Battle Tank.

General Burba's own good humor, enthusiasm, competence and radiant quiet confidence, together with the many juniors he inspired to be better soldiers and, above all, better men are his best memorial. But a good case could be made that a gymnasium vibrant with young people enjoying the exhilaration of good hard, clean competition, in an atmosphere of goodwill, would be about the best inanimate reminder to a great division of another of its great commanders. *An Old Dragoon.*

MG Coats and Mrs. Burba at the ceremony dedicating the gymnasium in memory of General Burba.

GENERAL DAVISON TO CINCUSAREUR

General Michael S. Davison, a 1939 Cavalry graduate of the United States Military Academy, is the new Commander in Chief, US Army Europe, replacing General James H. Polk, who retired recently.

General Davison comes to Europe from Vietnam, where he commanded II Field Force. Previous European assignments include chief of staff, Headquarters, V Corps, US Army Europe and commanding officer, Combat Command A, 3d Armored Division. He also served as Senior United States Representative, US Army Standardization Group in London during 1960-61.

General Davison has had a mixture of troop and administrative assignments during his 31-year career. During World War II he served as division G2 and CO, 1st Battalion, 179th Infantry, 45 Infantry Division, and later as G2 and G3 VI Corps. During the early 1950s, after receiving a master's degree in public administration from Harvard, he worked in the Office of the Chief of Legislative Liaison and the Office of the Chief of Staff.

A 1946 graduate of the Command and General Staff College, he returned in 1965 as its commandant. He served previously as commandant at West Point.

His most recent assignments, in addition to the tour in Vietnam, have been as Chief of Staff, Pacific Command and Deputy Commander in Chief, US Army, Pacific.

GEN Davison

MG DESOBRY TO FORT KNOX

Major General William R. Desobry has succeeded Major General Richard L. Irby as commanding general of Fort Knox. General Desobry began his military career after graduating from Georgetown University, where he was commissioned through the ROTC program. During World War II, he served with the 10th Armored Division, and while engaged in the defense of Bastogne, was wounded and hospitalized by the Germans. He was transferred to Falingostel, a branch of the Belsen prison camp, from where he was liberated in 1945.

In 1955, after completing a tour as a faculty member at the Command and General staff College, he returned to Germany as commanding officer, Combat Command D, 2d Armored Division. He later served as division chief of staff and G3 V Corps.

After a tour in the Office of the Chief of Legislative Liaison, he was assigned to the faculty of the Army War College. In 1965 he became Deputy Senior Advisor to the ARVN IV Corps in Vietnam, advancing to senior advisor the next year. He returned to Washington in 1968 as Deputy Director, Plans Directorate, in the Office of the Deputy Chief of Staff, then became Director of Operations, the Office of the Deputy Chief of Staff for Military Operations.

He comes to Fort Knox after a tour as Commanding General, 1st Armored Division, Fort Hood, Texas.

MG Desobry

MG SMITH TO FORT HOOD

Succeeding General Desobry as commanding general of the 1st Armored Division is Major General James C. Smith, who goes to Fort Hood from an assignment as deputy commanding general, US Army Aviation School, Fort Rucker.

He enlisted in the Army in 1942, serving originally with the 16th Cavalry Regiment. After rising to the rank of sergeant, he attended Officer Candidate School and was commissioned in January 1943. In 1945 he was assigned to Troop A, 28th Reconnaissance Squadron as a platoon leader, a unit organic to the 6th Cavalry, with whom his father had served for nearly 25 years. He was wounded several months later and evacuated to England and later to the United States. After training at Fort Sill, he received a Regular Army commission in Field Artillery, but was detailed in his original branch of Cavalry.

General Smith received a rating as a liaison pilot from the Artillery school and returned to Europe as Air Observation Pilot.

A graduate of the Command and General Staff College and the US Army War College, he has since served

with the 1st Air Cavalry Division and the 101st Airborne Division (as deputy commanding general) in Vietnam.

In addition, he has had a number of aviation-related assignments, included two years with the Joint Test and Evaluation Task Force which analyzed Air Force and Army activities related to air mobility, and commanding general, US Army Flight Training Center, Fort Stewart.

MG IRBY TO HEAD VMI

Major General Richard L. Irby has been chosen to succeed retired Marine Lieutenant General George R.E. Shell as Superintendent of the Virginia Military Institute. General Irby, a 1939 graduate, will return to his alma mater following his retirement from the Army on 30 June. Formerly Commanding General of the Armor Center, he has been on duty at Headquarters, Department of the Army, since 1 April.

CAPTAIN MARSHALL WINS DSC

Captain Carl B. Marshall, a student in the Armor Officer Advanced Course at Fort Knox, received the Distinguished Service Cross recently for actions in Vietnam in January 1970.

Captain Marshall received the award from Major General Richard L. Irby. The 24-year-old captain was cited for extraordinary heroism as a squad commander with the 11th Armored Cavalry Regiment. He was on a reconnaissance mission when he saw another helicopter shot down. He went down to hunt for survivors and seeing one of the crew, set his craft down amidst small arms fire from North Vietnamese regulars. He successfully evacuated the crewman to a hospital, then returned to the area where the NVA were entrenched.

The Tarpaulin

TAKE COMMAND

MG Franklin M. Davis Jr., US Army War College. . . **LTC Ronald E. Artzberger,** 5th Bn, 2d Bde, USA Engr Tng Cen, Ft. Leonard Wood. . .**LTC Richard L. Barber,** 1st Bn, 16th Arty, 2d Armd Div. . .**LTC William R. Colvin,** Inf, 2d Bn, 41st Inf, 2d Armd Div. . .**LTC Howard G. Glock,** 1st Sqdn, 14th Armd Cav Regt. . .**LTC Bruce Jacobs,** 1st Sqdn, 107th Armd Cav Regt, Ohio ARNG. . . **LTC William T. King,** FA, 1st Bn, 73d Arty, 1st Armd Div. . .**LTC William J.R. Lampe,** Ord C, 126th Maint Bn, 4th Armd Div. . .**LTC Phillips S. Larkin,** 18th Bn, 5th Bde, USATCA. . .**LTC Leslie A. Layne,** 8th Sqdn, 1st Cav, 194th Armd Bde. . .**LTC L.S. Sorley III,** 2d Bn, 37th Armor, 4th Armd Div. . .**LTC Lewis M. Tuggle,** 2d Sqdn, 14th Armd Cav Regt.

ASSIGNED

MG Phillip B. Davidson Jr., Asst Chief of Staff for Intell, DA. . .**MG Dana L. Stewart,** Adjutant General of Ohio. . .**BG William B. Caldwell III,** ADC, 4th Armd Div. . .**BG R.J. Fairfield Jr.,** CofS, I Corps. . .**COL W.G. Allen,** Dep Comdr, USA Log Doctrine, Systems & Readiness Agency, New Cumberland. . .**COL Arthur Brinson,** Dep Post Comdr, Ft. Meade. . .**COL James A. Hill,** 107th Armd Cav Regt, Ohio ARNG. . .**COL Paul B. McDaniel,** ACofS J3, USMACTHAI. . .**COL Thomas L. Morgan,** 3d BCT Bde, Ft. Ord,. . .**COL Oscar M. Padgett Jr.,** Inf, 1st Bde, 2d Armd Div. . .**LTC John D. Borgman,** G1, 1st Armd Div. . .**LTC William N. Bradberry,** G3, 1st Armd Div. . .**LTC Michel A. Henry,** former French Liaison Officer at USAARMS and *ARMOR* author, is now Editor of *Bulletin de l' A.B.C.*, the French Army Armor Magazine. . .**LTC David R. Moore,** Inf, G2, 2d Armd Div. . .**LTC Stan R. Sheridan,** Proj Mgr, M60 Tanks, MAMP, Warren Mich. . .**LTC Robert S. Thompson,** XO, 2d Armd Cav Regt. . .**MAJ Alan D. Hobson,** AGC, 2d Armd Div AG. . .**CSM Thomas D. Call,** 2d Armd Cav Regt. . .**CSM Antonio Gutierrez,** 5th Bn, 6th Inf, 1st Armd Div. . .**CSM Howell D. Hutchison,** 4th Bn, 46th Inf, 1st Armd Div. . .**CSM Kenneth L. Leyer,** 3d Sqdn, 14th Armd Cav. . .**CSM Robert A. Macon,** 3d Sqdn, 12th Cav, 3d Armd Div.

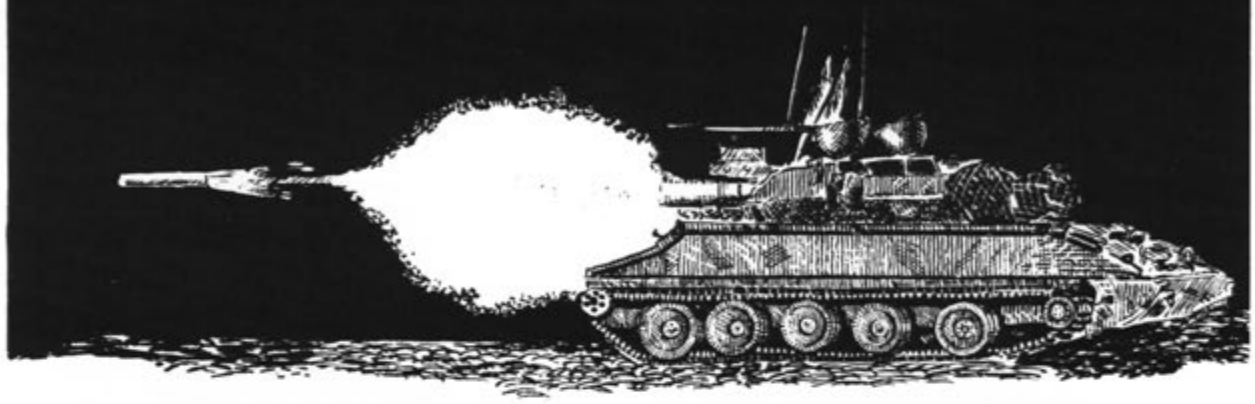
VICTORIOUS

BG Harry H. Hiestand was recently inducted into the Infantry OCS Hall of Fame. . .AOAC 4-71 Distinguished Honor Graduate: **CPT Ralph E. Nelson.** Honor Graduates: **CPT John L. Hoefler, CPT David M. Robinson** (who also won an Armor Association writing award), **CPT Douglas B. Campbell, CPT Russell P. Grant Jr.** . .AOB Distinguished Honor Graduates: 6-71 **2LT Paul F. Herrera,** 7-71 **1LT Richard L. Carroll,** 8-71 **2LT David D. Graydon,** 9-71 **2LT Larry L. Sapp,** 10-71 **2LT Frank L. King,** 11-71 **2LT Grady R. Anderson**. . . 1970 **General Bruce C. Clarke** award to outstanding **1st Armored Division** unit was won by **2d Bn, 52d Inf (LTC James P. Van Sickle).** Previous winners were 3d Sqdn, 1st Cav (1969), 141st Sig Bn (1968), 16th Engr Bn (1967) and 3d Bn, 19th Arty (1966). . .**2nd Bn, 51st Inf (LTC John R. Randolph)** won 1970 **Major General John S. Wood** trophy for top **4th Armored Division** unit. Past winners are 1st Bn, 54th Inf (1966, 1969), 4th Bn, 35th Armor (1965, 1968) and 2d Sqdn, 4th Cav (1967).

AND SO FORTH

In addition to those selections published in the March-April 1971 *ARMOR*, **LTC Bruce H. Robertson** has been selected for promotion to Colonel AUS and **MAJ Ronald A. Hofmann** has been selected to attend the Fuehrungsakademie der Bundeswehr in Hamburg, Germany. . .All elements of the **11th Armored Cavalry Regiment** except the **2d Squadron (LTC John L. Ballantyne)** were inactivated in early March . . . All of the 6th Armored Cavalry Regiment except the **1st Squadron (LTC Rodney W. Spotts)** has been inactivated at Fort Meade, Maryland . . . The **3d Squadron, 3d Armored Cavalry Regiment,** Fort Lewis, was also inactivated. **3d Bn, 312th Regt (Armor AIT), 3d Bde, 78th Div (Tng) USAR** has been redesignated **1st Sqdn, 302d Cav.** The Kearny, N.J. unit is commanded by **MAJ Harry Lloyd** . . . When **2LT John K. Boles III** joined the 3d Sqdn, 1st Cav, 1st Armd Div, he kept up the record set by his father in 1941 and his grandfather in 1911 that an officer of that name begins service in the Blackhawk Regiment every 30 years. He is also the second Boles to serve with Old Ironsides.

HOW WOULD YOU DO IT?



US ARMY ARMOR SCHOOL PRESENTATION

SITUATION:

You have been assigned as the assistant S3 of an M551 Sheridan-equipped armored cavalry squadron that is currently preparing for annual gunnery qualification. The S3 has called you in to give you your first assignment. He informs you that while the Sheridan crews are, for the most part, well-qualified in conventional gunnery, they have little or no experience with the Shillelagh missile system. Due to the limited number of missiles authorized by the common table of allowances (CTA) for annual training (one missile per weapon per year) there will be no opportunity for practice firing. This situation has caused the Squadron Commander to insist that effective use be made of the missiles allocated for annual gunnery qualification.

PROBLEM:

The S3 directs you to draft a training program that will assist the troop commanders in preparing their crews for the missile firing phase of annual qualification. His guidance to you indicates the following key points:

a. The training must be realistic.

b. Concentrate on moving targets.

c. Do not plan for elaborate equipment requirements. Confine yourself to either TOE or Training Aids Center items.

d. Training areas for this program will be limited to troop motor parks and a target acquisition range.

e. The Squadron Commander has established a goal of at least 85 percent hits in the missile firing exercises.

f. The training program must be completed in minimum time.

SOLUTION:

The solution to this seemingly difficult problem is actually quite simple. Depending on the location of your squadron, you will have available, either as TOE or as Training Aid Center items, the Conduct of Fire Trainer (COFT) XM41/42 (see illustration) and the snakeboard (figure 1). The preliminary gunner's examination (PGE) (FM 17-12, sec II, chap 18) will also be of use. The COFT provides the gunner with a realistic simulation of missile flights and can be used to simulate missile engagements against stationary and moving targets. The snakeboard and the PGE provide valuable preparation for the use of the COFT. Additionally, the chart recorder, a component of the XM41/42, allows the commander to observe and assess the gunner's progress. Your reference for the installation, operation, and maintenance of the Conduct of Fire Trainer is TM 9-6920-465-12. Effective use of this device can assure that your commander's goal of 85 percent hits will be achieved. Your training program should begin by determining the current level of proficiency. The most readily available method of doing this is the preliminary gunner's examination (PGE). Since you are primarily concerned with missile related skills, you should modify the PGE to concentrate on the missile subsystem. Be sure that your program provides a means of correcting weaknesses uncovered by the PGE and improving proficiency prior to moving into more advanced stages of training. Bearing in mind that

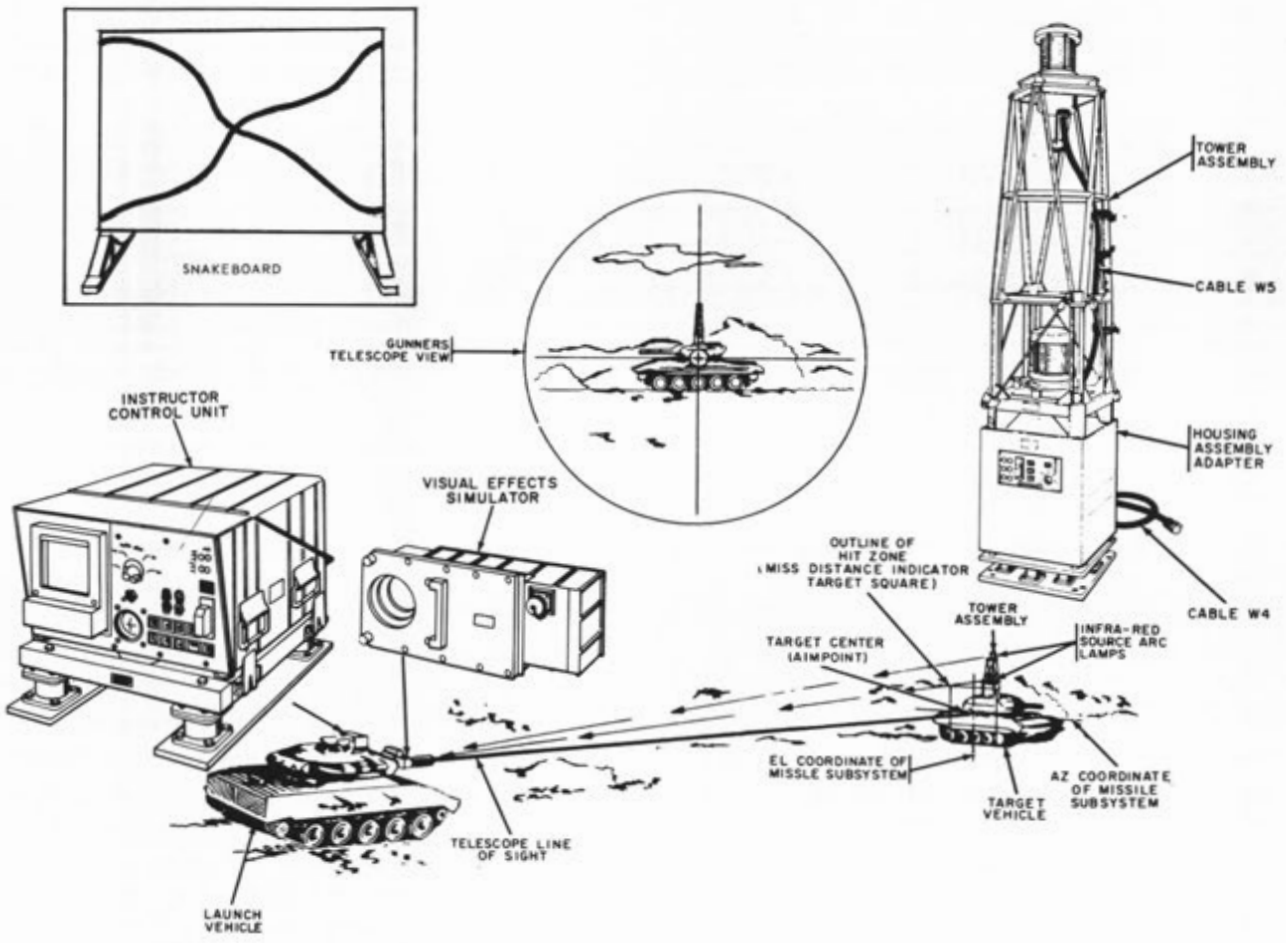
AUTHOR: MAJOR JAMES A. LOGAN

ILLUSTRATOR: JOE WARD

you are to concentrate on moving target skills, you consider using the snakeboard training device as the next phase of training in your program. Tracking skills can be improved by the use of the snakeboard without special equipment or large training area equipments. Now that the preliminary groundwork has been completed, you can begin to make effective use of the COFT. It will require approximately one-half day's time to mount and prepare the XM41/42—provide for this in your plan. The S3, in his initial guidance stated that a target acquisition area would be available for training purposes. This type of area is ideally suited to the COFT.

DISCUSSION:

Begin your COFT training with stationary targets and stationary launch vehicles. This will develop the gunner's confidence in his own ability as well as in that of the system. Proceed in successive stages, through moving targets and finally to a moving launch vehicle firing from a brief halt against moving targets. In this last phase require the gunner to simulate coax and conventional engagement as well as missile engagements. During each of the phases of COFT training allow each gunner a specified time period for practice and then test him. Set your standards high! There is no reason why your gunners should not achieve 100 percent hits against stationary and moving targets from a stationary launch vehicle. It is not unreasonable to expect 80 percent accuracy when firing from brief halts. This then is your training program. In an evaluation conducted by the Armor School using USATCA trainees, this same type of program resulted in better than 85 percent hits against moving targets. The success of these relatively inexperienced gunners was related to effective use of the Conduct of Fire Trainer XM41/42.



Relationship of launcher to target.

Military Men

by Ward Just. Alfred A. Knopf. 252 pages. 1970. $6.95

The first reaction to *Military Men* is: "What's he trying to prove?" This, in part at least, reflects the fact that in the popular literary game of "What's Wrong with the Army!" every player-writer is expected to allege discovery of some new military wrongdoing. As a consequence, with any new military title, one is prompted from the outset to look for what the present author hopes to add to the growing tally of Army sins.

Few, if any, seem concerned with telling it like it is, and much less concerned with telling it dispassionately, without rancor. However, at first glance at least, Ward Just has undertaken to do both, opening here and there a door on the Army, describing non-acrimoniously what he observed. Indeed, one reviewer remarked that since his findings confirm the views of many military men, Ward Just is about as good an apologist as the Army is likely to get.

But is this really so? Or is the apparent absence of axe-grinding a deliberate ploy which, eliciting a "Now isn't that stupid!" from the reader, ridicules indirectly by inference rather than directly by allegation. So much with bias has been written of the Army recently, and so pervasively do the media penetrate the contemporary consciousness, that it could be argued that Ward Just's observations simply reinforce well established prejudices, and that his indirectness is therefore possibly a more effective weapon than directness might have been.

Chapter titles: "The Academy," "Hood and Lewis," "Three Sergeants," "The Generals," "Outsider: One Major," "Machines," "Futures," "The Colonel," represent a fairly chosen sample of Army ingredients. It is a well written, even brilliantly written, book. The voices are familiar—those one hears when rationalizing with the young about military service; when talking with the sergeants—young, older, white, black; when listening how generals are made; when hearing of mismanagement in the making of machines; when debating the future.

In "The Academy" Ward Just finds West Point's fledgling Military Men troubled by the same things that trouble "college students everywhere: haircuts, pot, women . . . the general liberalization of society." And therein lies the problem. For the Army's traditional values—Duty, Honor, Country—began and are nurtured at West Point. Once generally shared by most of American society, they are now said to be Victorian, outmoded, out of tune with the times. Plenty of applicants for admission, yet few cadets dedicated to a career in an unpopular service torn between a recognized need for discipline, moral strength, and courage, and a general relaxation of any discipline at all in an increasingly permissive society.

At "Hood and Lewis" Just finds the Army's young—the bored privates and dissatisfied sergeants—no less troubled than their West Point contemporaries. Deprived of full measure free participation in the liberalization of society, they are resentful of what seems an increasing purposelessness about what the Army does. A once acceptable, even necessary, level of background bitching is now portrayed as outright dissent by vocal minorities and the media in every GI coffee house, pot den, and fire base. For without the flavor of a crusade, what is the purpose of it all?

And what of the Army's future? To many, the traditional Army is dysfunctional in outlook and purpose to society today. To others, the Army's growing concern with, and emphasis on, psychological and civic operations is dysfunctional to the role of an Army in a democratic society. There seems no consensus; *Military Men* can find no sure and purposeful view of where the Army is to go, much less how it is to get there.

The important question is how representative are Ward Just's observations—the few just cited, and the others. How well do these outward and

visible signs describe the inner and fundamental phenomenon?

For example—West Point. In olden times it was an engineering school. As America outgrew the need for a military *Polytechnique*, the academy curriculum, while still technical, broadened in history, languages, and other liberal arts, until it now compares favorably in those subjects with the curriculums of many colleges and universities. Of West Point, Ward Just observes that the need for broadening the product has created a system that smatters the cadet with a little of everything. No one can immerse to depths of his choosing in any subject or discipline. Breadth is had at the expense of depth. But is this unique to West Point? Hark! The plaintive cry of graduating seniors everywhere is that they are splattered with too little of too much; that to be effective in a field they need more depth than is afforded by a baccalaureate degree. At West Point therefore, the underlying educational philosophy is, for better or worse, quite in tune with the prevailing philosophy in contemporary American education.

What does set West Point apart is the Duty-Honor-Country framework etched in and around the educational experience. It is this same framework that, in many ways, sets the rest of the Army apart from the society it serves. The cadet who cannot relate Duty-Honor-Country as he finds it at West Point, fails in realization for the same reason that the bored young soldier, or the frustrated young sergeant, cannot understand the need for the disciplined absolutes of combat training or for the oversimplified rights and wrongs of traditional military value judgments. None of them can relate the social values they knew as adolescent citizens to those of the institution in which they are serving.

But again, is this not symptomatic of the contemporary liberalization syndrome? Mr. Jefferson's liberalism championed the rights of man and freedom of the individual, both at the cost of a certain responsibility the individual owed society. Today's liberal, non-contextual in his Jefferson, lauds freedom and individual rights with obligation only to one's self. The substitution of self for something above self in the value hierarchy is no less discomfiting to a West Point cadet than to his contemporary who is a seminarian or a student of law; and for quite different reasons it pains the mature soldier no less than his generation's barristers and surgeons. And so it is with the code of Honor—for moral, righteous, and imbedded in the Judeo-Christian ethic which gave Western liberal society its basic values, Honor, as a member of the hierarchy of American social mores, seems to have died in the same attack which killed God.

And so what fate Country? With Duty now only to self, with Honor entombed with God, who will put Country above self? How is there to be judgment of right and sense of wrong without the requisite ethical bias? The dilemma is not unique to the Army; it is American; it belongs to the liberal West. No doubt it reflects more acutely in the Army than elsewhere, because traditionally the American Army has buried its roots deepest where they were best nourished by the fundamental values of American society. To see the Army therefore as an "embattled institution in a changing society," as Ward Just does, is simply to admit the embattlement of society itself.

For it is essential to remember that in its fundamental attitudes, prejudices, hopes, and frustrations, the Army is a mirror image of American society. All the social malaise, disaffection of the young, diffusion of values, travail of justice, and questing for goals that beset America today are reflected in some way in the nation's armed forces. Actions which change the Army start in the society itself. A certain institutionalization of values, an inherent conservatism, both unique and probably necessary to the military, do cause change in the Army to lag change in the society. The necessity for a professional military ethic—an ethos binding professionals together—frequently causes soldiers to resist change, especially if change appears debilitating to the core values which nourish the professional's sense of selflessness and acquiescence to the disciplines of a moral code. Nonetheless, one must recognize the Army for what it is—a piece of America, changing as America changes—be that for good or bad.

Also, it is essential to remember what the Army does. One of Ward Just's colonels declares: "The Army is the only goddam thing holding this country together!" A soldier's frustration with society's indisciplines is understandable. But if the Army is indeed the only thing holding the country together, then both the Army and the country are in deep trouble. For if the democratic fabric is so rent that it must be stitched together by the military, then democracy is at an end, and the Army not an army at all, but a force of state police. The Army's role is defense of the nation. Military men must understand that. Even if the democracy elects to destroy itself, their sacred trust is to ensure that the Army is not a means to that end. For in the end, the Army can defend the nation against everything but the nation itself. BG DONN A. STARRY.

THE FOURTH DIMENSION OF WARFARE:
Volume I Intelligence/Subversion/Resistance
Edited by Michael Elliott-Bateman. Praeger. 181 pages. 1970. $6.50.

Mr. Elliott-Bateman and his associates have produced a fascinating book on what they consider to be the new dimension of warfare: "the systematic supply, training, and deployment of irregular forces, using in a methodical and deliberate way all kinds of modern techniques for the disruption of enemy forces, morale and communications by means of subversion, intelligence and resistance."

They view it "to be the most likely form of warfare for the future, wherever apparently unequal forces are ranged against each other, wherever the strong are armed and the weak are not, wherever organized force is opposed by popular common consent."

They develop their thesis in a series of lectures originally presented at the University of Manchester in England during the autumn of 1967. This first of a two-volume series is devoted to intelligence, subversion and resistance, which these experts believe to be the basic content of the fourth dimension of warfare. In addition to being scholars, the contributors each have had considerable experience in the business, primarily during World War II.

The lectures are not only thought-provoking but are made very interesting through the use of history and personal experience. S.G.F. Brandon describes the Zealots, who played a leading role in the ancient Jewish resistance against Rome. Donald McLachlan draws from personal experience to discuss the gathering and evaluation of intelligence and its importance in World War II. Major General Sir Bolin Gubbins, who was head of the British Special Operation Executive in that war, tells of the early days of the SOE—established in 1940 to coordinate sabotage and subversive activities—and of its subsequent operations. M.R.D. Foot takes a broader look at special operations, telling of its successes and failures throughout history. Henri Raymond recounts his experiences as an SOE agent in France during the war. Finally, the editor, Michael Elliott-Bateman tries to tie the whole concept together by describing the modern concepts of people's war as developed and used by such revolutionary theorists as Sun Tzu, Mao Tse-tung, Giap, Lawrence, Wingate and Che Guevara. Many of the lectures are followed by a series of questions and answers.

One finds throughout the lectures a number of important observations about the nature of this new form of struggle. For example, in answer to a question, Elliott-Bateman responds:

> . . . In this sense I say yes to political activity by our military commanders; they must be highly trained in external politics, otherwise they will carry their political naiveté into highly sophisticated political arenas, seeking communists under every bush and, worse still, supporting political losers purely because they seem affluent and respectable on the surface. Military commanders must be trained in armed diplomacy . . .

Controversial? Perhaps. However, these are questions which must be raised and discussed by politicians and soldiers alike.

From the point of view of an American, the weakness of this book is its emphasis on the British. So too it leans heavily on World War II experience. It is not really until near the end when Elliott-Bateman talks about people's war that the book starts addressing American problems in responding to insurgency in Southeast Asia and Latin America. Even here, his 1967 evaluation of the Vietnam situation is not altogether accurate in the light of today's developments. Thus, the book's value is more the philosophical one of placing this type of war in proper context, rather than of providing any answers or helpful hints.

Nevertheless, it is certainly time that we start thinking in philosophical and conceptual terms about the changes that revolutionary strategy and tactics are bringing to the art of war. We of the military must stop thinking about these sorts of operations as unorthodox or even ungentlemanly. As British Prime Minister Heath recently suggested before the United Nations General Assembly, internal disorder and political violence, not conventional or nuclear war, may well be the world's great problem in the coming decade.

The Fourth Dimension of Warfare is a challenging introduction to the use of these and other forms of insurgency and subversion as weapons of warfare. It is valuable and interesting professional reading. It is hoped that the second volume on violence in politics lives up to the first on subversion, intelligence and resistance. COL JOHN J. MCCUEN, USAWC.

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