

ARMOR

July-August 1970



IN THE 1970s

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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ARMOR

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reconnoitering

IT AIN'T NECESSARILY SO

We are now firmly into Year 1 of the 1970s. For quite a time now we have been trying to get a feel for a new decade that, even at first glance, appeared to be destined to be marked by more eventful things affecting the Army and our branch than any other in the 195 years of that Army, or the 82 years of this journal.

As thought and discussion about what might come to be progressed, some suggestions began to take shape -- a somewhat smaller, more professional Army with fully modern, practical equipment; the reaffirmation, in up-to-date terms, of the code of selfless dedication and true competence which has marked our best years; the need to make sure that we not lose sight of those major arenas where proper military power would make possible successful political pursuit of our national defense objectives. And throughout came the recurring theme of those things which we should be thinking about with respect to what emerging new means of strategic and tactical mobility would mean to Armor.

From these tentative areas for inquiry came the thrust of our 81st Annual Meeting which is reported on in this issue, as well as some uncommonly thought-provoking prize-winning articles by Advanced Course 70-1 students.

A sentence in the "continued on page 25" part of a newspaper article led to our asking General Tomio Hara to write what he could about the new Japanese MBT. It seemed to us that to such names as Sony and Toyota might be added Mitsubishi in the military materiel field. And we thought ARMOR readers should be among the first in the world to weigh this.

While this enlarged 80-page issue certainly brings the reader no blueprint for the next 10 years, it should help further to keep us all thinking forward. Admittedly, coverage of some important, and exciting, areas is pretty slim -- frustratingly so. These include present efforts directed at finding an enemy faster and more accurately so that power is brought to bear on him, not on some empty piece of real estate. So too, there is all too little on increasing the speed and efficiency of the command and staff process. Logistics are largely ignored. And, as so often happens, there should be more on Armor's newest means of mobility -- the rotating air foil.

All this certainly suggests that together we have the opportunity to make the 70s the most dynamic decade that Armor and ARMOR (and their predecessors) has ever known. The question is, will all of us do so? While our inclinations are to reply with a resounding affirmative, the answer must come from your minds, your voices and your pens.

The Editor

LETTERS TO THE EDITOR



A Proper Concern

Dear Sir:

The study of military history seems to have fallen into somewhat of a decline as many of us focus all our attention on current matters. It appears that in the minds of all too many historians perversely immerse themselves in dusty archives diligently researching the irrelevant. This misconception leads (or at least may lead) many career officers and NCOs to regard military history as more a quaint hobby than a part of professional development deserving serious attention.

Frequently, we in Armor are guilty of cherishing the spirit of Cavalry while, at the same time, we have all too little appreciation of the people and the conditions which fostered the development of a dynamic and efficient combat arm. There is much we might learn from our military forefathers of the Civil War, the Indian wars or even more ancient conflicts.

Every great captain advocated and pursued the study of military history. Indeed, it would be unfortunate if preoccupation with the present and the future denies us the lessons of the past. The fact is that we need the balance, the perception and the rational foresight which result from the study of competent military history.

JOHN E. GRABOWSKI
CPT, Armor

University of Pittsburgh

ARMOR book sales, the paucity of worthwhile historical manuscripts and the conversations heard in which a speaker purports to have discovered fire, or the wheel, buttress strongly the thrust of Captain Grabowski's argument. For example Russell Weigley's

superb History of the United States Army was published in 1967 and continually ever since has been brought to the attention of *ARMOR* readers. To date, only 18 copies have been ordered. One can hardly pretend to have begun, much less reached competence, in the study of American military history until one has read, and then referred back to, this basic work. THE EDITOR.

"Updating The Air Cavalry Squadron"

Dear Sir:

I would like to congratulate Captain Phillip V. Branstuder on his outstanding article in the March-April 1970 *ARMOR*. He has pointed out some refinements to the air cavalry squadron that would definitely increase its overall mission capability.

In 1968, while serving as Assistant S3 of the 3d Squadron, 17th Cavalry I observed the results of replacing *UH1Cs*. Everyone concerned welcomed the additional firepower of the *AH1Gs*. However, it soon became apparent that we had lost a large percentage of our reconnaissance capability. We had been operating with teams of one *OH6A* and one *UH1C*. We found that in most instances this was no longer feasible. The most common team became two *OH6As* with one *AH1G* covering the scouts from a high vantage point. This cut our scout team capability in half. I wholeheartedly agree that the *UH1M* should replace the *AH1G* in the air cav troop and that an attack helicopter troop be formed consisting of eight *AH1Gs*.

Captain Branstuder's recommended addition of a long range reconnaissance patrol troop is also a valid point to consider. While commanding D Troop, 3d Squadron, 17th Cavalry I was placed under the operational control of the 52d LRRP Co., II Field Force. Our mission was to act as an airmobile reaction force for any teams making contact with the enemy. Other resources OPCON to the LRRP Co. were two *AH1G* fire teams and four *UH1Hs*. Initially my squadron was able to give me an *OH6A*.

It soon became apparent to the LRRP Co. and myself that what we actually had was a small air cavalry troop, with three aerorifle platoons and a LRRP troop. By using my one *OH6A* as a scout flying eight to 10 hours a day and our other assets, we were able to increase greatly the capability of the LRRP company. However, the overall effectiveness of this task

force was greatly reduced due to lack of overall control and more important a lack of esprit de corps. The guns and slicks came from two different assault helicopter companies and an attack helicopter company. The crews were rotated frequently and never felt they were a real part of the task force. D Troop, 3/17th Cavalry, even after four months, considered the OPCON a temporary hardship. The combining of the separate LRRP companies with the separate air cavalry squadrons would result in an economy of effort. At the present, the LRRP company requires a large staff. Their duties would be absorbed by the squadron staff. The necessity of providing airmobile assets to the LRRP company would be eliminated. Most important is the fact that all elements would be part of one team with a common identity.

Captain Branstuder has proposed the most economical approach to this problem that I have heard to date. I recommend that his suggestions be given serious consideration by CDC and by commanders in Vietnam who could implement this on a test basis at minimum cost.

JOSEPH P. SEERY
MAJ, Armor
Commanding

A Troop, 8th Squadron, 1st Cavalry
Fort Knox, Kentucky

Semper Fidelis

Dear Sir:

This is in answer to Lieutenant Coogler's call for opinions about a Combat Armor Badge (*ARMOR*, March-April 1970). As a Marine I am not one of the Armor branch members whose support he was soliciting, but I do have an opinion.

The attachments to the Marine service uniform consist of rank insignia, ribbons, shooting badges, and service insignia. Members of the Fourth and Fifth Marine Regiments wear a four-regère also. And air crewmen have their wings. For most Marines, these are all they need to symbolize their pride in their Corps and in their records. I think most will agree that the Marine service uniforms are attractive, distinguished and uncluttered.

Last year, the Navy Department came up with its answer to the Army's Combat Infantryman's Badge. This is the Combat Action Ribbon, which is awarded to all Marines who have been involved in actual combat. This award is placed with the other ribbons worn by the Marine—all above the left pocket.

My advice to the Armor Branch concerning the Combat Armor Badge is—if you need it, create it, and wear it wherever you can find room for it.

JOHN D. BENNETTS
1LT, USMCR

Camp Pendleton, California

Dear Sir:

No matter how it's sliced, the most important man in the Army is the guy with the rifle—the *dog-face* soldier. The guy who stands there with nothing but a tin pot and a rifle and represents the United States of America against all opposition.

Toward the end of War Two, the Army finally decided to give him a little recognition, a small, silver wreathed badge with a flintlock on a blue background. It said, simply, this man, in close ground combat with the enemy, did his duty.

For that reason, it quickly became the most sought-after decoration in the Army. This reluctant warrior remembers well spending nights in North Korean outposts commanded by corporals, with captains and lieutenants volunteering to help with the machine gun so that they could get their 30-nights of bona fide combat, one or two at a time, and go home with the little badge on their chests.

The man who was called, with some justification, "the worst soldier in X Corps" remembers how shocked he was when the infantry regiment from whom he'd been mooching food for a while mustered a corporal's guard on his departure and pinned one on him. The pride hasn't dimmed in almost 18 years that the guys in holes with their rifles thought that he—a *tanker* at that—should also be allowed to wear the little badge that said he'd done his duty, such as it was, as they were doing theirs.

That same badge now graces the breast of my little brother. He's a signal corps type, and an aviator and he got his in Vietnam with the special forces. He'd been engaged in placing, and extracting, long range patrols, and some

rifle carrier in the proper command position decided that he, too, had done journeyman's work, and really knew what it's like to be a combat rifleman.

I've seen my little brother without the ribbons he's earned for valor, but I've never seen him without his CIB.

It's a fraternity, *their* fraternity, and you can't even apply for membership. But once you're tapped, you're proud and grateful.

As long as they're willing, from time to time, and in my case, to be incredibly generous, to let the back-up troops in every once in a while, for having done their duty, there's no reason for the back-up troops to ask themselves in.

Army regulations make provision for application to transfer to the infantry.

EX-SGT WILBUR BOLSHEVIK,
C.I.B.

Ex-Sgt. Wilbur Bolshevik, a well-known author, says he is carried in the Thank Heavens, We're Rid Of Him files under another name. He was christened "Bolshevik" on Luke's Castle in Korea during the late unpleasantness there by Colonel, then Captain, George S. Patton.

All the Brothers . . .

Dear Sir:

In the January-February 1970 ARMOR "Letters to the Editor," Lieutenant Colonel Quinn, former commander of the 3/1 Cav, 1st Armored Division contrasts his units' accomplishments with those of the 2/4 Cav, 4th Armored Division.

Tom Quinn, as all of us, is justly proud of his unit. However, a few clarifying comments must be made concerning the 2/4 Cav's *Sheridan* gunnery results.

The gunnery tables were completed in May 1969 as part of the USAREUR M551 evaluation which the 2/4 Cav had been selected to conduct and for which it was issued the first *Sheridans* in Europe. The crews were a conglomerate—39% trained (mostly AIT) *Sheridan* crewmen, 44% M60 tankers and 17% others. Crew training consisted of a one-week orientation at the

Seventh Army Combined Arms School (CAS) and a smattering of additional hours fitted in where possible. On 27 April, we received 27 brand new, depot-boxed *Sheridans*. The gunnery program commenced 1 May. By 24 May all tables (I-VII) had been fired at Vilseck-Grafenwohr and 26 of 27 crews were qualified. Scoring was by the expert and hard but fair CAS cadre. Qualification was set at 70% of possible. The highest score was 91%, lowest was 69% and average 79%.

The cavalry squadron of the "Deeds Alone" 4th Armored Division led the way and set a pace for USAREUR. We're proud of the record. I shall not quibble over which is the best cav squadron in the Army because the mission, environment and overall situation are different for each. Besides my troopers and me already *know!*

FRANK E. VARLJEN
LTC, Armor

2d Squadron, 4th Cavalry
APO New York

The 1969 Sheridan gunnery records of both the 3/1 Cav and 2/4 are impressive, as are those of other units worldwide. We look for more outstanding achievements this year since more experience has been gained with our newest armor tracked weapon system. THE EDITOR.

Dear Sir:

I wrote this letter to explain my apparent lack of interest in the Armor Association. In late 1967 I came overseas and except for three months while I was with a BLT in the Philippines, I have been serving in Vietnam. Because of all the tie up in the mail system it sometimes takes a long time for my mail to catch up to me and I am late in returning such things as my registration card for the annual meeting.

I have found ARMOR Magazine informative and a great help in keeping me informed of the latest developments.

JOHN R. HARVEY
CPL, USMC

MOVE, SHOOT AND COMMUNICATE

ARMOR is on the move, quite literally. Changes of address have been coming in at a 600 per month rate lately. If you are moving, shoot yours in to maintain two-way communication. Magazine returns indicate non-receipt of some address changes. If you do not get a yellow reader service card with your new address imprinted thereon within a month, send another change in an envelope.



Japan's New Main Battle Tank For The 70's

by Lieutenant General Tomio Hara, Japanese Army-Retired

*Photographs courtesy of MG Sampel Ohgahara
Japanese Defense Agency*

Recently the Japanese Defense Agency announced officially the completion of a newly developed prototype main battle tank. This tank is currently undergoing engineering trials. Many details of its structure and capabilities cannot be dealt with at this time. However, a generalized outline within the limits of official releases is presented here.

DEVELOPMENT IMPETUS

The earlier Japanese *Type 61* tank (*ARMOR*, Jul-Aug 68, P. 38) was developed during the 1954-60 period with satisfactory results. Production and equipping units followed in 1961. Unfortunately rapid technological progress had rendered the *Type 61* a mediocre tank upon its completion even though it enjoyed superior features when originally con-

ceived. Therefore, without losing any time, research work on a next generation tank was begun immediately. This resulted in a master plan which saw design and construction of various components start in 1964. Ironically, this program coincided with the development program of the joint U.S.-German *MBT 70*. This resulted in an engineering competition between East and West for the outstanding tank of the 1970s.

DEVELOPMENT CONSIDERATIONS

The employment considerations which underlay development of the *Type 61* tank remained valid. However, the primary requirement for a new tank was to increase as much as possible the firepower while remaining within certain size and weight limits. In Japan, the railways are narrow gauge which re-



stricts cargo width to just over three meters. Cargo weight for the freight cars is limited to 35 metric tons. Cargo exceeding this weight requires special freight platforms.

For a main battle tank, a large caliber gun is now deemed necessary in order to increase antitank effectiveness. As a result, the current main battle tank guns of the leading World powers are generally 100mm or larger. At the time when development work on the *Type 61* tank was started, the tendency was to use the 90mm class of guns. It was recognized early by the Japanese planners that it would be most difficult to design a tank with a gun of the 100mm class within a vehicle width limitation of 3 meters and a weight limitation of 35 metric tons. Although our designers recognized this considerable handicap, it was decided that original creative efforts to be made as part of the new tank development program would make it possible for the tank to be armed with a 100mm class gun.

To increase gun power, it was necessary to increase gun size, and projectile weight and accuracy. At the same time, the weapon system had to be capable of rapid response to the commander and a high cyclic rate of fire. Additionally, improved target acquisition and fire control means would have to be developed by applying the latest scientific progress in the field.

A second important area of the research work was improving mobility both on high speed roads and on rough terrain. Japanese terrain is complex with many districts characterized by difficult features such as

muddy rice paddies, mountainous areas and so forth, all of which must be overcome during military operations. Thus, it is especially necessary that the tank possess off-the-road combat mobility capabilities of a high order. Except for the main highways, many roads are poor and narrow. Moreover, many have bridges of low weight capacity which limit the movement of heavier tanks. These terrain considerations, and the limitations imposed by the transportation system, dictated that no substantial increase could be made over the 35 metric ton weight of the earlier *Type 61* tank. Therefore, it was decided to hold the planned weight increase within 10%, making the target weight roughly 38 metric tons. In order to further improve mobility, research efforts also were directed toward bridging equipment.

RESEARCH AND DEVELOPMENT

The tank project was pursued under the supervision of the Director, Ground Ordnance Development, Technical Research and Development Institute, Japanese Defense Agency. As in the case of the *Type 61* tank, Mitsubishi Heavy Industries, Ltd. offered its full cooperation as the prime contractor. With respect to components, R&D work was allocated among many specialized commercial plants since it was necessary to take advantage of all possible sources of engineering knowledge and capabilities.

Following submission of tactical requirements from the Ground Staff Office (Office of the Army Chief of Staff), the Director of Ground Ordnance Develop-

ment drew up an engineering plan incorporating the wishes of the GSO and plotted an overall program for its execution.

Beginning in 1964, components were selected and work was started on studying engineering possibilities. The transmission, steering mechanism and suspension system were taken up first. Thereafter, research extended into armament, the electrical system, oil pressure devices, and so forth, with each component being handled separately. Thorough study preceded component design, prototype construction and testing.

A powerplant was newly designed by adopting the principles of Mitsubishi's excellent new 2-cycle diesel engine of the ZF series which had been developed for highspeed motor boats. The Nippon Electric Co., Ltd. took over development work on the laser range-finder and the Mitsubishi Electric Co., Ltd. developed a ballistic computer based on original ideas. Other operational electrical parts and oil pressure devices were designed, tested and completed. By 1966, all these were confirmed as reliable products.

As outlined above, a special feature of this development program was allowing ample time. R&D was doing a component at a time and new concepts were thoroughly explored and tested. It is felt that the success of the new tank can be attributed to the progressive approach taken.

During functional trials, the components were mounted on a specially constructed chassis fabricated by modifying the chassis of an existing tank. Through such tests, the compatibility of various parts and components, overall ability to function and durability of parts were checked out to satisfaction.

Parallel with these tests, a completely assembled full-size wooden mock-up was constructed to study configuration of the hull, arrangements within the vehicle, liveability qualities, and combat crew functioning. This mock-up also assisted in designing the steel casting for the gun turret and the drawing of plate cutting blueprints for the armor plate. The adopted hull is of rolled steel plate all of which is joined by welding. Solid cast steel has been used for the gun turret.

Assembly of two prototype tanks was started at Mitsubishi's Tokyo plant in 1968 with complete mounting of armament and equipment being made during September 1969. These prototypes are now undergoing engineering trials at the Fuji Training Grounds under joint sponsorship of the Director of Ground Ordnance Development, The Technical Research and Development Institute, and Mitsubishi engineers.

Results of initial trials have shown the design and specifications to be satisfactory with very good functional qualities. The powerplant is quiet and worked by complete fuel combustion and strong output. The operational quality of the suspension system is good and it shows a satisfactory off-the-road capability. It is felt that the automotive requirements have been fully met and that the various components developed may be considered a success.

As the next step in the engineering trials, it is planned to test thoroughly the firing system. This is of course, one of the prime points in this tank development program. If development targets are met with desired performance, and functioning confirmed, the next phase will see the prototypes turned over to the

SPECIFICATIONS AT A GLANCE

	MITSUBISHI "NEW TANK"	M60A1	MBT70
Length — Hull	21'7"	21'9"	24'02"
— Overall	29'7"	30'11"	30'06"
Width	10'6"	11'11"	12'03"
Height (min)	7'4"	9'9"	6'06"
Weight (tons)	38	51	55.3
HP rpm	750/2200	750/2400	1250/2600
HP per ton	17.6	14.7	22.6
Ground clearance	11-28"	18"	6-26"
Speed (mph)	31+	30	40
Crew	4	4	3

Mechanized Equipment Testing Unit of the Fuji School for user's tests. These will include a wide range of practical trials designed to evaluate whether this is worthy ordnance equipment. The testing unit will operate the tank over various types of terrain under different weather conditions to determine firing capability, mobility, obstacle crossing and climbing ability, passage through muddy fields, severe cold suitability, endurance, ease of maintenance and so on. The testing unit will then offer its evaluation of the tank's practical worth.

Following the user tests, it is anticipated that a second prototype series will be constructed. Its main purpose will be to examine production procedures through studying engineering standards, methods of inspection, calculation of cost factors, tooling programming and fabrication of components for future mass production. With the second prototype, which will essentially be the same as the production model, further trials will be conducted to achieve final standardization. Thereafter will come standard production and issue of the new tank to the armed forces.

CHARACTERISTICS

Special efforts were made to minimize height in order to achieve a low silhouette. A hydraulic suspension system permits the tank to be raised or lowered according to the terrain.

Effectiveness of the hull and turret against enemy fire has been increased by a carefully calculated sloping of armor surfaces and by eliminating weak spots in the armor. The overall configuration is streamlined.

Extreme difficulty was experienced in designing and mounting the large turret ring needed to accept the 105mm gun while staying within the limitations imposed by the Japanese railway system. However, through using new concepts of internal arrangements, this obstacle was surmounted. With respect to the rear drive sprocket, it was necessary to drastically shorten the distance between the powerplant and the cross-drive transmission due to the vehicle's limitation of width.

ARMAMENT

The primary armament is a 105mm tank gun mounted in the turret. In addition, one 12.7mm machinegun is mounted atop the turret on a revolving mount. This is controlled remotely from within the turret. A single 7.62mm machinegun is mounted coaxially with the 105mm gun.



As it was for the U.S. Army's *M60* tank and the West German *Leopard*, the English *L7A3* 105mm tank gun was chosen. However, the recoil buffer and recuperator were modified in Japan. Using this proven cannon has the additional advantage of being able to use ammunition common throughout the Free

FIRE CONTROL

World. Furthermore, standard NATO cartridges are used in the auxiliary weapons.

For instantaneous ranging, a laser rangefinder has been employed. A ballistic computer affords automatic calculation of ballistic data and environmental differences. The turret control mechanism is controlled by one-hand and is very easy to operate. These devices are all linked with the sighting of the gun.

The gun stabilizer is an electrically operated two-axes stabilized gyro. A semi-automatic loader automatically feeds the round to the gun but is itself loaded by hand.

CROSS-DRIVE TRANSMISSION

The transmission has six speeds forward and one speed in reverse. The steering system is of the regenerative type with differential control of epicyclic gears. In each gear step, pivot as well as normal turns are possible. The entire system is operated easily with one hand.

SUSPENSION SYSTEM

The hydro-pneumatic principle used is similar to that of the U.S. Army's experimental *T95* tank and Sweden's *S-Tank*. However, the design is original. The ground clearance height may be altered freely from front to rear and left to right either completely or on a partial basis. This feature is especially useful for passing through rice paddies since it permits raising the ground clearance to pass over muddy obstructions. Spring absorption characteristics are excellent giving a smooth ride over rough terrain. Damping absorption of firing recoil is immediate and very effective.

POWERPLANT

The tank has Mitsubishi's *ZF* 2-cycle aircooled 90-degree V-type diesel engine with 10 cylinders. The engine features direct injection and an exhaust turbo supercharger. Output is 750hp at 2200rpm. Since it is a multifuel engine, JP4 kerosene and gasoline may be used in addition to standard diesel fuel.

OTHER FEATURES

With a snorkel device, it is possible for the new tank to cross bodies of water completely submerged. For CBR protection, the vehicle is completely sealed. Infrared devices and various radio communications equipment are standard.

SUMMING UP

Despite severe limitations on dimensions and weight, it may be said that great success was achieved in designing the new Japanese tank. The various requirements were all met. The tank's height, compared with similar vehicles of other nations, is the lowest. Hard work and ingenuity made it possible to mount a 105mm gun within the limited space. However, the crew compartment is slightly cramped but considering the Japanese physique it is believed that no difficulties will result.

The 38 metric ton maximum weight notwithstanding, it is believed that this new tank is a well balanced piece of equipment with the three essentials of mobility, firepower, and armor protection.

Although air-cooled diesel powerplants for tanks are traditional with Japan, this is the first time that the 2-cycle Mitsubishi *ZF* series engine has been employed as a tank propulsion unit. When weight and efficiency are considered in relation to power output, great progress is shown by this development.

New fire control devices have contributed to the tank's effectiveness and likewise show worthwhile advances.

The coming field trials will offer users a full opportunity to evaluate the tank and to recommend improvements if such are found to be necessary.

LIEUTENANT GENERAL TOMIO HARA, Retired, was born on 12 June 1895. He received his commission from the Imperial Japanese Military Academy in 1915. In 1922 he graduated from the Mechanical Engineering Course at Tokyo Imperial University. He has been involved with armor in line units, research and development, design, and manufacturing for the greater part of his military career. During World War II he was a tank regiment commander. Later, as a lieutenant general, he held concurrent commands as Commandant of the Japanese Army Combat Vehicle Research Laboratory and Commanding General, Sagami Tank Arsenal. At the end of World War II he retired from active service. In 1961, as Chief of the Japanese Combat Vehicle Mission he visited a number of U.S. Army installations including The Armor Center, Aberdeen Proving Ground and the Tank-Automotive Command in Detroit. General Hara is currently the Executive Vice President of the Japan Ordnance Association and a technical adviser to the Japanese Defense Agency.





ARMOR OFFICER ADVANCED COURSE 1-70

ARE WE PROFESSIONALS?

by Captain Howard C. Kirk, III

The Vietnam conflict has given the U.S. Army a wealth of combat experienced young officers. This group will in time be expected to bring its leadership and expertise to the highest levels of command and staff. As a member of this group, I have second thoughts about our present potential and our preparation for such duties. Are we moving in the right direction to become the professionals that the Army must have in the future?

The present trend toward reducing our military strength will place greater responsibilities on the remaining force. Missions that have been accomplished by quantity in the past will have to be accomplished by quality in the future.

Apparently we have served well in Vietnam as junior officers. But, Vietnam is a strange war, and a war which is possibly misleading. As platoon leaders and company commanders, we have grown accustomed to tremendous advantages in firepower, mobility, communications and logistical support. These advantages are great to have, but we must accept them with the understanding that we may not always hold such an edge. Similarly, many of the tactics and techniques which have proved successful in Vietnam may not be as valid elsewhere.

We have learned to operate successfully on a counterinsurgency battlefield. It would be a grave mistake to believe that we could operate equally successfully on a conventional battlefield having ourselves only knowledge of a counterinsurgency battlefield.

Are we now looking toward the future and constantly striving to improve ourselves as professional officers? Or, are we content to rest on our laurels and sit around telling war stories?

What is a professional officer? Is he a combat veteran who makes the Army a career? Is he a career officer with outstanding OERs? Is he an officer

who makes the five percent list for promotion to a higher grade? No, a professional is much more.

It should be readily apparent that the military professional requires a high order of knowledge and expertise. The professional is not only a doer but a teacher. On him rests the responsibility to teach the citizen soldier the art of defending the nation in times of crisis. And this must be done quickly and efficiently. No individual, whatever his inherent intellectual ability and qualities of leadership, can be termed a professional without his having had considerable training and varied experience.

As a student at the Armor Officer Advanced Course, I have frequently observed attitudes of complacency and disinterest in fellow officers. In such a class are two types of officers — the professional officer and the officer who is in the Army for security. Many of my classmates walk into a class expecting to be entertained. Granted, many military subjects are boring. But should a captain or major have to be entertained? Or, should he be professionally motivated to have a true desire to gain as much knowledge as possible in every area?

Moreover, the school solution is often the subject of mockery. An attitude of "I know a better way to do it, I'm a combat hardened veteran," often prevails. Then these same officers turn around and ask "How many mortars are in a mortar platoon?" or "What is a no fire line?" The school solution is only one way of solving the situation, but it is backed by years of military doctrine and history. One must know all the basic facts before he can understand the big picture.

Anyone who has been in a doctor's home or office has undoubtedly seen scores of professional periodicals and books. The physician or surgeon strives constantly to further his medical knowledge since his competence can mean the difference between

life and death. An army officer should be no different. Our knowledge and competence can also mean the difference between life and death. Are we as professionally motivated as doctors?

Ask yourself these questions. "Do I subscribe to one or more military journals or magazines?" "When was the last time I read a book or serious magazine article on the Russian Army?" "Have I ever read a book on military history?" "Do I strive to further my military education or am I content to continue with what I've already learned?"

An officer must possess many skills, mastery of which requires intense study. With a limited opportunity for combat experience, the professional officer must turn elsewhere. Military history gives a detailed view of the evolution of tactics, weapons, and strategy along with the performance of men under fire. An understanding of the history of the Vietnam conflict and other counterinsurgencies is a good start in preparing for a tour in Vietnam. With the vast amount of printed material about Vietnam available, an individual would have to be very un-professional not to take advantage of the experiences and opinions of others.

Historical examples are an excellent source from which to determine future problem areas and to evaluate the impact of military techniques. Why not take advantage of the mistakes and successes of military leaders of the past?

What can help the Armor officer in addition to accounts of World War II? A wealth of knowledge can be acquired by studying military histories of events prior to World War II. The armored cavalry leader can learn much about screening and covering operations from studies of Colonel Turner Ashby's cavalry operations in support of General Stonewall Jackson in the Shennadoah during the Civil War. Colonel Ashby was a master of screening operations, and his techniques closely resemble our present-day doctrine for the use of the armored cavalry units on a nuclear battlefield. So too, Napoleon spoke often of shock affect when referring to his cavalry. The doctrine is not totally new, only the machinery.

Furthermore, most officers today know very little of the Russian or the Red Chinese army, although a great many books about them have been published. The professional prepares for the worst, and it is unwise for us to fail to take advantage of the available information about a possible foe.

Of greatest importance is basic military knowledge. Knowing your own branch is certainly not sufficient. Do you know the organization and capabilities of a

mechanized infantry scout platoon or an infantry reconnaissance platoon? It comes as a shock to many Armor officers to learn that an infantry recon platoon has two organic *M551s*. It is imperative that every officer knows the organization and capabilities of every unit he may control or work with in combat. There will not be enough time to be thumbing through field manuals on any future battlefield.

The Army publishes hundreds of field manuals which can answer, or suggest answers to, almost any military question. Military periodicals are abundant. Every post library maintains a large military history section. The material is readily available to anyone who cares enough.

Today, a great deal of emphasis is being placed on an officer continuing his civilian education. Of equal, if not more, importance should be continuing military education outside of formal military schooling.

If one has chosen the Army as a career, military competence in the form of true professionalism should be a primary objective. Knowledge can not, and will not, be handed out on a silver platter. On the contrary, it can be gained only through constant study. As the senior of the future, we can ill afford to content ourselves with what we have accrued thus far.

There is much more to being a professional than being a combat veteran, a career officer, or a five percenter. Much more!



CAPTAIN HOWARD C. KIRK, III., Infantry, was commissioned in 1966 from the United States Military Academy. He was assigned to the 9th Infantry Division, Fort Riley, Kansas, where he served as a rifle platoon leader and graduated from the Ranger Course. Following deployment to Vietnam with the 9th Division, he served as a reconnaissance platoon leader and an aide-de-camp. In 1968, he returned to CONUS and graduated from the Airborne Course while assigned to the 1st Battalion, 3d Infantry (The Old Guard) where he served as an executive officer, communications officer and company commander. A recent graduate of Armor Officer Advanced Course 1-70, he is presently assigned to the US Military Assistance Command, Vietnam.

a QUESTION of EMPHASIS



ARMOR OFFICER ADVANCED COURSE 1-70

by Major William T. McCain

Alone and bewildered, the young artillery captain sat in the dim light of his office and gazed unseeingly into the deepening German Autumn night. As a myriad of thoughts raced through his mind, he sought to reconstruct the cataclysmic events of the day.

The day had dawned crisp and clear. His quarters were silent as he poured his first cup of coffee and prepared to relax with a cigarette before dressing. The clattering sound of the telephone shattered the morning quiet. Breathlessly, the first sergeant blurted, "Sir, AGI at 0830" and quickly hung up. Thoughts of coffee and cigarettes erased from his mind, the captain quickly dressed.

Arriving at the caserne, he smiled proudly and confidently at the flurry of activity and noted the intense professionalism that marked the preparations by the men. He had grown to know them well in the five months which they had shared. While he felt a small trace of apprehension, it was not because of the men, for they had yet to betray his faith. Still, the gnawing was there. After all, he thought, this is my first AGI/CMMI so a slight degree of anxiety is normal. He dismissed the thought and strode into his office. It was not quite 0630.

In between routine progress reports, tense, candid instructions and walk-through inspections of the various displays and areas, the events of the past five months raced before his eyes. The command was justifiably proud of the battery. While it was hampered by the remoteness of the parent artillery battalion headquarters, the infantry battalion to which it was attached furnished excellent support in those areas in which they could. Maximum emphasis was on tactical operations and maintenance,

the mess was second to none, and a true spirit of cooperation and respect prevailed. Additionally, they were the "fastest guns in Europe," proved on the battery ATT, and this brought an undeniable measure of pride in their accomplishment not only to the unit but to the command.

He felt a glowing sense of well-being and knew that the Inspector General would find things in perfect order. The gnawing was almost gone.

At 0815, the executive officer reported the battery ready. The Inspector General was prompt. Taken back by the size of the inspection party, the young captain computed quickly that there was one inspector, a specialist in his field, for each 4.1 men in the unit. The gnawing returned. The remainder of the day was a blur as the commander accompanied the Inspector General. Little thought was given to the platoon of specialists who were off on their own.

This isn't so bad, the captain thought. The Inspector General is an outstanding combat leader with a reputation as a hardnose but so far he has only found two canteen corks not glued, six *Playboy* centerfolds, a pair or two of footgear not marked and the usual potpourri of minor infractions that inspections are designed to detect. After a pleasant lunch break (during which all those specialists were conspicuously absent), the afternoon brought more of the same. The men had no complaints and at 1630 the Inspector General requested space to meet with the other team members to discuss the day's events and compile notes for the exit briefing.

At 1715, the Inspector General returned to the young commander's office with a sheaf of papers. The remainder of the visit was devastating—left overs

not shown in red on the cook's worksheet — there is one man you can't account for in the strength section of the morning report — the fringe file is not in consonance with the regulation — ammunition storage violates safety-distance criteria — the mess steward doesn't receive a copy of the morning report — training records incomplete — no logbooks for communication equipment — and so on.

After what seemed an eternity, the Inspector General closed his briefcase, shook hands and departed.

It was almost completely dark when the cacophonous sounds from the dayroom roused him from his thoughts. Why, he wondered. An excellent unit which can operate with the best and yet fail to demonstrate sustained performance in the mundane, lackluster, albeit vital managerial details that hallmark truly professional units defies logic.

Instinctively, he reached into his desk and grasped the small notebook that contained the personal and military history of each of his subordinates. Both officers were college graduates, ROTC trained, graduates of the basic course and dedicated beyond question. Thumbing further, he next gazed on an extract of formal military training and a slight glimmer reflected in his eye. Two hundred hours of gunnery and tactics, 36 hours of maintenance management, but only four hours combined of unit administration and supply and mess management, and none on storage and transport of ammunition, attendant requisitioning, turn-in, or accounting procedures.

Quickly turning the page, the name of the first sergeant appeared. Seventeen years in artillery, chief of firing battery for six of those, a natural leader but not a single hour of formal preparation for the awesome management responsibilities of first sergeant! The training NCO — a key slot to successful training management — not only are they not formally trained, they aren't even authorized, he thought to himself.

The supply sergeant's data sheet was the next to receive his scrutiny. No question about his integrity or character. They were above reproach. Physical security and supply economy were realities. Then why do we have problems in timely supply actions he thought? The page held the key. The supply sergeant was an ex-chief of howitzer section whose profile required reclassification. This was done apparently with no thought given to management skills required by the new MOS. Not even a single subcourse was required. No wonder his eyes glazed when I asked for an XL on the 25-outlet light set!

Convinced of a pattern, the young captain quickly

thumbed the pages. The mess steward, school-trained to cook, but not a single formal course on how to manage \$30,000 a year in foodstuffs. The motor sergeant, a school-trained mechanic, picked up his ability to manage three and one-half million dollars of rolling stock on the job without any formal training. The PLL and TAERS clerks, both college graduates, but no formal schooling to prepare them to manage maintenance administration which is the precursor of an effective maintenance program. The battery clerk, a cannoneer selected for his typing ability and other inherent qualities, is not school trained to complete the source document for the Army's strength and personnel accounting system much less the profusion of other material indispensable to the welfare of the unit members.

Quietly, he returned the book to his desk. Why, he wondered, are officers trained to be battalion commanders in the basic course when they haven't the slightest inkling of the managerial skills required to make a battery function professionally? Why are our privates trained so well, but the training of the non-commissioned officers in the management area left to chance? As he turns out the lights in his office, the adage that to lead effectively, a leader must manage efficiently time, money, men and resources, rings hollow in his ears. The gnawing feeling is gone.



MAJOR WILLIAM T. MCCAIN, JR., Field Artillery was originally commissioned in 1955 in the United States Marine Corps. Upon release from active duty in 1958, he attended Auburn University, graduating with a Bachelor of Arts in History in 1963. In 1965, he was commissioned in the US Army and graduated from the Field Artillery Officer Basic Course prior to assignment to Battery C, 94th Artillery, Berlin Brigade, where he served as executive officer and battery commander. He was then assigned to the 1st Infantry Division Artillery, Republic of Vietnam in 1968 and commanded Headquarters and Headquarters Battery, 1st Infantry Division Artillery and Battery C, 1st Battalion, 7th Artillery, and then served as artillery liaison officer to the 2d Brigade. He was recently graduated from Armor Officer Advanced Course 1-70 and has joined the ROTC staff at Auburn University.

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wills . . . estates . . . trusts . . . equity . . . debt consolidation . . . futures . . .
consumer goods . . . inflation . . . g.i. benefits . . . money management . . .
interest . . . budgeting . . . borrowing . . . investments . . . personal property
. . . retirement . . . service charges . . . social security . . . taxes . . . annuities
. . . credit . . . leasing . . . financial strains . . .
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personal property . . . retirement . . . service charges . . . social security . . .

Personal Financial Management

by Major Roy P. Hooks

Unfortunately, too many of our soldiers do not understand the use of money. Basically, there are two reasons for this — lack of education in financial management, and inexperience in financial management.

The scars of gaining experience without the benefit of education are often deep and long lasting. The failure of soldiers to manage prudently their personal finances inevitably creates a burden for both the individual and the Army. Too often the soldier finds himself in serious financial difficulty before receiving the benefit of counselling. It is common knowledge that commanders and their subordinate leaders spend many hours answering letters of indebtedness and counselling soldiers after they become financially distressed. Too often the counselor is not really prepared for the task.

It seems that the Army can hardly afford to continue to ignore its obligation to educate its soldiers in financial management and to provide competent guidance for their financial planning.

A great deal of information has already been prepared by various government agencies for use in the Consumer Affairs Program. To supplement and organize this material into an effective educational program would be a relatively easy task. Before discussing this sort of program in any detail, it must be pointed out that any such program would be incompatible with the present Army Savings Program.

Certain aspects of the Army Savings Program should be reviewed and revised. As presently constituted it is not objective and is purposely biased in that its stated goal is to achieve maximum participation in the payroll savings plan for the purchase of U.S. Savings Bonds. In overseas commands, the objective is to achieve maximum savings through the Class S Allotment System for savings deposits as well as allotments for the purchase of U.S. Savings Bonds. In fact, the present program tends to discourage other forms of savings and investments. At the same time, it fails to point out possible disadvantages of savings bonds.

The present program does not acquaint the soldier with the many forms of savings and investments possible. While this does not deny him the opportunities afforded by these options, are we not derelict in our responsibilities to the soldier if we do not advise him of them?

The current program establishes a percentage of participation as a goal. Although great lengths are gone to in explaining that the stated goal is not a quota and coercion is not to be used, coercion is, in fact, built into the program. Required reports, circulation of a tabulation of percentages of participation among all elements reporting to the commander, issuance of local awards to individuals and units, and publicity in post newspapers and on unit bulletin boards all put pressure on the commander to

achieve the stated goals. Consequently, the needs and desires of the individual become lost in the shuffle and certain pressures are brought to bear.

The most unfortunate result of all this is the common sales pitch, "If you will buy the thing, people will get off my back and I'll be off yours. Besides, you can cash it in two months so you haven't lost anything and it makes it easier on everyone concerned."

This is not in consonance with the fundamental principles of saving. How can we expect our men to develop the important habits of regular saving, and of not disturbing their savings except for cogent reasons, if we tell them in essence that we want them to buy a bond only to meet a quota. Are we so naive to think that they believe we are really concerned about their welfare or the country's economic condition when we use such an approach? I do not think we are. So let's deemphasize the minuteman flag, and change the army savings program.

I propose that the Army Staff develop a new personal affairs regulation and entitle it "The Army Personal Financial Management Program." The purpose of the regulation would be to implement the program conducted as part of the Command Information Program. In addition, instruction on carrying it out should be included in the programs of instruction for officer candidate schools, noncommissioned officers and noncommissioned officer candidate schools, officer basic courses, and officer advanced course.

One basic syllabus covering two major areas would do the job.

ESTATE PLANNING

- *Insurance.* A brief explanation of the basic types of insurance, what life insurance can do for an individual's estate, and utilization of cash and loan values of life insurance.

- *Savings.* The importance of having savings equal to an anticipated emergency requirement, the value of saving for short-term aims such as furniture, appliances and clothing rather than buying on credit and paying finance and carrying charges. This would be a good place to discuss the advantages of U.S. Savings Bonds to fulfill these short-term aims as well as to present the capabilities of various commercial savings institutions.

- *Investing.* A brief survey of the basic types of investment opportunities with emphasis on the fact that while they offer the best opportunity for growth of capital there is no guarantee of performance and

no protection against loss. It should be emphasized that in any case professional guidance should be sought prior to making any commitment. The importance of this topic is pointed up by the fact that many soldiers will be receiving substantial reenlistment bonuses and knowledge of such opportunities may encourage them to invest prudently a portion of those funds for long-term growth.

- *Survivor benefits.* Entitlements and how the beneficiary receives them.

AREA 2 — FINANCE

- *Bank Accounts.* Checking accounts and the advantages of paying bills by check. The use of saving accounts for back-up and emergency funds.

- *Shopping techniques.* Importance of comparing prices, quality and quantity. Seeking advice before buying major items.

- *Borrowing money.* Interest rates of loan companies versus commercial banks and credit unions.

- *Buying on credit.* Consideration of the actual amount of interest payable and the temptation to buy too much on credit. The value of establishing and maintaining good credit references.

The proposed program would consist of four phases.

PHASE 1

All personnel entering on active duty would receive an orientation concerning the assistance available to them and encouraging them to seek advice on their financial planning.

PHASE 2

Advanced instruction on financial planning and counselling would be included in the officer candidate courses and officer basic courses and noncommissioned officer schools. The objective of this training would be to enable the small unit leader to assist his men with basic financial planning, to counsel individuals effectively before and after they become financially distressed, and to recognize when and where to obtain more assistance for his men.

PHASE 3

Additional training in guidance and counselling techniques would be included in the officer advanced courses. Here, as in all phases, the guidance envisioned is limited to the fundamental of personal financial management. Individual cases involving complicated technical or legal aspects should be referred to an appropriate military or civilian agency.

PHASE 4

Phases 1, 2, and 3 would be reinforced by utilizing a portion of at least two commanders' hours annually. This would be a controlled program with material to be presented published by the Department of the Army. At this time current pamphlets on consumer affairs would be distributed. There are many useful pamphlets available now but very few people know about them. Guest speakers from the local business community could add interest and depth to the program.

This proposal has three main objectives: First, to develop fiscal prudence and responsibility through education. Secondly, to allow and to assist the individual to plan his estate using the options he feels are best for him. And thirdly, to provide financial counselling and formal instruction before problems arise. After all, if a preventive program is good for maintenance, medicine and legal matters, why not finance?



MAJOR ROY P. HOOKS, Armor, was commissioned in 1960 from the Infantry Officer Candidate School. He then graduated from the Armor Officer Basic Course and was assigned to the 1st Cavalry Division in Korea, where he commanded a reconnaissance platoon. He returned to CONUS in 1961 and graduated from flight school in 1962. Subsequently, he has served in varied aviation assignments at Fort Carson, in Germany and Vietnam and at Fort Rucker. Major Hooks was recently graduated from Armor Officer Advanced Course 1-70 and is assigned to Eighth Army in Korea.

SHEEP SHAPE!

In early 1944 I was the S4 of a mechanized cavalry group at Trowbridge, England, the home of the "Green Howards." The British regiment was already off to the war and we were occupying their real estate which consisted of many Quonset-type Nissen huts with grassy areas in between.

One day the swill collector, who raised hogs and sheep, noticed that the grass in the area needed mowing. He suggested that I let him bring his herd of sheep in to graze so that we wouldn't have to mow the grass.

I approached the Group Commander with the request and pointed out that I didn't think it would be a good idea because of a possible sanitation problem. He reversed me immediately saying, "I think it's a wonderful idea. Bring on the sheep, that's an order!" I think he must have been thinking about goats or deer or rabbits when he made his decision.

The first day the sheep came they wandered into the ground level huts chewing up everything in sight. The troops had to keep the doors shut to keep them out of the buildings.

The second day it rained, the grass got wet and the sheep got Montezuma's Revenge. What a mess! Liquid fertilizer all over the place. One could hardly make a move with safety.

The third day the Colonel came storming into my office, scraping his feet as he came and bellowing: "Get rid of those damn sheep by sundown! That's an order!"

COLONEL GLENN E. FANT, USA-RETIRED



ARMOR OFFICER ADVANCED COURSE 1-70



MILITARY IDEALS

by Captain Jack S. Chase

Morning was just dawning as the 500 American soldiers stealthily left camp toward the nearby insurgent village. Slowly and quietly they surrounded the primitive dwellings of the 250 sleeping men, women, and children.

Colonel Forsyth, the American commander, motioned for the four machineguns to be brought up, indicating with a wave of his hand the locations where they were to be emplaced. The colonel then glanced around. Satisfied that everything was ready, he grimly smiled and nodded to the major at his side.

The village search operation began. Major Whiteside ordered the sleepy insurgents to surrender their arms immediately. The rebels, sullen and uncomprehending, failed to obey Whiteside's orders as quickly as he thought they should. Only a few weapons were given up, obviously far fewer than was known to be in the village.

After a hasty consultation with the colonel, Major Whiteside ordered his men in closer, forming a square tightly encircling the village. Then squads were sent in to look for the concealed weapons.

Into the squalid huts the troopers strode, pushing out women and children and throwing over every bed or stick of furniture that might contain a hidden weapon. A sullen murmur spread through the band as they watched their families and precious belongings being shoved about. The tension rose and as a trooper jerked away a blanket a shot suddenly rang out.

This was exactly what the Americans had been waiting for. The chance was too good to pass up. Straight into the crowd of sitting and standing villagers they discharged a lethal volley. The four machineguns began chattering, killing or wounding nearly half the village in the first bursts.¹

All the pent up frustration of the Americans was being released. Months, sometimes years of combat under a scorching sun was beginning to tell. The war wasn't popular back home and widespread public criticism coupled with an oftentimes overzealous, uninformed, and biased press had not helped morale. Most of the soldiers had experienced the pain of losing a best buddy to this evasive enemy, sometimes by excruciating torture. Several remembered one captured young officer whose fingernails and toenails had been pulled out. His nose was then sliced off, one eye gouged, and his tongue torn out. Not satisfied with this, his barbaric captors had cut a slit in his abdomen and tied his intestines around a tree. Still conscious he was then forced round and round the tree while suffering indescribable agony before he was finally beheaded.² Yet although many troopers had lost friends in this way, few had had the satisfaction of having evened the score.

Now here they were! It mattered little if they were women or children — in the blood crazed eyes of the Americans they were all enemy. Babies were clubbed down. Young girls held their faces in their hands so they would not see the soldiers come up to shoot them. A handful of the helpless fugitives broke away down a ravine but were relentlessly hunted down and killed, with the bodies of some of the women and children being found two to three miles away.

By nine o'clock the carnage was over. The burial party reported a body count of 64 men and boys, 44 women and 18 young children, for a total of 126. Final estimates however, ranged to well over 200.³

Viet Cong propaganda? Another Vietnam atrocity? No. This story actually happened as described — in 1890 at Wounded Knee Creek, South Dakota. The "rebels" were a village of Sioux Indians that had come in to surrender to elements of the U.S.

7th Cavalry. The resulting massacre was to become one of the lesser known and certainly least proudly remembered actions of that historic regiment.

The passage of 80 years has not changed the nature of war or the human beast. Atrocities have been committed by Americans in every war in the past and will undoubtedly be committed in the future. They are not an exclusive characteristic of the Vietnam conflict, "the inevitable immoral offspring of an immoral war," as much of the American press and certain other "enlightened" elements of our society would like to have us believe. The problems and frustrations of those 7th Cavalry troopers are not unlike those of nearly every soldier who has served in Southeast Asia recently or of any soldier on any battlefield since Issus.

History has borne out, however, that on the whole the American soldier has conducted himself well; generally in a more honorable and civilized fashion than his adversaries. Indeed this concept of ethical conduct in battle is one of our basic tenets as a civilized nation. It has been instilled in each of us since we were young children that we are more cultured, less barbaric than many other nations. Were we not to live up to it, our basis for existence as a nation would have little meaning.

What then is it that has inspired the American soldier to support these high ideals, and what has been lacking when individuals or units fail to achieve the desired standards?

Obviously the United States Army has a leg up over other armies in the initial raw material — its citizen soldier. Taught since birth to respect life and never to take it needlessly the mere thought of killing another human being is repugnant to most. Yet war is brutal and it brutalizes many men. Even the excellent background of G.I. Joe will tend to erode under battle conditions unless his ethical standards are constantly reinforced by his leaders.

It is therefore to the leaders that the problem of ethical battlefield conduct must be addressed; and every leader if he is to be worthy of that name must squarely face this problem at some point during his career. How he faces up to this will indicate to a great degree the esteem in which he will be held by his colleagues and by future generations.

Few people today have ever heard of Colonel Forsyth or Major Whiteside. On the other hand, contemporaries such as General George Crook have earned a permanent niche in history largely because of their humanity to man. These relatively few still remembered leaders have almost to a man possessed

a certain greatness of soul which even decades later is noticed and respected. Perhaps the best phraseology would be that they possessed a well developed sense of military ideals.

Now, many today would argue that it is sheer cant and hypocrisy to speak of an ethical code in the same breath as war. But the thinking individual realizes that human nature has not changed in the five thousand odd years of written history. There have always been wars, and there will be wars in the future. However there is the possibility that those who best understand the use and nature of armed might, that is, the military leaders, may by conscientious application of a sound sense of values and ideals stimulate in others a higher morality which may someday restrain a war. Therein lies our main chance for the future.⁴

Now, since we are dealing with human nature there is obviously no completely adequate set of military ideals. I would submit, however, that there are certain minimum attributes which all leaders should have to a great degree.

The first of these and perhaps the most important is so widely recognized that it is a nearly identical rule in practically every religion of the world. That is the familiar "Do unto others" philosophy of the Golden Rule. Now this doesn't mean that we as soldiers should not kill the enemy because we would not like them to do the same to us. War is our profession and death is an occupational hazard. However, once the exigencies of battle have subsided there should be no question about humane care for all prisoners and noncombatants. Even during the heat of battle there is no excuse for the wanton killing of noncombatants nor for mutilation of enemy prisoners and dead.

A second attribute is that of honor. The concept of honor is a rather nebulous one, for as soon as it is tied down to specific situations it tends to fluctuate somewhat from year to year and war to war. For example, in the earlier wars of our history if a man was captured and then paroled by his captors on the condition that he stay within certain limits and not try to escape, the agreement was a point of personal honor and was generally observed. This could hardly be said to be true nowadays. Nevertheless, the generalization can be made that a person has honor if he chooses a course of action because he is convinced that it is in the general interest even though he is aware that it may result in humiliation, personal loss, inconvenience, or grave physical risk.

Finally a leader must possess integrity. A man has

integrity if he can look at himself and say that his interest in the good of the service is at all times greater than any personal interests and that he holds himself to the same line of duty when his superiors are absent that he would when all of them are present.⁵

There are certainly other attributes which could be added to the list; it is far from being an all inclusive one. Nevertheless, the young officer and the seasoned pro alike would do well to take inventory of their personal stocks of military ideals; not so much in the light of contemporary values and social pressures, but in comparison with the tried and true values which have marked the great leaders of our Nation's history. The standards outlined above are not counsels of perfection; thousands of Americans have adhered to them.⁶ Judging from recent news accounts, however, it is evident that a few military leaders of today have not given enough attention to forming a set of military ideals, and then being guided by these. If all had so done, there would be no modern day "Battles of Wounded Knee."

¹ Paul I. Wellman, *The Indian Wars of the West*. (New York: Doubleday, 1956), pp. 236-238.

² Fairfax Downey, *Indian Wars of the U.S. Army 1776-1865*, (New York: Doubleday, 1963), p. 40.

³ Wellman, *Op. Cit.*, pp. 237-238.

⁴ Department of Defense, *The Armed Forces Officer*. (Washington: Government Printing Office, 1950), p. 15.

⁵ *Ibid.*, pp. 18-19.

⁶ *Ibid.*, p. 19.



CAPTAIN JACK S. CHASE, Armor, is a 1963 graduate of the United States Military Academy. He attended the Armor Officer Basic Course, Ranger course, and Airborne School prior to his assignment in 1964 to the 64th Armor in Germany where he served as a tank platoon leader, battalion adjutant, tank company executive officer, reconnaissance platoon leader, and tank company commander. In 1966 he returned to Fort Knox to become an OCS company executive officer and a company commander in the School Brigade. He was assigned to Vietnam in 1967 as a troop advisor to the 7th Vietnamese Cavalry Regiment near Hue and later as province fire support coordinator and assistant G3. Upon his return to CONUS, he was assigned to Ohio State University where he taught military history. Captain Chase is a graduate of Armor Officer Advanced Course 1-70.

Those who Got Away



ARMOR OFFICER ADVANCED COURSE 1-70

"We had just come out of the jungle where half of us slept for security, while the others slept in the comfort of the house. It was a beautiful morning, quiet and serene, and the seven of us sat about the table as the old woman and the girl served up a steaming pot of glutinous rice and salt. In the distance we could hear the flap-flap of the enemy's helicopters. This did not alarm us since the enemy air machines often darkened the sky where we went. We began eating; the conversation was light as we talked of meeting some friends in the next supply group which we were to join later today and guide through our sector. Ch'in had just finished an amusing story and the others were laughing heartily.

"Suddenly the laughter dropped off as the roof above us began to shake and seemed as if it would fly away. The roar outside was deafening! We were caught! The others reacted at the same instant and grabbed for their weapons, abandoning all else. It was the war birds of the enemy, so close outside that they would surely blow the house over on top of us.

"We ran for the dark safety of the jungle 20 meters away — such a long 20 meters to the sanctuary of the hidden tunnel we had prepared months earlier. We could see their soldiers pouring out of the machines, surely they could see us! Why don't they fire?

"I choked and felt the dryness in my throat as I sprinted for the tunnel entrance, expecting at any moment to hear the crack of rifle fire or the screams of their many-mouthed dragon gun. I could feel the taste of death rising from my stomach. As I lay in the dirt of the tunnel floor and calmed the pulsating throb in my temple, I began to wonder again why they hadn't fired.



by Major Sidney E. Lyons, Jr.

"We were exposed and had hesitated far too long before hurrying to our jungle sanctuary. The first sound of firing was from the warships high above and not those on the ground, and they didn't fire until we were safely in our underground hideaway. Why had they not fired as they swooped upon us? They could have killed us as we sat for breakfast!"

Such must have been Nyugen's thoughts as he lay panting from the hard run. For the time being, he would be one of "those who got away."

In the air and on the ground, the crewmen in the helicopters were having their thoughts too. It is doubtful that many were experiencing flashbacks to Fort Riley where we had trained a very short time before, or of the late arrival of our choppers and the requirement to prepare them for shipment to Southeast Asia before we could really train with them, or even of our employment in a general combat support role to augment the division's aviation battalion, since our arrival "in-country." But, all of these were to play a part on this day, the day of our first true air cavalry mission, a little more than two months after our arrival. This time we had a mission statement,

an area of operations, and the freedom to operate as a unit with all our assets in whatever way would best accomplish the mission.

Three days ago, Troop D, 3d Squadron, 5th Cavalry, had started executing its part in *Operation Port Sea*, a joint U.S. and Australian effort. The troop was given the mission of cutting any enemy exfiltration across a prominent highway on the flank. The OH23 scout helicopters immediately began reconnoitering throughout our area of operations. During the first night's debriefing, they reported seeing five draft-age men around one isolated hut near a small village. During the late afternoon of the next day six young men were observed in the same vicinity; obviously, our continued surveillance, at a distance, had gone undetected. A last light reconnaissance was made of the area by means of a single overflight at 1500 feet. That night, back at our base, the plan for a surprise raid on the hut was formulated. We would take off before dawn and planned to land on the objective as soon as it was light enough to avoid the major obstacles in the landing area. The four ships of the aerorifle platoon would be accompanied by two gunships and a fifth slick would remain high overhead for command and control.

Surprise was complete! The aerorifle platoon landed within 10 meters of the hut. Through the openings in the dwelling we could see the people frozen in their seats! As the Viet Cong recovered from their initial shock and began to flee, the frustrated voice of the crew chief crackled over the intercom, "I can't shoot, lift off, lift off!" It was then clear to his pilot that the aircraft was situated in a bowl and the steepness of the sides prevented the gunner from firing for fear of hitting the main rotor blades and kept the riflemen from moving forward without being struck down by the rotor. The trail ship in the formation had landed behind a hedgerow and could not see the situation ahead. The lead chopper heard, "Trail is airborne," over the radio and could not lift off for fear of a collision with the trail ship. Had the lead and second chopper been able to lift off immediately their gunners could have brought down the fleeting target. Instead, the insurgents disappeared in that moment of hesitation.

For the rest of the morning the aerorifle platoon rummaged through two square kilometers of jungle, adjacent to the hut, to no avail. A scout team sealed off the open perimeters of the jungle area and did not detect any movement out of the serried growth. It is likely that the Viet Cong did not move very deep into the forest but stayed nearby their point

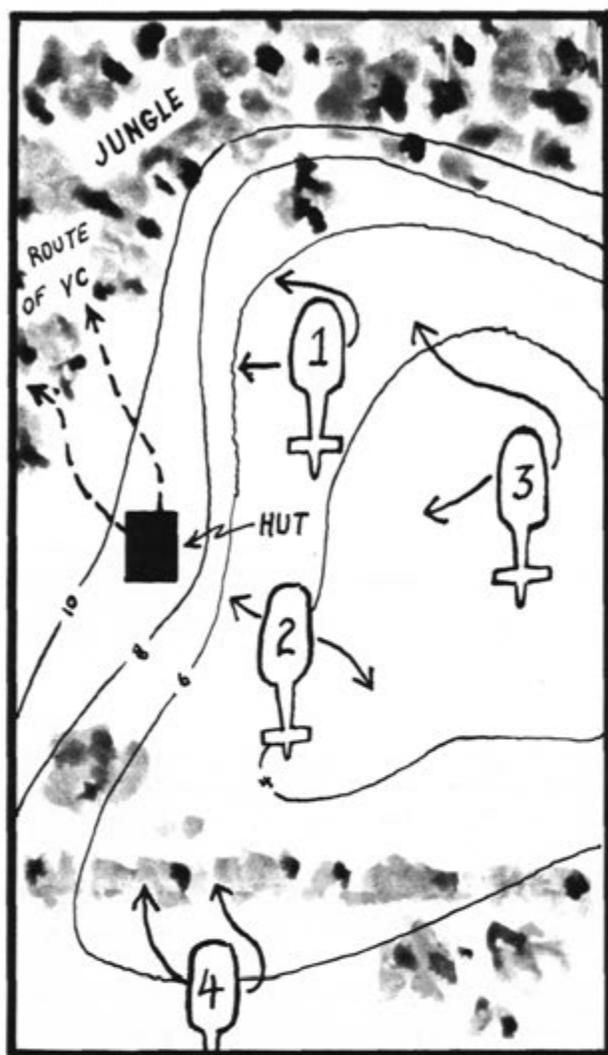


Illustration showing landing zone, path of enemy flight and landing formation.

of entry in previously prepared, camouflaged, underground positions. Our troops lacked the skill and experience to find such positions at this point, later they would do much better.

The spoils of victory were much less than what they might have been, but they were not insignificant. The old woman and the girl were detained and turned over to ARVN authorities for interrogation. The seven who got away had left behind most of their ammunition, their knapsacks, clothing, and bedrolls, as well as a mass of documents. The speed of execution had been so great that not a single shot was fired by the stunned enemy.

That night, the debriefing of the day's operations turned into a rather searching discussion as each examined his part in the mission. The raid has been conducted with all the swiftness and surprise of an eagle eagerly snatching its prey from the ground.



Illustration showing why the gunner couldn't fire without damaging rotor blades.

Only this time, the prey had slipped from the eagle's claws!

Our terrain analysis had been poor. The lay of the land had been deceptive and the chosen landing area was not identified as a bowl, but was thought to be a gentle slope downhill from the hut. A combination of overgrown paddy dikes and high brush, interspersed with burned out plots, had confused the observer. The mission should have been preplanned from a map reconnaissance before the aerial recon was conducted. This would have given the observer something more specific from which to determine the feasibility of the plan. Deception must be employed during an aerial reconnaissance of a suspected target. However, the reconnaissance must also be detailed and accurate.

Additional confusion had resulted from the units lack of aerial training together as a team.

The lead lift ship had been unsure of the trail ship's position and was unable to react to the tactical situation. The gunships were afraid to fire in proximity to the slicks because they were of unsure of the slick's reaction. The Command and control aircraft got to low in an effort to see what was happening and interfered with the flight path of the attack helicopters.

The key to the successful conduct of air cavalry operations is teamwork! SOPs can establish procedures and techniques for performing various type missions. But teamwork, the intangible factor, will determine the degree of success. Intensive training is required to develop the optimum level of teamwork and constant effort is required to maintain it!

Our first cavalry mission was not a complete failure though. The intelligence people were quite excited by what we brought in. And we learned a lot from "those who got away." But, we failed to accomplish the complete destruction of the enemy

force, although the psychological impact must have been devastating. However, these mistakes would not be repeated and Delta Troop was to enjoy much greater triumphs as it went on in the following months to prove time and again that no area, however remote, was truly safe for Charlie to sit down to a leisurely breakfast. He had ever to look over his shoulder and upward to the sky.



MAJOR SIDNEY E. LYONS, JR., Armor, was commissioned in 1959 from the University of Tennessee. Upon completion of the Armor Officer Basic Course and flight school, he served for one year with the 7th Aviation Company, 7th Division, Korea, as assistant operations officer. Returning to CONUS he served with the 101st Aviation Battalion and later as Commander, Headquarters Company, Campbell Army Air Field. His next assignments took him to Germany where he served as training officer, supply officer and fixed wing platoon leader with the 60th Aviation Company, 7th Army and as detachment commander of the Fulda Flight Coordination Center, 14th Air Traffic Control Company. After attending the Rotary Wing Transition Course at Oberschleissheim, Germany, he returned to the states and joined the newly formed 9th Infantry Division at Fort Riley, Kansas, and deployed to Vietnam with Troop D (Air), 3d Squadron, 5th Cavalry, where he served as the aerorifle platoon commander, operations officer, and finally troop commander. Next he was assigned as an instructor in the Command & Staff Branch, Department of Tactics, US Army Aviation School. Major Lyons graduated from the Armor Officer Advanced Course 1-70 and is now assigned to US Army, Vietnam.

A Practical Engineering Solution

by General Bruce C. Clarke

During graduate degree work in civil engineering at Cornell, I was particularly interested in several courses on bridges.

Later, on 1 February 1940, I reported to the 7th Cavalry Brigade (Mechanized) at Fort Knox to activate and train the 47th Engineer Troop (Mechanized). Soon, two lieutenants and 91 soldiers arrived from various other engineer units to fill the unit to its authorized strength. Together, we comprised the first armored engineer unit in the U.S. Army.

In May, we accompanied the brigade to the Louisiana maneuvers. These exercises pitted the 7th Cavalry Brigade against the 1st Infantry Tank Brigade from Fort Benning.

Brigadier General Adna R. Chaffee, our brigade commander, was an advocate of the Cavalry concept of the use of armor. These maneuvers, he felt, would decide whether that concept or the Infantry tank concept would prevail in the Army.

The Cavalry concept was strong on mobility and quick and fast thrusts of tank units. The poor roads and bridges in the maneuver area worried General Chaffee since they could spoil his plan of maneuver.

On the Friday before the maneuvers started, General Chaffee called me to his tent and oriented me on his thinking and on his plans for the maneuver. He said that by Monday he needed a bridge recon-

naissance of the maneuver area which would show all the bridges which would not carry his tanks. I returned to my troop and divided it into three parts, one for each third of the area, loaded several trucks with bridge building timbers and flooring materials, borrowed three tanks with crews from my Cavalry friends, and told my lieutenants:

"Take your platoon with tools, several truckloads of bridging materials, and a tank, and reconnoiter every road in your portion of the maneuver area. Run a tank across every culvert and bridge, repair every one needing it and rebuild those that your tank breaks down. I'll see you Monday noon with that job done."

(Let the record show that we did have to repair and rebuild a few bridges and culverts.)

On Monday afternoon I was able to present a clean map to General Chaffee and tell him that a tank had crossed successfully every culvert and bridge in the maneuver area and had passed over all the roads on the map.

The 7th Mechanized Brigade did well on the maneuvers. Within a few weeks, on 15 July 1940, the Armored Force was formed with the activation of the 1st and 2d Armored Divisions. At that point armor was in business in the US Army.



WOLTZ STUDIO

GENERAL BRUCE C. CLARKE, USA-Retired is much too well known to the readers of *ARMOR* to be the subject of a standard author's biography. However it should be noted that when the 1st Armored Division was activated then Captain Clarke became the first commander of the newly formed 16th Armored Engineer Battalion. Still later he was the Armored Force Engineer. Subsequently, his career was characterized by command assignments—CCA 4th Armored Division and CCB 7th Armored Division in WWII combat, 2d Constabulary Brigade, 1st Armored Division, I Corps in Korean combat, US Army Pacific, Seventh Army, CONARC and USAREUR/Central Army Group. Nonetheless, he never lost his interest in military engineering, and especially bridging. He was one of the originators of the Treadway Bridge and the AVLB. It was he who first recommended a bridge company for the armored division engineer battalion.

AGENDA

81st ANNUAL MEETING

THE UNITED STATES

ARMOR ASSOCIATION

FORT KNOX, KENTUCKY, 14-16 MAY 1970

THURSDAY, 14 MAY 1970

1830 Reception and Buffet at the Brick Mess

FRIDAY, 15 MAY 1970

0800 Honors Ceremony at the Court of Honor

MORNING SESSION AT THE WAYBUR THEATER

0820 Welcome by Major General Richard L. Irby, Commanding General, US Army Armor Center

0830 Response and Introduction of Keynote Speaker by Lieutenant General W. H. S. Wright, 23d President, The United States Armor Association

0835 Keynote Address: "A Sharp" by Lieutenant General George I. Forsythe, Commanding General, US Army Combat Developments Command

0900 Symposium: "Armor Through 1975"

Introduction by Brigadier General James V. Galloway, Assistant Commandant, US Army Armor School

"Future Trends For Armor" by Majors David G. Moore and Charles C. Walters, US Army Combat Developments Command Armor Agency

"MBT70/XM803" by Colonel Merritte W. Ireland, Office of the Main Battle Tank Project Manager

"The Armor Center Team Concept" by Major Donald R. Hiller, US Army Armor School

"The Future Armor School Campus" by Major John G. Demschak, US Army Armor School Discussion

1145 Patton Museum Progress Report by Lieutenant General Samuel L. Myers, President, The Cavalry-Armor Foundation

1200 Luncheon and Business Meeting at the Brick Mess

AFTERNOON SESSION AT THE BRICK MESS

1400 "British Armor" by Lieutenant Colonel John D. Osborne, British Army Liaison Officer, US Army Armor Center

"French Armor" by Major André Loussouarn, French Army Liaison Officer, US Army Armor School

"Armor In the Bundeswehr" by Lieutenant Colonel William D. Carter, US Army Armor School Liaison Officer, German Army Armor School

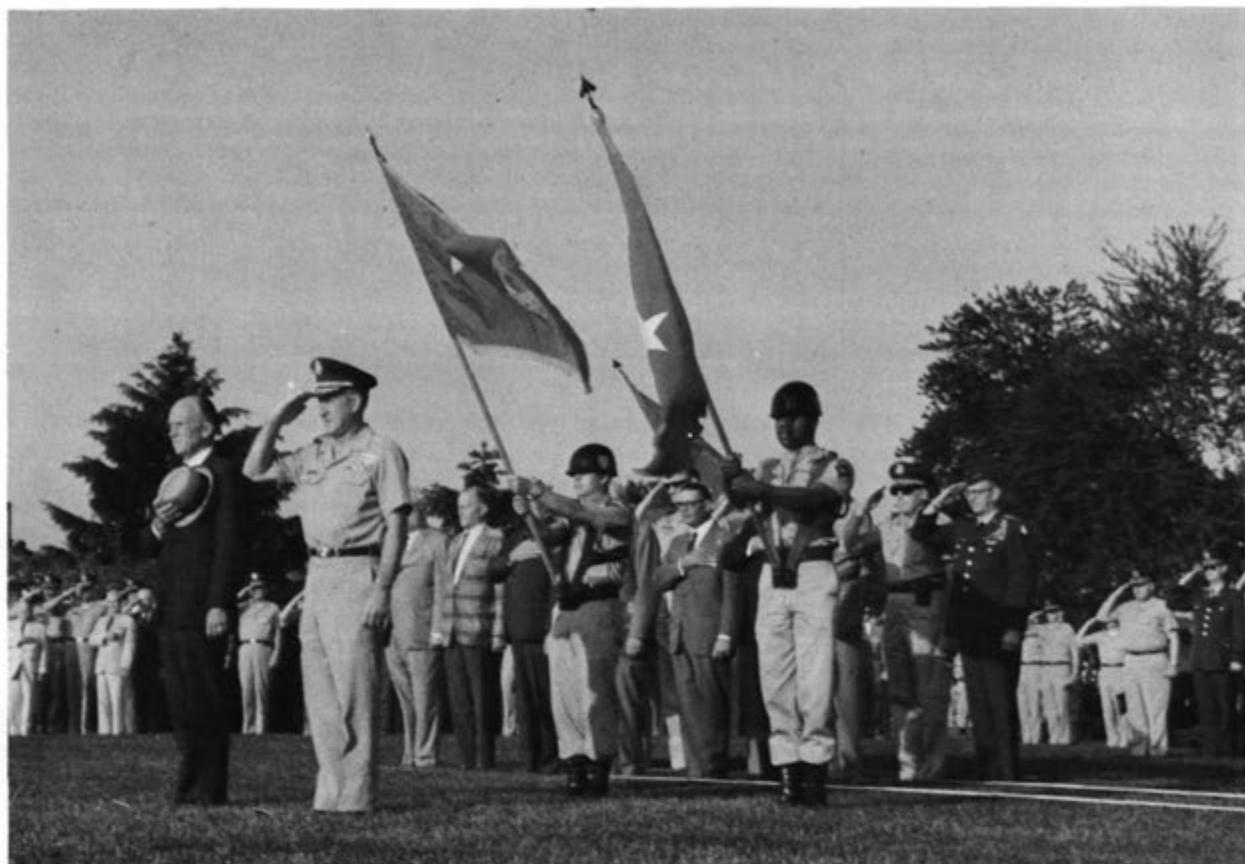
1550 Equipment Displays at Brooks Field

1830 Banquet at the Brick Mess

Address: "Some thoughts For These Times" by General Hamilton H. Howze

SATURDAY, 16 MAY 1970

0830 Executive Council Meeting at the Brick Mess



WELCOMING REMARKS

by Major General Richard C. Irby
Commanding General, US Army Armor Center

GENERAL WRIGHT, GENERAL FORSYTHE, DISTINGUISHED GUESTS AND FELLOW MEMBERS OF THE UNITED STATES ARMOR ASSOCIATION.

It is a distinct honor and pleasure to welcome all of you to the Home of Armor for the 81st Annual Meeting of our nearly 85 year old Association.

These are times of change for our Army and for Armor. Our central purpose in preparing for this meeting has been not so much to reexamine the past but to look toward the future. The Armor Center's portion of the agenda has been designed to try to give you an insight into what is being thought about for the relatively immediate future and, also, to share with you our views on the future for Armor. In essence, we are taking a look at developments in Armor.

There are always hazards connected with predicting the future. And very much among these is the possibility of misinterpretation by the hearer and

misquotation. In that vein, General Oden has asked me to clarify a point for him.

As all of you here are doubtless aware, General Oden was quite prominently cited recently as having said that the tank was dead.

I would like to quote to you from a letter I got from him the other day in which he clarifies what he actually said. I only quote the very pertinent portions, "... he asked me what I thought about employment of helicopter gunships in the European Theater. We discussed this at some length and I firmly believe, and so emphasized that they will not only be great in the European environment but, working very closely with tanks, should increase the kill capability of the tank itself. Towards the end of the interview he asked me if I thought the tank was

dead. I told him not for a long time to come, but eventually it was possible, through better aerial platforms, but in the distant future — perhaps in the late 1980s or 1990s. By that time the tank, as we know it today, may be dead. Then I cautioned him about quoting me out of context . . . and added that even if the tank as we know it today is out-moded, there will be a tank, made of lighter and stronger material, that can be lifted by Army aircraft."

Again, it is good to have all of you here with us. If there is anything we here at Fort Knox can do for you to make this a more worthwhile and most enjoyable meeting, we will certainly do our best to do so. Thank you very much.



"ARMOR THROUGH 1975"

INTRODUCTION

by Brigadier General James V. Galloway
Assistant Commandant, US Army Armor School



GENERAL WRIGHT, GENTLEMEN: The subject of this year's Annual Meeting symposium is "Armor Through 1975." To begin, we will present the evolution of armor concepts foreseen for the coming decade. To do this we will use selected items of equipment which are currently in our armor inventory as well as describing anticipated future developments and how they will affect armor training, doctrine and organization. It now appears that the Armor Center will play an increasingly important and dynamic role in these developments.

I think we all agree that we must optimize individual proficiency with the costly and sophisticated equipment which we must have. And this must be done within the constraints of time, money and the limiting human factors which we can expect to encounter. The attainment of this objective will require all the expertise and experience available within our entire Armor community.

We will have a quick look at the new

Armor School which with the help of the Almighty and the Bureau of the Budget, and the Congress, and a few other people, hopefully will appear one day as you will see it this morning.

At the conclusion of our presentations this morning we will set up a panel. The panel members will try to answer any questions that you may put to them.

This afternoon, we will have additional presentations. Our bonds of friendship with the nations of the Free World have grown ever stronger in the past and will continue to do so in the future. No presentation could be complete without including the armor of our Allies. We will be fortunate to hear representatives of Great Britain and France and from our own liaison officer to the Federal Republic of Germany speak about the development; in those countries.

To begin the symposium, Majors Moore and Walters of the Combat Developments Command Armor Agency will present an overview.

FUTURE TRENDS FOR ARMOR

by Major David G. Moore & Major Charles C. Walters
US Army Combat Developments Command Armor Agency

During this presentation we will highlight doctrinal and organizational concepts, items of equipment and materiel under development or test, and troop tests and evaluations for Armor in the 1970s.

During the 1962 Army reorganization, the Combat Developments Command was established as a major command co-equal to the United States Continental Army Command and the Army Materiel Command. Subordinate headquarters to the

Combat Developments Command are three groups and 17 agencies, each located at the corresponding CONARC School. The Armor Agency, a part of the Combat Arms Group, is located here at Fort Knox, the home of mounted combat. The Agency is also a member of the Armor Panel and consults regularly with other members of the Armor Center Team.

The role of CDC in the force development process is to determine future Army

requirements. The Armor Agency's mission is to determine the best ways to fight, equip, and organize tank and light armor units; armored cavalry; air cavalry; and armored and cavalry brigades. To do this, we conduct doctrinal studies concerned with future operational and organizational requirements and develop new materiel characteristics. The new concepts are then troop tested to determine their feasibility and the effectiveness of the new compared to the old in ac-

completing the functions of land combat. After this testing, field manuals incorporating the new doctrines and TOEs with the new organizations are published.

Our studies, and hence materiel requirements, are constantly influenced by the postulated threats to world stability. Basically, the security of the free world will be threatened by two major forces — the Soviet Block on the land mass of Europe and Communist China in Asia.

Communist China's land, sea and air forces are at present far from being as modern and sophisticated as those of the United States or of the Soviet Union. However, the huge size of China's population and land forces, its considerable experience in low-intensity and guerrilla warfare, and the growing sophistication of its armament, to include nuclear weapons, have made Communist China the primary threat to free world stability in Asia.

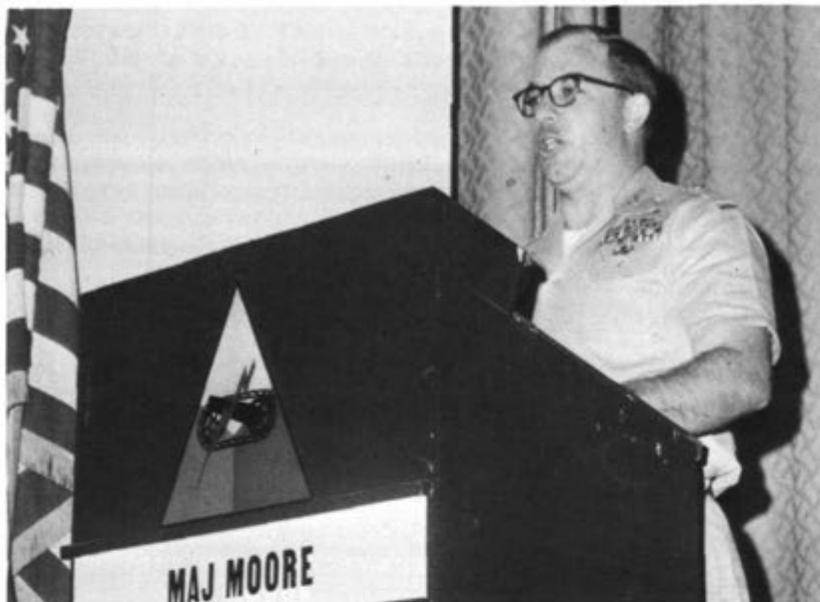
Worldwide, however, the Soviet Union, with the Warsaw Pact nations, is considered the most significant threat to the security of the free world. Since World War II, and particularly since the advent of tactical nuclear weapons, the Soviets and their allies have greatly improved the direct fire-power, cross-country mobility and armor protection of their armies. With the exception of the airborne and other specialized units, all Soviet and Warsaw Pact divisions are classified as either tank or motorized rifle. These appear to be equal, at least in initial combat power, to the NATO armored and mechanized forces. Both Soviet type divisions are built for violent, mobile, offensive action in nuclear or nonnuclear environments, using armor as the primary group-gaining weapon. Therefore, at the Armor Agency, Soviet armor is a primary object of continuing professional interest.

Armor combat developments for the period after 1970 must continue to address the massive Soviet and Warsaw Pact threat in Europe, yet at the same time be responsive to operational requirements in other parts of the world.

Thus the challenge — Now let us examine how we plan to meet in part the challenge through improving the combat effectiveness of armor units during the 1970s. First, Major Walters will discuss the equipment that is under development for cavalry units.

Perhaps the greatest materiel impact on armored cavalry units in years resulted from the recent introduction of the *Sheridan/Shillelagh* weapons system into our equipment inventory. The *General Sheridan* is a lightweight, amphibious, airdroppable, armored reconnaissance airborne assault vehicle developed to replace both the M41 light tank and the M56 self-propelled antitank gun. For the first time in history, the *Sheridan/Shillelagh* gives armored cavalry units a weapon capable of defeating the enemy's heaviest armor out to a range of more than a mile.

The *Sheridan* was deployed to, and



has been fighting in, Southeast Asia since January 1969. We have learned much from the *Sheridan* operations in Vietnam. And the system has proved to be a worthy member of the armor combined arms team. As you know, certain deficiencies were noted when this vehicle was first fielded. However, these are now being corrected through an aggressive product improvement program. This includes increased mine protection through the use of side and belly armor applique, a searchlight, and armor protection for the commander when he is firing the .50 caliber machinegun.

Several other changes are anticipated in the equipment of armored cavalry units. In addition to replacing the M60 with the *General Sheridan* within armored cavalry units, we are also anticipating replacement of the M114 command and reconnaissance vehicle by the late 1970s. This Armored Reconnaissance Scout Vehicle (ARSV) program is still in the initial stages of development. Hence, a large number of design concepts, both wheeled and tracked, are being considered. It is important to note that several manufacturers are competing for the contract on the ARSV, and all concepts are being examined very closely to ensure that the best possible vehicle from both a combat and a cost effectiveness standpoint is selected.

Design goals for the scout vehicle include such characteristics as small, lightly armored, air-transportable, highly mobile, quiet operating, with inherent swim capability, and an improved ability to enter and exit inland waterways. The primary armament may be the Vehicle Rapid Fire Weapon System-Successor (VRFWS) provided that this does not seriously degrade the mobility, agility, or other characteristics essential to the scout vehicle mission. The ARSV design must provide a mobility differential superior to that of other ground combat vehicles.

A power station and stabilized weapon are required to permit firing from either a fully protected or a partially exposed position. Advanced day and night detection and observation devices, combined with improved communications equipment must be provided for the acquisition of information and its rapid and accurate transmission, either orally or visually to the tactical commander.

As mentioned previously, the ARSV may mount the Vehicle Rapid Fire Weapon System-Successor as its primary armament. This system is commonly referred to as the *Bushmaster*.

The *Bushmaster* is an automatic cannon system having various gun/ammunition combinations which may be tailored for various types of vehicles. The weapon will be 20mm or larger in caliber and will replace the current 20mm cannon. The ARSV will have also a secondary 7.62mm light machinegun.

The most noteworthy improvement envisioned for the new scout vehicle is the recommended night vision sensor package and other devices to assist the scout in performing his mission.

In addition to the new scout vehicle, Armor is interested in replacement for the armored personnel carrier and the mortar carrier now found in armored cavalry units.

The Army's new Mechanized Infantry Combat Vehicle (or MICV) will be compatible with the mobility of the MBT70 and it will be a swimmer. It will carry a full infantry squad and will feature vision blocks and gun ports in the sides and rear of the vehicle which will enable the squad to fight while mounted. The primary armament may be a turret-mounted, stabilized *Bushmaster*, together with a coaxial 7.62mm machinegun.

We have one other materiel item which has demonstrated potential for armored cavalry application in coastal and delta areas. In 1968, a unit of US-built air



cushion vehicles was organized, trained and deployed to Vietnam for evaluation. The performance of the Air Cushion Vehicle in Vietnam, especially in the coastal area around Hue and in the Mekong Delta, has been very encouraging. This has been very closely monitored by the Armor Agency.

In addition to armored fighting vehicles, armor, and especially cavalry units, are primary users of helicopters. Presently the air cavalry squadrons are equipped with three types of helicopters: scout, lift and weapons. The newest scout helicopters, the Kiowa and the Cayuse, are now replacing our older scout and observation helicopters.

The Kiowa scout helicopter is armed with a 7.62mm minigun, can carry a load of three passengers plus pilot, and has a cruise speed of 100 knots. It is presently undergoing confirmatory tests here at Fort Knox.

The Huey Cobra is replacing the UHTB as the interim attack helicopter. The Cobra has greater speed than the UH1 achieving over 100 knots cruise and 150 knots dash. In addition, the Cobra can attack from a higher altitude and at steeper dive angles. It is armed with combinations of the 40mm grenade launcher, 7.62mm minigun mounted in a chin turret, and 2.75-inch rockets or other weapons in pods on exterior pylons. Studies of improved antitank and anti-materiel weapons for the Cobra are now underway.

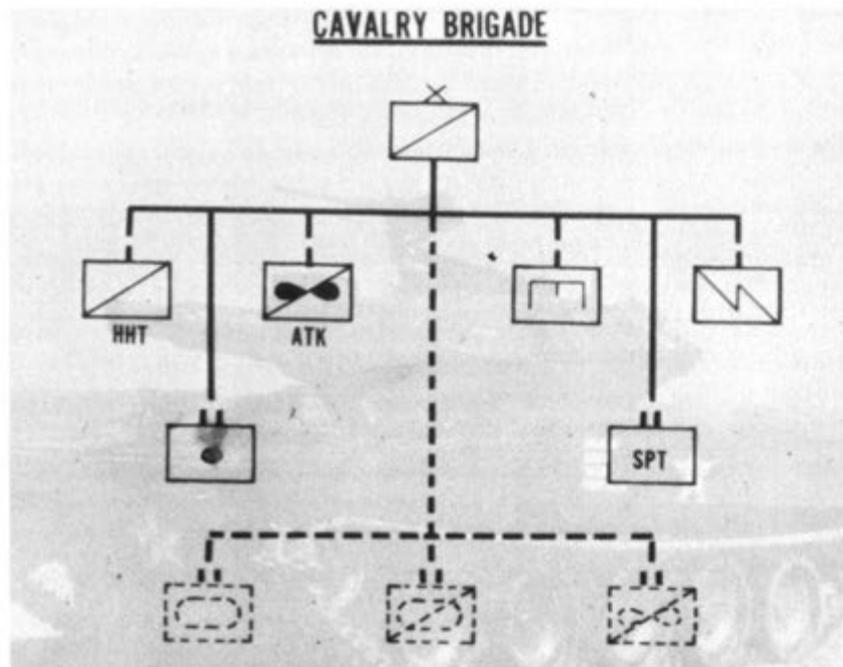
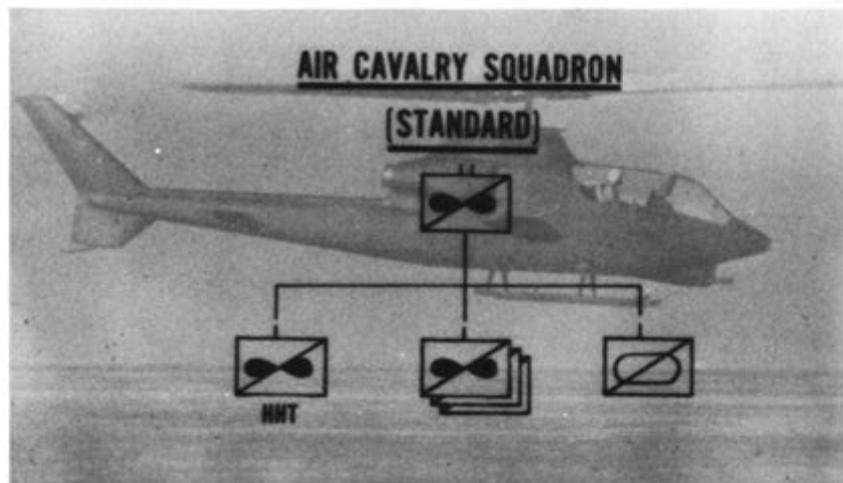
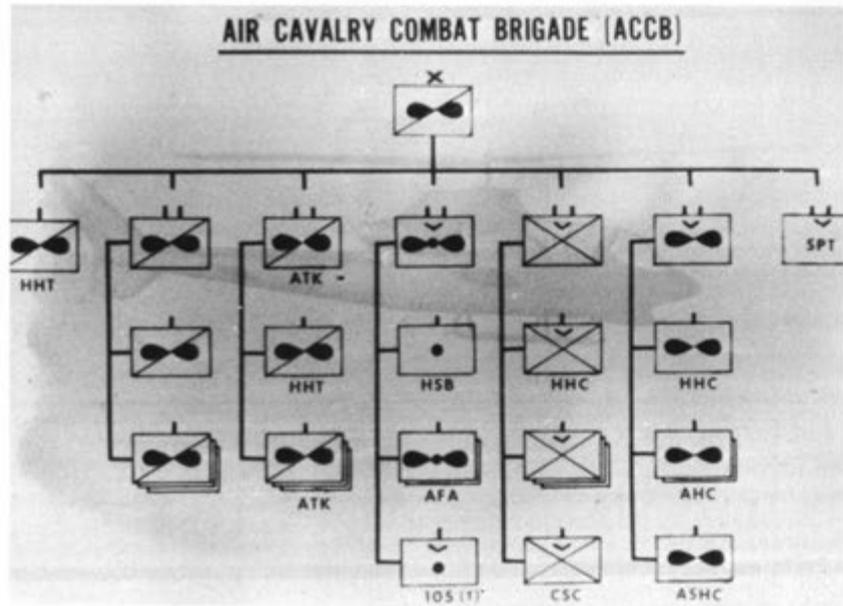
Armor has a requirement for an improved attack helicopter with increased survivability and firepower for employment in mid and high intensity wars. At present, our requirements push or exceed the state-of-the-art. Our long range goal is for an attack helicopter armed with an antitank missile system incorporating a true fire and forget capability.

This completes the highlights of ground and air cavalry materiel items through the 1975 time frame. Ongoing studies will determine follow-on vehicles for the post-1975 period.

Major Moore will now discuss the trends in armored and air cavalry organization and comment on employment doctrine.

One of our main study objectives has been to develop optimum cavalry organizations to carry out reconnaissance, security, and economy of force missions for the unit to which they are assigned or attached. Next, we will outline proposed organization for an armored cavalry squadron, an air cavalry squadron, a cavalry brigade, and finally, the air cavalry combat brigade.

Traditionally, the cavalry has been the fastest and most agile force on the battlefield. This mobility advantage has been maintained over the years as the horse gave way to wheeled vehicles, and they in turn to track mounted scouts. Through the use of the helicopter, we are taking another step forward. In just a few short years, the air cavalry units have demonstrated their exceptional po-



tential for sustained mounted combat. The improved scout helicopter, the advanced aerial fire support system, known as the AAFSS, and other improvements in support aircraft will enhance the reconnaissance and security capabilities of the land combat forces and make available to the ground commander an additional enemy seeking and tank killing force.

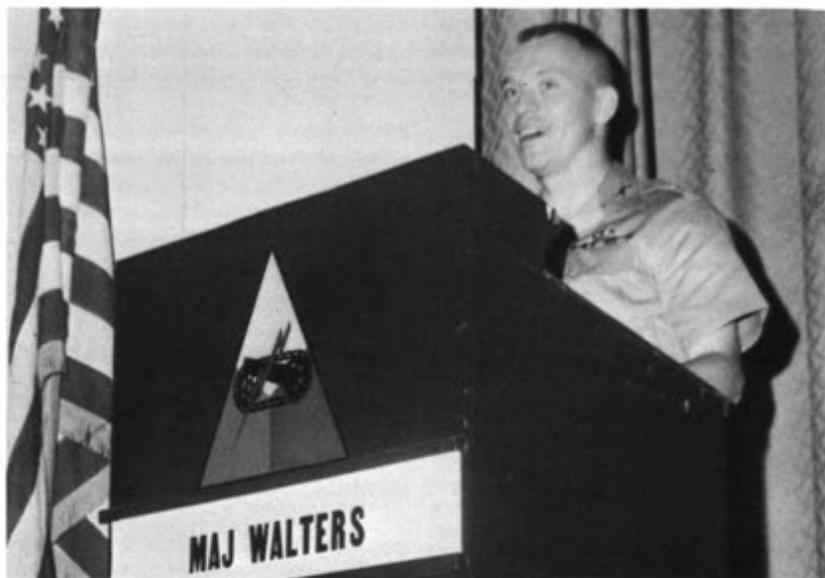
The assignment of the M551, armored reconnaissance assault vehicle and other forthcoming materiel developments will greatly improve the combat effectiveness of our armored cavalry units. With the improved transport capability of the gigantic Air Force CSA aircraft, long desired responsiveness to strategic mobility requirements will become a reality. Shown here is a proposed armored cavalry squadron organization for the 1970s. The air cavalry troop of this organization improves the ability of the squadron to conduct reconnaissance and security missions.

Next is the proposed air cavalry squadron for the 1970s. The organic armored cavalry troop provides a flexible, mobile, rapid reaction ground force with a high volume of firepower which assists the air cavalry squadron in gaining and holding critical terrain objectives.

Looking into the future we see a continuing requirement for cavalry units which are larger than the squadron sized units already discussed. To meet this need, a cavalry brigade has been proposed to replace the current armored cavalry regiment. The brigade concept stems from the demonstrated flexibility of this form of organization. As envisioned, the cavalry brigade can be tailored to fit any given mission by attaching battalion or squadron units in building block fashion. In various environments the mixture of armored and air cavalry squadrons can be varied to fit the battlefield requirements. For example, when employed in the European theater, a main battle tank battalion and an artillery battalion can be added from corps assets for operations against a sophisticated enemy. For the Southeast Asia environment, the attachment of additional air cavalry squadrons, a light armor battalion, and airmobile artillery could meet the requirements of that area.

We have discussed the impact that an advanced aerial fire support system will have on cavalry operations. The future organization which will incorporate this system is the aerial weapons troop. This troop will add an effective antitank/anti-mechanized capability to our mounted combat force. The Armor Agency is presently determining the structure of the aerial weapons troop, where it will be placed organizationally, and how it will be troop tested to determine the doctrine and tactics required to gain the maximum effectiveness from this organization.

The last of the cavalry units to be considered is a unique organization called the air cavalry combat brigade or the ACCB. Shown on the chart is one possible



ACCB organization proposed by the Combat Developments Command to the Department of Army.

The proposed ACCB has the following major organic units — an air cavalry squadron, an attack helicopter squadron, an airmobile artillery battalion, an airmobile rifle battalion, an assault helicopter battalion, and an airmobile support battalion. The brigade has the mission to destroy, disrupt, or delay an enemy force by using massed aerial mounted firepower, in conjunction with armored, mechanized or airmobile forces. The heart of this organization is the attack helicopter squadron.

You have just seen some of the significant changes in doctrine and organization that we envision for the cavalry in the 70s. Before looking at the tank and light armor doctrine and concepts, let's go back to Major Walters to see what new armor equipment and materiel we can expect during the 1970s.

By way of introduction to our materiel goals for the tank battalion, I would like to leave two points to your imagination and to make one observation. First, the threat and our national objectives I will leave to your interpretation. However, it seems germane to note that throughout our history, except in times of general warfare, the US Army has been forced to live under severe force level constraints. This has dictated that we make every attempt to ensure a qualitative equipment advantage over our potential enemies. And the situation appears to be no different today. In the CDC Armor Agency, we strive continually to accomplish this through realistic product improvements and through the timely introduction of advanced materiel items.

The M60A1 is our current main battle tank. Today this tank is qualitatively competitive with any tank in the world. With product improvements, the M60A1 can remain competitive until the MBT70 is introduced in quantity. Product im-

provements in the offing or programmed include a solid state electronic computer, laser rangefinder, and add-on stabilization. Also, as a result of continuing product improvement, a newly designed compact turret was developed.

The M60A1E2 is a combination of the M60A1 chassis, the compact turret, and the Shillelagh weapons system. The requirement for fielding a main battle tank mounting the Shillelagh weapon system in the period 1970-1975 has long been recognized as both necessary and desirable. The M60A1E2 tank includes some advanced design features such as passive night vision devices, a target designating system, a laser rangefinder, and an electronic computer with cant corrector and target lead angle sensor. Both the main gun and the commander's weapon are stabilized. However, only a limited number of M60A1E2s will be fielded due to the planned introduction of the MBT70, or as it is now called the XM803, in the post 1975 time frame.

The MBT70/XM803 has all of the advanced features of the M60A1E2 and many more. The Armor Agency has recently completed a QMR based on the latest threat information and engineering technology to guide the final development and testing of this new main battle tank. I shall not discuss the details of the MBT70 since a detailed presentation on this will be given by Colonel Ireland from the MBT Project Manager's Office.

With respect to weapons of the future, work is progressing on the first development stages of a new type missile system. Called MISTIC, this new weapons system is a candidate for application to the armored combat vehicle weapons system, long range.

This concept offers Armor the potential of placing lighter, more mobile, less expensive and less vulnerable fighting vehicles in contact with an enemy force while the complex and more expensive weapons system remains behind a hill in



a defilade position. In theory, one fighting vehicle illuminates the target, then the missile is launched, from another vehicle in a protected position, in the general direction of the target. Once the missile is in the air it flies to the target constantly seeking the signal from the illuminator. Upon locating the correct signal, the missile makes the necessary inflight corrections and homes in on its target. The illuminator may take the form of a laser which is either handheld or, as shown here, vehicular mounted. But in either case, it will be capable of being remotely located with respect to the launching vehicle.

This has been a brief look at what we intend to accomplish in the improvement of our current tank fleet, a glance at a developmental tank which will be discussed in more detail later, and a look at a long range conceptual design for our tank battalions of the 70s and the future. Major Moore will discuss the doctrine and organization of these units.

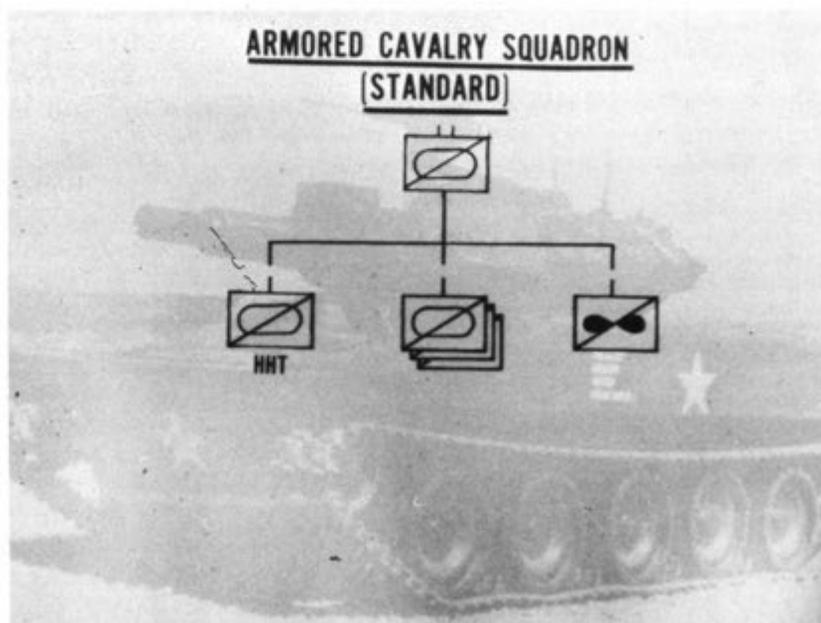
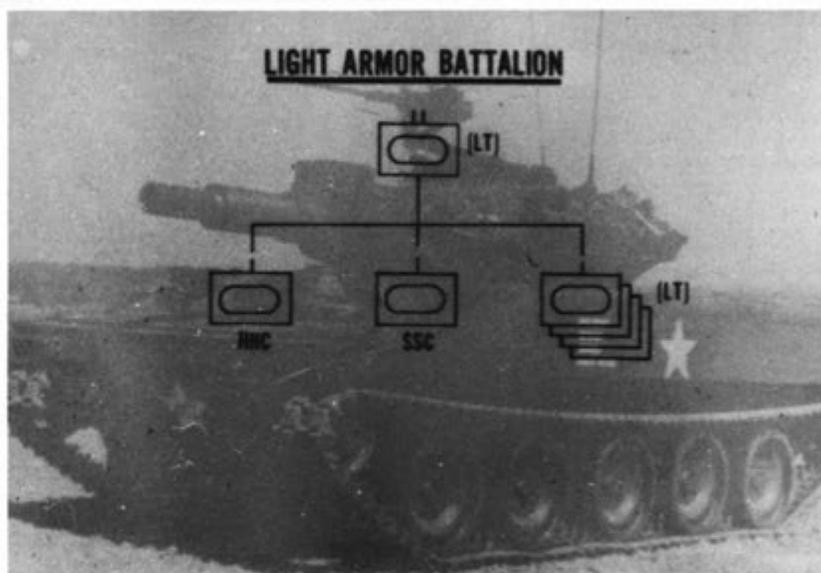
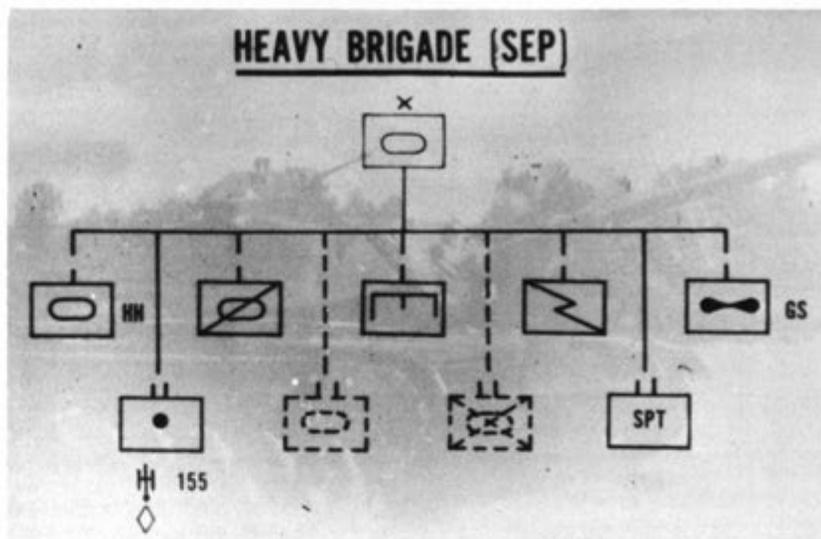
Now, we will examine the proposed tank and light armor battalions for the battlefield of the future. How can the battle effectiveness of the current tank battalion be improved? Some methods are to increase the firepower, increase the number of maneuver units, reduce the ratio of support to combat personnel and, finally to increase mobility.

Much of the development effort of the Armor community has been pointed toward finding the best mix of these factors and applying them to current and future tank concepts. In a number of studies the tank platoon, company, and battalion organizations have been examined to determine if the units provide the maximum combat power for the assets assigned and at the same time are cost effective. The major objectives of these examinations are to gain greater battle efficiency with less support time, to lower costs, and to standardize units. Tank battalion organizations having from 36 to 91 tanks in various numbers of companies have been studied.

All study efforts to date have resulted in the recommendation that the tank battalion for the 70s be organized with a headquarters and headquarters company, a service support company, and four tank companies, regardless of the number and type of tanks in the battalion. The concept of the service support company has been applied successfully in two wars, but has lately fallen into disuse. However, an evaluation based on the experience and judgment of senior officers and our own recent studies have reaffirmed the need for the service unit.

With the variety of tanks anticipated in the Army inventory in the 1970s, a mixed tank organization may be necessary. The Armor Agency has prepared a troop test to determine the feasibility and comparative effectiveness of an organization equipped with various mixes of conventional and missile firing fighting vehicles.

In another study, the agency is con-



sidering the organizational design and the doctrinal concepts for units which will be equipped with the MBT70/XM803. This study is also considering the techniques of employment for these units. Since they will probably have fewer tanks and less manpower than current units, careful attention is being given to such criteria as training, maintenance, and human factors. The other members of the Armor Center Team are playing a major role in this action.

The introduction of the M551 General Sheridan made it logical to assume that there was a possibility for employing the system also with other than armored cavalry units. The excellent mobility of the M551 with its heavy firepower makes it an excellent candidate for a light armor battalion organization. The most important consideration, however, is the M551's ability to satisfy the requirement for strategically mobile armor units. That is, the possibility of air lifting of an entire armor battalion by Air Force aircraft.

The proposed light armor battalion equipped with the M551 is organized like the main battle tank battalions. This allows it to be substituted for the main battle tank battalion when such a course is necessitated by strategic mobility requirements. The light battalion can also be employed in unsophisticated conflicts or as an attachment to airborne, airmobile, or cavalry forces.

For armor operations where a full division is not required, we propose that a separate heavy brigade be used. This brigade, like the cavalry brigade, can be formed by attachment or substitution of maneuver units to fit transport availability and theater requirements.

The improved equipment and organizations you have just seen will add greatly to our ability to wage mounted

combat. The increased firepower and improved mobility, both ground and air, open new dimensions on the battlefield. The introduction of advanced night vision equipment will allow increased round-the-clock operations. This in itself may cause changes in our tactics and techniques of employment.

Many unanswered questions remain in the study of sustained combat operations, but analysis and testing in the next few years will make available valuable information to pave the way for orderly transition while introducing new equipment, doctrine, and organizations into the Army.

Up to this point we have discussed the role that CDC plays in developing and coordinating equipment requirements and we have shown how doctrinal and organizational concepts evolve. Now let's examine the actions taken to insure that the new equipment, organizations, and doctrine will work and can be managed by the soldiers in the field. This is accomplished by the CDC Troop Test Program.

The purpose of the troop test is to determine the combat effectiveness of new doctrine and organizations, and the impact new materiel may have on current concepts. In essence, the troop test is designed to determine how well the test unit can fight and support itself under simulated combat conditions.

Presently, we are testing a new concept in land navigation that promises to improve command and control of all mounted combat units. The purpose of this evaluation is to determine the basis of issue for land navigation systems and, at the same time, to field test a candidate system. Although equipment evaluation is a responsibility of the Test and Evaluation Command, comments will be made on the acceptability of the test hardware.

At the completion of the test, the number of navigation systems that should be distributed to combat units will be made to the Department of the Army. These recommendations will take into consideration the differences in unit missions, types of vehicles, and degree of use. Once a proposed basis of issue is determined and the total Army requirement is established, the research and development cycle can be completed.

Earlier in the briefing, the newly conceived Air Cavalry Combat Brigade was discussed. The Army is presently developing plans for troop tests and field evaluations of this organization and its subunits. Due to the size of the major unit involved and the high operational costs of the aircraft organic to the ACCB, a novel approach has been taken in the design of this test.

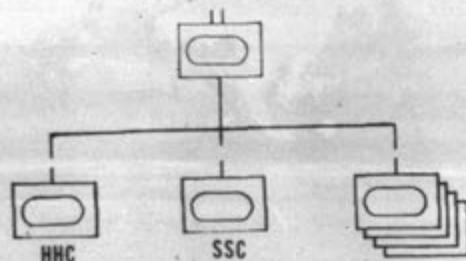
The project will actually consist of a series of four evaluations starting with a platoon test of seven attack helicopters. Each subsequent test will be larger than the previous test and will examine a broader level of command and control. This building block approach allows the most economical use of aircraft; provides a progressively growing technological data base; and allows for timely decisions concerning the feasibility, effectiveness, and overall value of the basic organization and doctrine. If workable, the concept of the ACCB could prove to be the most dramatic development in the history of mounted warfare since the tank.

Another test which will be of great interest to the Armor commander is the Ground Mobility Troop Test. The next three slides show candidate vehicles for the high mobility fleet—the M561E1 (Gama Goat), the M656 5-ton truck, and the M520E2 (Goer). This test has been designed to measure the effectiveness gained in armored units when they are supported by the new family of high mobility vehicles.

For this test, the performance of a test brigade will be compared to that of another brigade equipped with the standard vehicles currently found in TOE units. Data gathered from this test will assist the decision makers in their search to meet the mobility challenges of the 1970s.

In summary, you have seen some of the organizations and materiel the Armor Community is testing. Since the Army is continually striving to develop the most combat effective, and most cost effective, organizations and equipment, you may or may not see these concepts actually in action in the field. The Armor Agency extends to each of you an invitation to help us shape the future of Armor. Your ideas, even in general terms, may be the seeds from which new concepts can grow. A simple letter to the Commanding Officer, USACDC Armor Agency, Fort Knox, Kentucky 40121 will get the ball rolling on items of interest to all in Armor. We of the Combat Developments Command and its Armor Agency urge you to join us in developing the future of Armor, the mounted combat arm.

TANK BATTALION





MBT70/XM803

by Colonel Merritte W. Ireland
Chief, Technical Coordination Division
Office of the MBT Project Manager

General Luczak, the project manager, regrets that the press of official business has prevented him from addressing you personally, but he sends to you his very best wishes for a successful and rewarding meeting.

My presentation this morning first will outline the background of the joint tank development program and then will describe the first generation pilot vehicle which resulted from these efforts. I will then discuss the current joint aspects of the program and will describe to you the second generation vehicle.

Tank development in The United States has previously been characterized by product improvement and evolutionary changes to already existing vehicles. Witness, for example, the evolutionary change from the M26 at the end of the Second World War to the M48 and M60 series which are serving us so well today. Today, however, cost and manpower constraints prevent us from producing massive numbers of tanks with which we can meet our potential enemies on a one-for-one basis. What is needed is a revolutionary new tank which is qualitatively superior to the enemy armored vehicles which it may encounter.

The Main Battle Tank is the result of efforts to build a revolutionary tank, new from the ground up, in order to modernize our tank inventory for the mid-1970s and beyond. The program to develop this tank was implemented in August 1963 by an agreement between US Secretary of Defense McNamara and the German Minister of Defense von Hassel. Actual development started in April 1965 and design responsibility for the majority of the components was assigned to either the US or the FRG at that time. Some of the components had parallel development and a few were jointly developed. As examples, the automatic loader and commander's night sight were originally German components. The 152mm gun and ammunition

were the responsibility of The United States. The engine and suspension system, as further examples, were parallel development programs.

As you may be aware, the joint program has recently undergone some change in direction, which I will discuss in a moment. I will first, however, describe the results of some of the joint activities to date.

The original agreement between the United States and the Federal Republic of Germany did not define the tank which was to be built, except to say that it would be the most advanced tank that the state-of-the-art could provide in the 1970s. Concurrent with establishing a management structure, the program managers, in conjunction with the users of both countries, came to an agreement on joint military characteristics.

To assist the program managers in determining the desired concept, a parametric design/cost effectiveness study was initiated. Technical and tactical input, as well as varying tank design concepts, were provided by the US and German governments as well as by the contractors. Based on a systems analysis approach, computerized offensive and defensive tank actions were conducted. The study then took the best features from the most promising concepts and those furnished the basis for the R&D version of the tank. The concept dictated many new components throughout. The *Shillelagh* missile system is the oldest component of this tank. There are 12 prototypes of the R&D version; six in The United States and six in Germany. The first complete US pilot arrived at Aberdeen Proving Ground late last year and is currently undergoing system testing.

We have been conducting extensive automotive, weapon and fire control tests on these pilots in both countries. While the tank is not without its growing pains, the development at this point is extremely promising.

The main armament is a 152mm gun/launcher capable of firing the *Shillelagh* missile and the heat ammunition developed for the *Sheridan* vehicle. Additionally, we are developing a kinetic-energy round for this tank. The increased chamber pressures and muzzle velocity of this round account for the length of the gun tube, which is much longer than the tube on either the *Sheridan* or the M60A1E2.

Many of the preliminary results which have been achieved thus far in testing, particularly the very important cross-country mobility and fire-on-the-move features, are considered to be significant accomplishments in the tank development field. We have only been able to succeed in this area because of the very fine performance of the stabilization system, automatic loader and hydropneumatic suspension. Although I am not at liberty to reveal firing data, I can say that some of the fire-on-the-move results have been astonishing. Our sample sizes are relatively small and firing tests are continuing. However, thus far, no significant problems have been revealed.

I mentioned earlier that the program had undergone a redirection of effort. This came about after a recent reevaluation of the program by the US and the FRG. We had concluded that having successfully completed the development of the first generation of pilots, it would be in the interest of both governments to continue the joint program under a policy of maximum commonality consistent with national interest. Each government is now authorized to make such unilateral technical decisions as are necessary to meet its national requirements. A cooperative arrangement will be continued to assure mutual access to the progress achieved by each country. Joint funding has been concluded and each nation now buys the goods and services that it needs from the other.

Having essentially completed the joint development of the first generation of

pilots, the United States is currently turning its efforts to the second generation vehicles. All of the components comprising the second generation pilots will be built in the United States. Emphasis is on simplification and cost reduction without significant compromise of performance. The primary tool in achieving these objectives was a productivity/cost reduction study conducted by the Battelle Memorial Institute. The results of our study have identified cost saving measures that will significantly reduce the projected unit cost of the production tank.

The official nomenclature of the next generation vehicle is MBT70/XM803. In about a year we will drop the MBT70 part of the designation and subsequent to type classification the tank will be known as the M803.

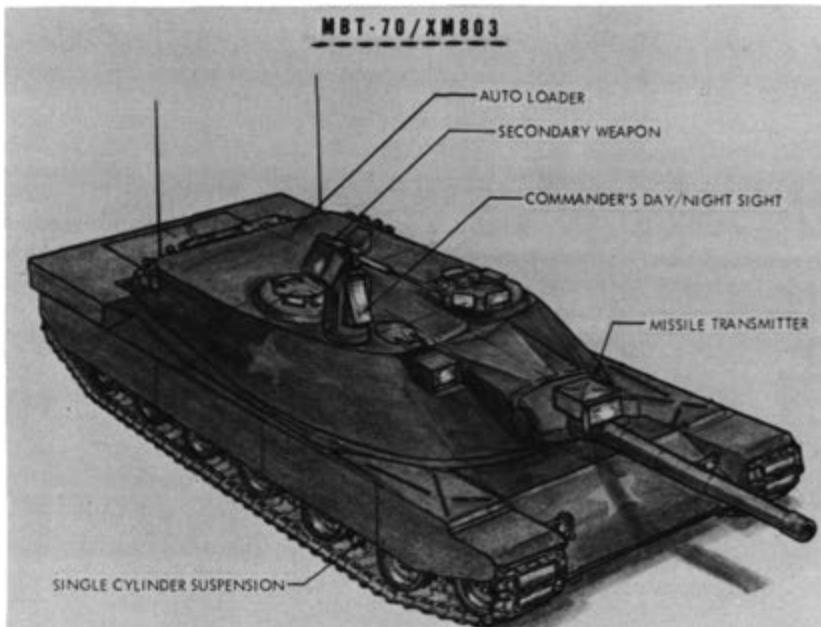
The primary differences between this tank and the R&D version are:

- The engine that was originally selected for use in this tank was a liquid cooled Daimler-Benz combined with a Renk transmission, both of German design. This engine had a number of drawbacks, principally that it was very heavy and the engine compartment had to be sealed prior to fording. In the second generation of pilot vehicles, a 1250 horsepower Teledyne Continental engine will be used. An earlier version of this engine is being used in the US pilot vehicles. This engine will be coupled with an Allison transmission. Both of these items are of US design. This engine is much lighter and has a capability of operating in a wet environment. That is to say we will no longer be required to seal the engine compartment prior to submerging. Additionally, the reduction in power, although it does not reduce the mobility characteristics of the vehicle significantly, does give us much greater confidence in the engine's capability to meet reliability goals.

- The automatic loader was originally a German development. However, the functioning of the original loader was never entirely satisfactory. For this reason, last year a redesign effort was initiated by General Motors. This redesigned loader has undergone extensive testing with a mix of ammunition including the *Shillelagh* missile. We have verified the performance of the loader as well as its compatibility with the ammunition. Testing of the loader is continuing at Aberdeen Proving Ground and, thus far, we are very pleased with the results.

- The complex and very expensive pop-up 20mm cannon has been replaced by a caliber .50 machinegun. This secondary weapon will be moved from its position behind the driver and will be mounted on top of the commander's panoramic sight. From this position it will have a full 360° traverse with appropriate elevation and depression.

- The first generation vehicle had separate day and night sights for the commander. Advances in technology have now allowed us to combine these



two sights into one with both day and passive night capabilities.

- The missile transmitter was originally placed on the left side of the turret. The second generation tank will carry this missile transmitter on the gun shield. The movement of the missile transmitter to the gun shield has allowed us to eliminate the need for an independent transmitter drive mechanism.

- Apparently, many people are under the impression that we have eliminated the hydropneumatic suspension system. This is incorrect. The hydropneumatic suspension has been a very successful development. Furthermore, it is essential to the important high speed cross-country mobility and fire-on-the-move capabilities. The suspension system has been simplified by the use of a single as opposed to a dual cylinder unit. However, this will have no effect on mobility characteristics but rather will increase the reliability and durability of the suspension system.

- Additionally, ballistic skirts will be added. This will permit a reduction in side hull armor with a resulting reduction in weight and also will give protection to the suspension system.

Moreover, we are building into the tank a capacity to capitalize on improvements as they become technically and financially feasible. For example, we are developing a 1500-horsepower gas turbine as a potential product improvement. The turbine offers many attractive features—most notably, increased output with significant reductions in maintenance, weight, volume, and noise and smoke signatures. The tank design allows adoption of the turbine with no modifications to the basic hull and only minor changes to the transmission.

There is concern voiced in many quarters whether a tank as sophisticated as this one can be made reliable and be maintained in the battlefield environment by the average soldier. Unless we can maintain it and unless it is reliable, then there is really no point in putting these capabilities into the equipment. We have long recognized this

problem. Early in the Main Battle Tank Program a comprehensive reliability and maintainability program was developed. With regard to reliability, throughout our testing we have very carefully tabulated the failures that we have encountered. The failures attributed to design are forwarded to the design engineers for solution. Others may be a fabrication error or a matter of quality control calling for different action. This system is in being and appears to be working well.

The systems goal for this tank is a very practical and, we believe, attainable objective. Simply stated, this objective is to develop a tank that is more reliable and requires less maintenance than the M60 series of tanks in spite of the fact that this vehicle will have significantly greater capabilities.

For the first time in tank development, we have incorporated a malfunction detection system which allows the crew to detect and isolate equipment failures. Modular design has been used, wherever practical, to facilitate and speed replacement of the components identified by the fault isolation equipment.

In summary, this tank represents a major improvement in mobility, speed, and agility. Such features as the superb stability of the firing platform while moving cross-country and the night vision capabilities of this tank provide survivability benefits that may well prove decisive in the future. Other significant features, which can not be added to existing tanks without a major redesign, are the capability of lowering the silhouette, the advantage of being able to fire the complete gamut of 152mm ammunition (including the kinetic energy round and the *Shillelagh* missile) and the automatic loader, which permits us to reduce the tank crew from four to three men.

This tank has been designed for simplicity of operation and ease of maintenance. Although it is qualitatively superior now to every tank in the world, it is designed to receive future technological advances. This will enable it to maintain its superiority for many years to come.



THE ARMOR CENTER TEAM CONCEPT

by Major Donald R. Hiller
US Army Armor School

Activities at Fort Knox have always been the basis for the exchange of information among members of the Armor Community. As a spokesman for this group, the Armor Center Team has played a key role in the development of new armor concepts. In the coming decade, it is certain that armor developments will make ever-increasing demands on the experience and expertise available within the Armor Center Team.

Prior to the reorganization of the Army in 1962, the commander at Fort Knox was responsible for the development of armor doctrine, organization, training, and materiel. CONARC Board Number 2 and later the Armor Board were physically located at Fort Knox and assigned to the center commander to facilitate the development of armor materiel. With the 1962 reorganization, and the formation of the Combat Developments Command and the Army Materiel Command, many of the agencies that were an integral part of the Armor Center became tenant organizations. That is, they were physically located at Fort Knox, but primarily responsive to a parent headquarters located elsewhere. It was soon apparent that this reorganization had disturbed the unity of effort and exchange of information which had previously been so useful.

To correct this breakdown of close coordination, the Center commander proposed the establishment of a forum, or panel, to formalize the flow of information and to give him a comprehensive picture of the broad spectrum of armor activities. To facilitate these objectives, the Armor Panel was established in 1964 as an unofficial organization. Similar arrangements were soon in effect at other posts having branch schools and branch-oriented CDC agencies. The resulting contributions to the accomplishment of Army objectives by the several branch centers operating with this informal center team organization, prompted the Chief of Staff of the Army to direct that the center team

concept be adopted by all service schools having counterpart US Army Combat Developments Command agencies. In 1967, Department of the Army directed implementation of the center team concept. Shortly thereafter, this concept was formalized here at Fort Knox. Thus, approximately three years after its inception, the Armor Center Team or Armor Panel became an officially recognized organization.

The Armor Panel consists of: the Commanding General, US Army Armor Center; the Assistant Commandant, US Army Armor School; the Commanding General, US Army Training Center, Armor; the President, US Army Armor and Engineer Board; the Chief, US Army Armor Human Research Unit; the Commander, US Army Combat Developments Command Armor Agency; the President, US Army Maintenance Board; the Commander, US Army Medical Research Laboratory; the Commander, 194th Armored Brigade; and the Secretary of Armor.

The many and diverse activities of these panel members and their organizations cover the entire spectrum of armor interests. During panel meetings, problem areas are examined to enable the development of what might be regarded as an "Armor Community" position regarding new concepts and developmental items. These Armor Panel recommendations are critical to the successful development of new materiel.

The Department of Army life cycle management model provides for the active participation of the Center Team from the early stages of concept formulation through retirement of the end item. For example, during the development of a complex end item, such as a main battle tank or an aircraft, as many as 230 steps or critical points of decision may be identified in the life cycle management model. Under the current procedures, the Armor Center Team may be expected to be directly and formally involved in 67 of these steps, while closely monitoring the remainder. This is in sharp contrast to

the situation prior to the establishment of the Center Team concept, when the Armor Center's role in the development of new equipment was both informal and isolated. In addition to this current formal coordination of the Armor Panel, information is disseminated on a daily basis within the agencies located at Fort Knox.

The considerable talent concentrated in the Center Team is heard at the highest levels of command. Its judgments will become an increasingly important factor in the Army decision-making process affecting new materiel developments. This is best exemplified by recent revisions in the procedures for testing and evaluating new equipment which give the center commanders and center teams a significant new responsibility—that of giving the Department of the Army the user's point of view early in the developmental cycle. To preclude future problems similar to those recently encountered in the development of certain new materiel, it has been resolved that the user must have a better opportunity to evaluate the military utility of new equipment at the earliest possible time in the development cycle and, in any event, certainly prior to the decision on procurement and production.

To this end, a review of the test and evaluation program was conducted at Department of Army which resulted in a general consensus that:

- The center commander's charter should be strengthened to give him the responsibility for evaluating equipment from the user's point of view.

- The center commander should be directly involved in the development of the coordinated test program for new equipment to assure that provision is made for the application of necessary resources during operational test and evaluation.

- The center team concept will be employed to marshal scarce resources, since the center team represents a source of valuable experience.

Accordingly, a charter outlining op-

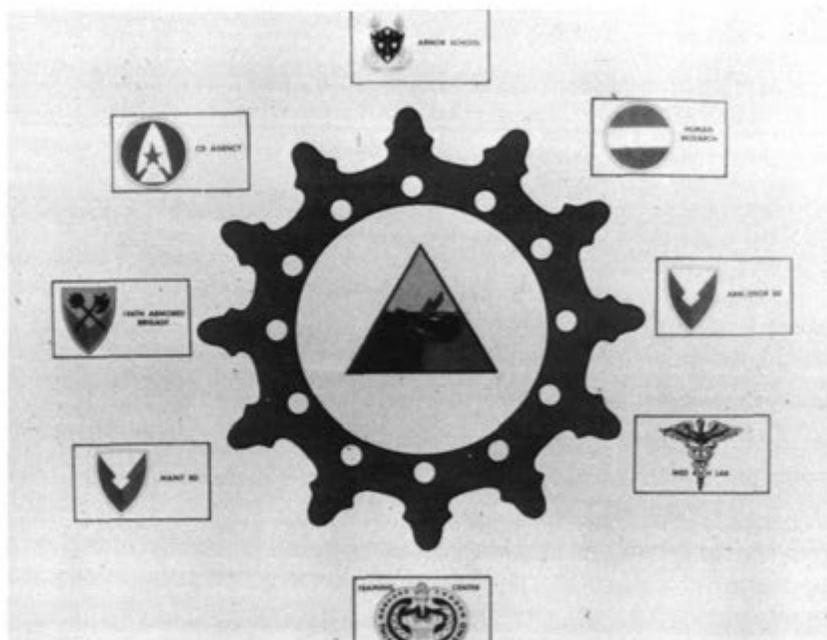




ARMOR PANEL MEMBERSHIP



COMMANDING GENERAL, US ARMY ARMOR CENTER
 ASSISTANT COMMANDANT, US ARMY ARMOR SCHOOL
 COMMANDING GENERAL, US ARMY TRAINING CENTER, ARMOR
 PRESIDENT, US ARMY ARMOR AND ENGINEER BOARD
 CHIEF, US ARMY ARMOR HUMAN RESEARCH UNIT
 COMMANDER, USACDC ARMOR AGENCY
 PRESIDENT, US ARMY MAINTENANCE BOARD
 COMMANDER, US ARMY MEDICAL RESEARCH LAB
 COMMANDER, 194TH ARMORED BRIGADE
 SECRETARY OF ARMOR



erational test and evaluation responsibilities of the center commander was developed and was concurred in by the Armor Panel. Its salient points included:

- If a more direct involvement of the center commander in test planning, execution, and reporting will raise the confidence level in test data, then this should take place.
- To effect a higher confidence level in the data available for production decisions, the service test should be expanded to include operational test and evaluation, and the two should be conducted concurrently by the Armor and Engineer Test Board supported by the Armor School, CDC Agency, and other center team members.
- This expanded service test, now called the operational service test, would be conducted prior to the decision on production.
- No change in existing army organization or chain of command would be made to expand and improve the service test.

- The report of the service test would be written by the test board and copies immediately provided to the center commander, TECOM, CONARC, CDC, AMC, and ACSFOR. All commanders receiving this report would evaluate it and state their position in writing. Moreover, the center commander's independent evaluation of the test report is of key importance and he would use all of the talent available from within the center team in arriving at his position.

These Conclusions in the form of recommendations were accepted by Headquarters, Department of the Army as a basis for a change in policy regarding test and evaluation. Appropriate Department of the Army regulations are currently being revised to reflect that change.

In the past, service tests have tended toward being too technical in that they were hardware oriented. It is the Armor School's position that the total system must be evaluated during the operational service test. Of critical importance

is the need to ensure the existence of effective training at the time the new equipment is fielded. Pertinent regulations should incorporate requirements to test and evaluate milestone developments in training, concurrent with the development of the end item. This approach is called the "training package" concept.

This concept calls for the systematic development and evaluation of job descriptive information, training objectives, methods of instruction, and instructional media concurrent with the development of a new end item.

It is our intention that personnel to be used in the operational service test would receive their initial training under the proposed training program for the system. Following this, the evaluation of training data acquired during the test would determine the adequacy of the training package. Most important, failure to provide a complete training package, including training aids and devices and instructional material, for the operational service test would act as a bar to the initiation of the test.

This renewed emphasis on the development of training subsystems is necessitated by the multiplicity of sophisticated and costly equipment currently in the inventory as well as that planned for the Army of the future. A dynamic approach in developing new and innovative training concepts is required to optimize individual proficiency within the constraints of time, money, and limiting human factors.

During the time frame 1970-1980, a variety of armor equipment will require trained Armor crewmen. Because of weapon systems dissimilarities among the M48 series tanks, the M60A1, the M60A1E2, as well as the M551 and the MBT70/XM803, no single common training course of reasonable length, can adequately train an individual to man all these fighting vehicle systems.

Previously, training for the basic entry MOS for Armor crewmen enabled the assignment of new personnel to the loader's seat. There they could be given on-the-job training by the tank commander which would fit them for driver and gunner duties requiring additional skills. As discussed by Colonel Ireland, the MBT70 will have a three-man crew: tank commander, gunner, and driver. A mechanical loader will eliminate a fourth man. The responsibilities and knowledge required to operate this sophisticated tank may prove to be more than the individual with marginal skills and abilities can manage.

In the development of our future training program, we must recognize that the complicated technical aspects of a number of armor weapons systems will require the selection of personnel capable of grasping and absorbing information on many different major items of equipment, and in a relatively short period of time. It is anticipated that the MBT70/XM803 will necessitate an addi-



tional training course for *Shillelagh* equipped vehicles, rather than the add-on presently being accomplished for the M551.

The problem of identifying and placing specially trained personnel will be compounded when other new equipment and special add-on courses of instruction are included. A survey of the training problem reveals that the mental acuity of the trainee to absorb instruction on a multiplicity of complex equipment is indeed a challenge which must be met.

One answer to this challenge involves the development and increasing use of simulation in training devices.

With the present XM40 *Sheridan* weapons systems trainer, simulation is already a very real part of our cost effectiveness program for training. Each XM40 systems trainer is capable of simulating the firing of conventional rounds and *Shillelagh* missiles. Fourteen trainers, with an initial cost of \$3,850,000, are now in use at the training center here at Fort Knox. Currently, about 1390 trainees complete the course of instruction yearly and qualify in basic *Sheridan* skills through the execution of firing simulations. At one time, it was believed that the firing of as many as seven missiles per gunner would be required to acquire proficiency on the weapon. However, results of a missile gunner evaluation conducted at Fort Knox in the fall of 1969 indicated that, with the use of the weapon system simulator, three missiles are adequate to achieve an acceptable level of gunner

proficiency. At a cost of \$2650 per missile, it is obvious that use of the simulator, even with its high initial procurement cost, quickly results in sizable overall savings.

However, as with almost all training devices, simulators can reduce the need for, but not eliminate, the real thing. Because of this and because the cost of simulation increases greatly with realism, the value of simulation versus the real thing must be delicately balanced to produce effective training as economically as possible. Simulation devices of the future will vary from simple cubicles using flash cards to the complex MBT70/XM803 conduct of fire trainers envisioned for future use.

The latter proposed device is a simplified trainer capable of familiarizing Armor crewmen with their basic duties as drivers or gunners. Through the use of a control station, multiple instruction can be given. This device has all of the controls and instrumentation normally used by the crew of the MBT70/XM803. The simulator is capable of inducing sight, motion, and sound values to the crew through control by the instructor from his console. It will serve as an adjunct to the tank crew qualification course and will, in addition, simulate combat situations.

The present system of training device development, under the DA-approved life cycle management model, will more nearly parallel that of end item development. However, the increasing use of simulation to accommodate limiting

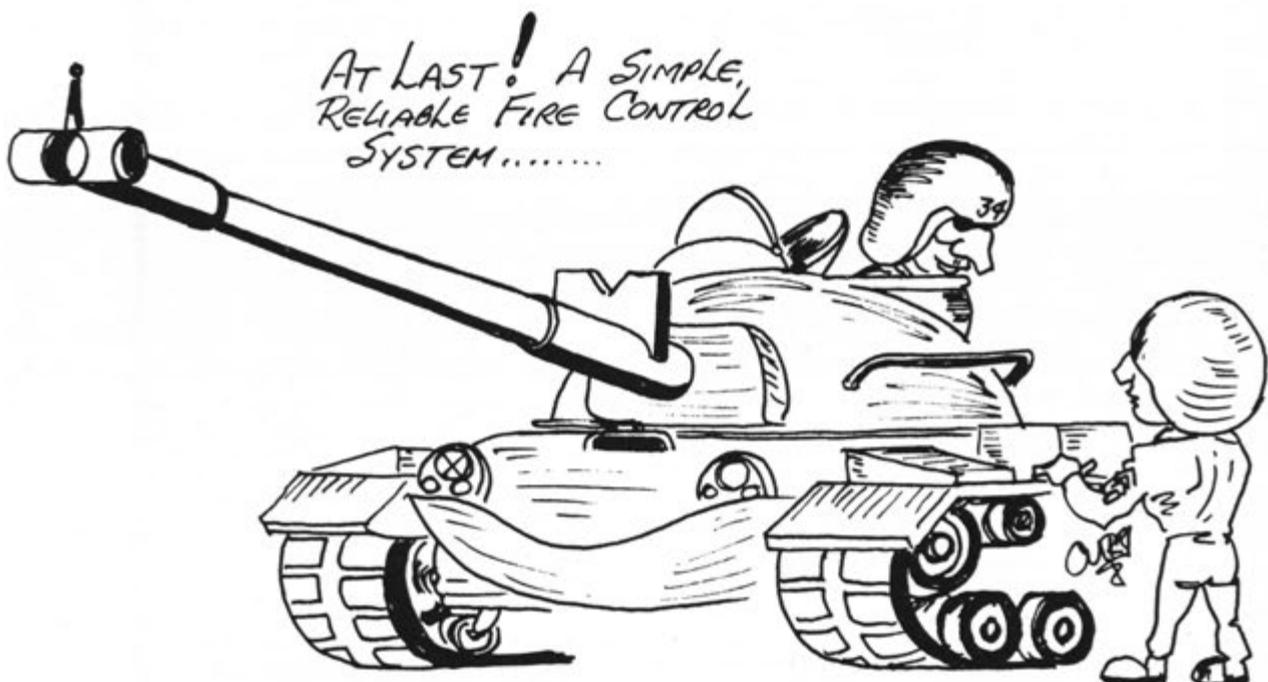
human factors and high cost of end item equipment will require our greatest effort in applying modern management techniques to ensure cost effectiveness.

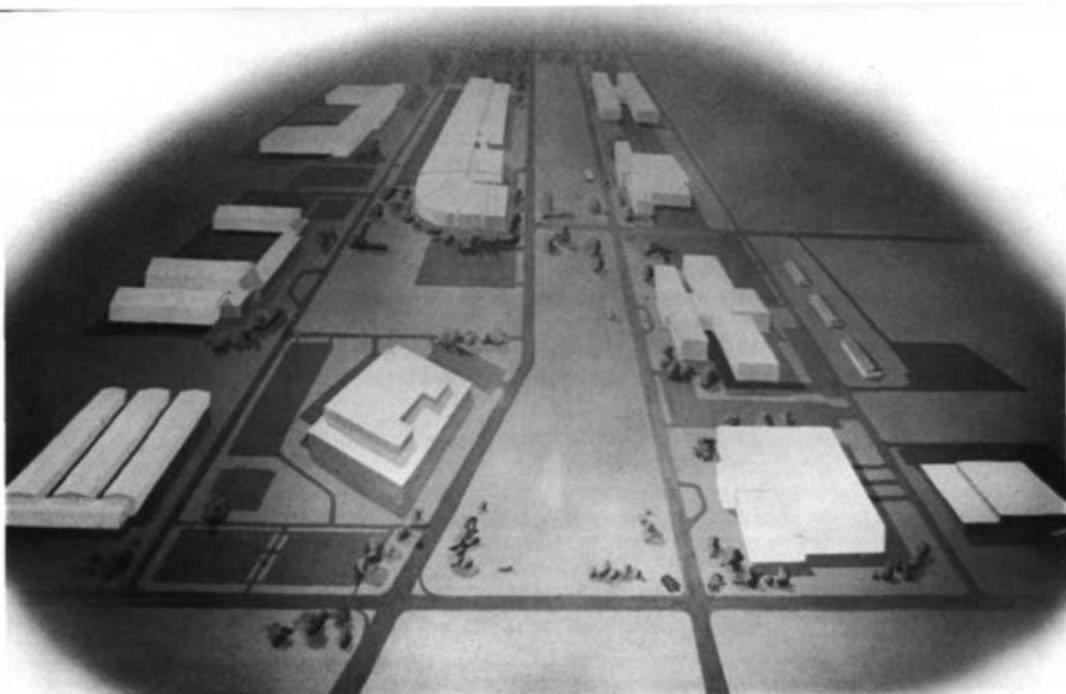
The Armor Center Team and the Armor Panel have gained a new and significant role in the developmental process. The direct involvement of the Center Team Commander in the test and evaluation of new equipment during the operational service test will assure evaluation of military utility from the user point of view as early in the development cycle as possible. It will permit this evaluation to reach top level management at the same time as technical information, and it will increase confidence in the data made available for production decisions.

It is certain that the development of effective training for our modern fighting force will require the blending of sophisticated training devices, with innovative training methodology, and enlightened leadership. To achieve this will provide a real challenge to the Armor Community. The Armor Center Team stands ready to meet this challenge.

We of the Armor School regard the development of officer and enlisted leaders as being of prime importance. To accomplish this primary mission and keep pace with future events, the facilities of the Armor School must be expanded and modernized. Major Demchsak will now acquaint you with the steps being taken to improve the Armor School campus.

SPECIAL ANNOUNCEMENT?





THE FUTURE ARMOR SCHOOL CAMPUS

by Major John G. Demschak
US Army Armor School

During the next few minutes, I will discuss the military construction program for the School with primary emphasis on future construction. The concept of this program is ultimately to have a modern campus complex which will replace completely 118 World War II mobilization buildings.

Perhaps a few of you who admit to being 39 years of age will recall the view of the Armor School in 1940. Prominent is the old wooden Henshaw Theatre which was located on the corner of what was then First Avenue and Old Ironsides, currently Eisenhower Avenue and Old Ironsides. The 1951 view will probably bring back memories to even more of you here today. And a 1968 photograph shows the School pretty much as it is today. As you may have noted since your arrival, a number of the temporary structures along Eisenhower Avenue and Old Ironsides are now in the process of being torn down. The theatre burned to the ground in January of 1968 and was one of the first structures to be razed in preparation for the new School complex. Incidentally, we have been directed to raze the remainder of the old buildings in a more conventional manner.

Now for a look at the future of the Armor School. Our last illustration depicts what we hope the School will look like in the late 70s. Richardson Hall, which houses the Engine and Electrical Division of the Automotive Department, was completed and turned over for use to the School in January 1969. In April of last year, construction was begun on the second Automotive Department build-

ing and we expect to occupy this by 1 November of this year.

The School's next major construction project is the Weapons Training Facility which is in the FY 71 Program. This facility will cost an estimated 7.5 million dollars. Once completed, it will house the entire Weapons Department under one roof. A contract was awarded in January of this year for concept design and cost estimates. These were completed and presented to the District Engineer on 20 April of this year.

There are two projects in the FY 72 Program. First, the Field Printing Plant/Instructional Services Department. This facility will cost 2.2 million dollars and will house the Instructional Services Department, Non-Resident Instruction, and the Army Field Printing Plant.

Also in the FY 72 program is the Army Maintenance Management Department building known to many of you as the SOPM Department. This building will cost 2.6 million dollars.

In FY 73, we will construct the third Automotive Instructional Facility, a new Todd Hall, which will house the Periodic Services Division of the Automotive Department. This project has an estimated cost of 4.6 million dollars. Upon completion, it will place all of the Automotive Department which is located in the immediate School area in three permanent structures.

The Central Academic Facility is programmed for FY 74. The cost is an estimated 6.6 million dollars. Upon completion, this building will house the Headquarters of the Armor School, eight

additional classrooms and a 1200-seat auditorium. It will, in addition, centrally locate School and center student support facilities and like services under one roof, much like Benning's Infantry Hall. Once this building is completed, it is planned to move the General Subjects Department into Gaffey Hall.

The agenda for FY 75 includes a two-story classroom addition to Harris Hall, the home of the Communication Department. The addition, at a cost of 1.4 million dollars will provide five classrooms, training aids storage areas, and supply and maintenance facilities.

The FY 76 program includes two projects. First, the addition of warehouse space in Boudinot Hall. This will cost approximately 400 thousand dollars and will make available much needed storage and work space for the Command and Staff Department.

The final project is the Tank Recovery Facility. This project will cost 2 million dollars and will provide a permanent instructional area for the track vehicle recovery training activities of the Automotive Department. It will be located in Area 60, off Brandenburg Road, approximately one mile north of the school area.

When these projects are completed, the Armor School will have approximately 800 thousand square feet of new permanent construction, at an estimated cost of 30 million dollars. The School will then be housed in 11 instruction and support buildings which will have replaced 118 mobilization structures which we currently use.



1940



1951



1968



DISCUSSION

BG GALLOWAY: We have assembled a panel of Armor Center Team members, plus Colonel Ireland, to answer any questions that you might have regarding this morning's presentations. Gentlemen, we are ready for your questions.

LTG WRIGHT: My question has to do with Colonel Ireland's presentation which was extremely interesting. We've all read in the paper that concerning the development of the MBT70, we and the Germans are no longer together. I wonder if you could give some of the philosophical reasons behind this?

COL IRELAND: Sir, I don't mean to hedge, but we do have the American Armor School Liaison officer from Germany with us. Later today he will give us some details. However, I will attempt a partial answer to your question as to why we have come to something of a parting of the ways with the Germans. Their philosophy is a bit different from ours. There are a number of things that I think perhaps we do not agree on in terms of armored doctrine. I think that perhaps the Germans are not as enchanted with the missile-firing tank as we are. We feel it is necessary. Therefore, we have continued on the road with a combined conventional gun and missile launcher. There were other more minor problems. Disagreements on the total weight of the vehicle and things of this sort. We were willing to take a heavier vehicle to give us better protection. They, on the other hand, wanted a lighter vehicle because of the nature of German terrain, their villages, German bridges and so forth. We felt that we could get along with a little more weight and a little more protection and this is what we put into the vehicle. Beyond that, perhaps I should state, I am not at liberty to say.

FROM THE FLOOR: I am concerned that five MBT70 tanks will be difficult for one platoon leader to control properly. But, on the other hand, in the past few years very few reconnaissance platoon leaders have been concerned with the size, varied elements and span of control of their units.

COL BROWN: You are not the only one who is concerned about that. General Clarke has always been concerned with the span of control in our organizations. We are faced with that throughout our

combat development cycle. There are many people today that believe the size of the tank platoon really should be three tanks instead of five. Some of our upcoming test programs will treat some of these points. Also, we have programmed another look at the cavalry platoon. We would certainly encourage, and consider fully, any suggestions that people have on objectives for the various troop tests that we plan; or on any of the equipment which will be involved in the troop operational tests and evaluations.

COL LEACH: My question pertains to the track of the *Sheridan*. As we know, the *Sheridan* vehicle has a very reliable track. During my eight months in Vietnam watching *Sheridan* operations I never saw a *Sheridan* throw its track. This is a remarkable accomplishment for Armor. Have we finally found a design which guarantees that the track will stay on?

COL BROWN: We have. Colonel Baer from the Office of the Assistant Chief of Staff for Force Development can expand on this.

COL BAER: This has been looked at very carefully, particularly with respect to some of the development that is being done by various contractors on other vehicles. We will capitalize on the best available track designs.

COL BRIGHAM: As a brigade commander, I'm interested in what sort of training we're getting today. I think it would be helpful to know what significant changes, by way of improvement, have taken place in the recent past and are projected for the near future?

COL GREENWOOD: I'd be happy to discuss that. As you are all undoubtedly aware, the Armor community has been concerned for some time that the officer basic course is probably too short. These young men come aboard in this day and age steeped in fine civilian education. But by and large they have never seen a tank. This is especially true of those from the ROTC program with the single exception of one school which still maintains an Armor ROTC unit. The OCS graduates have had but limited Armor indoctrination. The Military Academy graduates have had one week of training here during their third class year,

and a two-day visit during the summer of their first class year. Other than that, they've had virtually no Armor training, per se. So our purpose in the nine weeks available today is to prepare the officer for his first troop unit assignment. The course is necessarily heavily hardware oriented. We have reduced the frills to an absolute minimum, and work some rather long hours. However, we are still not satisfied that they are getting enough experience with the equipment. There is simply too much to cover in too short a period of time.

The basic course has recently undergone a process known as "systems engineering" which essentially is an objective analysis of what we are trying to teach and why we should teach it, based on past years job analyses of what platoon leaders have been doing. This is a very involved, tedious, time-consuming process. However, we are confident that this is going to improve the quality of instruction in the basic course since it will focus more precisely on the things that the platoon leader must be able to do. Undoubtedly, this will be a considerable improvement.

The advanced course, as most of you are aware, was restructured about four years ago and is still undergoing constant scrutiny. The objectives of the course were changed. The mission today is to train the advanced course officer for battalion/brigade command and staff functions and duty as a division junior general staff officer. We feel that we have a sound course. As you probably know, an electives program was introduced to give the advanced course student the opportunity to pursue studies in those areas where he feels there is a need to expand his knowledge or to pursue in greater depth areas that with which he is already familiar. In some cases, the officer uses this to build his general education. We see much of this in this day and age. In the last two years particularly, the college graduate content of the advanced course has dropped from about 88 percent in 1966 to about 45 percent today. We expect this trend to continue for the next two or three years.

Looking to the future, Colonel Brown and his CDC people, have been working with us for a long time, along with



Left to Right: Colonel Ireland, Colonel Ahrenholz, Colonel Greenwood, Brigadier General Galloway, Colonel Hislop, Colonel Brown

HumRRO, on how we are going to go about training tankers for the more sophisticated combat vehicles. If we continue with the two-year soldier, we are going to have a difficult time training a tank crewman to do all the things that a tank crewman must do on a vehicle as sophisticated as the MBT70. The maintenance aspects of the MBT70 conceivably, at the unit level, may be considerably less complicated because of the concept of module component replacement. However, some place short of a general depot, there are going to have to be some highly-skilled technicians to rebuild the black boxes. It is too early to announce the results but we are planning in considerable detail how we are going to analyze the requirement for trained men at the unit level and what changes in training techniques will be required to accomplish the job. I can point out one instance where we have already encountered a problem. With the introduction of the *Sheridan*, in training our turret mechanics, we've had to extend the turret mechanics course four weeks to accommodate the *Sheridan's* turret which, most of you know, is quite different from any other turret we've ever had. We just could not add it on as another turret to be learned about. This has been a rather long and rambling answer to a very pertinent question. I hope that it has at least hit the highlights.

GEN CLARKE: I am aware that a tank crew, even a five-man tank crew, works long hours, performs lots of manual labor, and can only keep going a limited number of days while it does maintenance, provides local security, and accomplishes all the other things a tank crew has to do. What is going to result from the MBT70 tank having only a three-man tank crew? On one of these tanks one of the crew members is the platoon leader. Who is going to handle all the ammunition, do the maintenance, do the cleaning, and provide the local security and all the things that have to be done day after day? How are we going to do the job unless we have an

auxiliary ground force to augment those tank crews? How do we expect the necessary things to be done entirely by the tank crews themselves?

COL IRELAND: General, you've mentioned a number of things—handling the ammunition, maintenance, and so forth. We are trying to build reliability into this vehicle so that we are not going to get a lot of parts breakdown or component breakdowns. We anticipate this can be done.

As far as the maintenance goes, I've tried to point out that we are going to have a vehicle which should be relatively easy to maintain. As an example, the automatic loader, which is in essence a complex device, has been built with sealed bearings and dry lubricants, and in this respect it is very much like some of the automobile parts that are coming out these days. It will not require even periodic maintenance by the crew. At some time in its life cycle, after a number of rounds, it will be lowered out of the bustle and inspected by a higher echelon of maintenance. The parts or components that need to be replaced will be taken care of before it is put back into the vehicle. This is one example. The hydropneumatic suspension system is another.

The hydromatic unit which controls each wheel is an individual component. Rather than trying to pick out the pieces of a broken torsion bar buried in the hull which a great many of us here have tried to do for long hours—it was always raining and things of this sort—this unit is an individually replaceable unit. All that is required is to remove four bolts and to put another unit in place and drive off. We have tried to soldier-proof the tank. This is not a term that I claim as original. I first heard it from General Polk, who, of course, is greatly interested in this tank. He gets periodic and rather frequent briefings on it. We talk to him and he talks to us. We have a lot of communication about the vehicle.

Ease of maintenance is one of the

things about which we are very much concerned. Local security and that sort of thing is a matter of organization, that is, what people a unit is going to have and whether security forces will be added to the MBT tank company. I can well recognize your reservations—that once a crew completes the 48-hour battlefield day which the tank is designed for, they still have to gas up and load the tank with ammunition. Then, all of a sudden, the first sergeant comes around and tells these three guys that they are on guard. It is going to get awfully tough for them. There must be proper organization for the company so that there will be an additional ground crew or perhaps another unit, to take care of these things.

COL BROWN: I would like to add to that. General, this is where the center team can be most useful. As the operational tests and evaluation plans are drawn up here, in conjunction with the Army Materiel Command, the members of the team will participate. The things just mentioned are the type things that we are making certain are included in the early workout of this particular tank when it comes here. There is emphasis, too, throughout AMC, on getting the early development prototypes down to Fort Knox in a timely way so that we can work out some of these things early in the development cycle.

FROM THE FLOOR: Colonel Ireland mentioned that we are going to adopt a caliber 50 machinegun for secondary armament on the MBT70 and he mentioned the high cost of having an automatic cannon as secondary armament. I would like to ask, if you may discuss it, what our rationale was, from a doctrinal standpoint, for justifying the 50.

COL IRELAND: The adoption of the 50 caliber machinegun was largely a consideration of cost reduction. We are watching the development of weapons such as *Bushmaster*. If this seems to be a feasible approach in the future, we will certainly take advantage of it.

CPT SNYDER: We have been told that



the *Sheridan* vehicle is not a tank. Previously this morning we were told about the possibility of a light armor battalion armed with the *Sheridan*. Would these units be added to our existing tank forces or would they replace existing tank units?

COL AHRENHOLZ: The fact that we don't call the *Sheridan* a tank has some connotations that are out of our field here. This vehicle will satisfy certain requirements for strategic mobility. Because it is air transportable, it can be substituted for a tank if you will. We feel that it can operate in the same type organization to fill particular needs.

MAJ PAULING: My question has to do primarily with the vulnerability of the main battle tank. After hearing the presentations, I am concerned about several complicated devices, lasers and so forth. Will we be more vulnerable if these are knocked out, say by artillery, where previously we were not quite as vulnerable? Since highly technical systems rely on the data that these things put in, will damage from artillery and mortars be more devastating than previously? A second question concerns the silhouette of this vehicle. While we get a lower sil-

houette with the variable height suspension system, it seems that the overall length has been increased. Frequently we don't face an enemy head on. If he is off to our side, he gets a flank view or oblique view. If our new tank, and especially its turret, is longer, it seems to me that we would present a larger target.

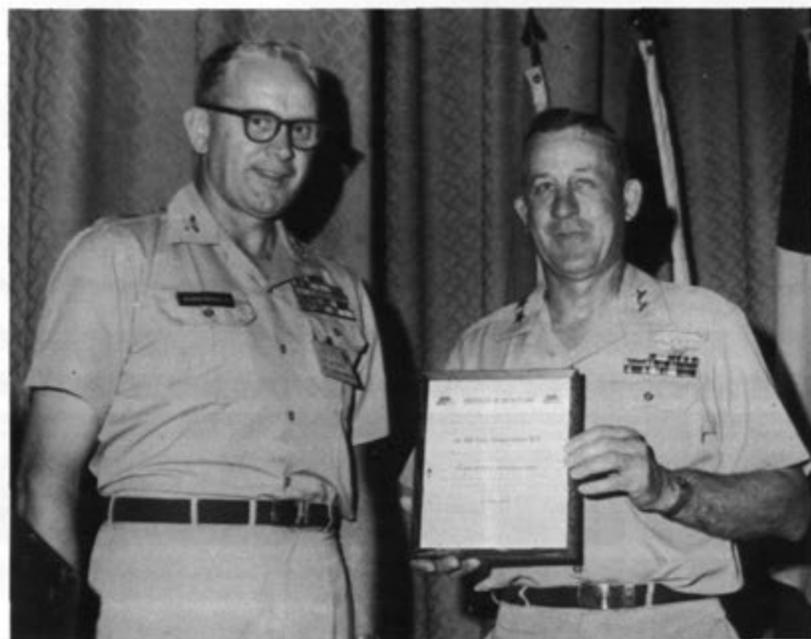
COL BROWN: Briefly, in regard to the first part of your question concerning the things that are on the outside of the MBT70, you mentioned the laser. The laser is inside the vehicle. The range finder and so forth which we normally consider vulnerable are not, in fact, on the outside. The items that we do have on the outside, for example the missile transmitter like that on the *Sheridan* or the M60A1E2, must be outside. Another item that is on the outside is the searchlight; this is not critical. Essentially, the MBT70 has nothing that is any more exposed than are key parts of Soviet tanks. With respect to the silhouette, we have, of course, tried to keep the silhouette down just as much as we possibly can. It is really quite a dramatic demonstration to put somebody in the turret while the vehicle is at full ground clearance

height. Then, while he is in there, lower the vehicle so that when he gets out he just steps off the tank onto the ground. It is quite a dramatic demonstration. We have run comparisons of this vehicle with all sorts of other tanks, both our own and those of foreign countries. The MBT70 has considerably less silhouette than nearly all. The length of the vehicle, and especially the length of the turret, is a primary consideration. Overall, you will find that you are less vulnerable in this tank than you would be in any other tank that we know about.

GEN GALLOWAY: Gentlemen, on behalf of the panel, thank you very much. We will now turn the meeting over to General Wright.

GEN WRIGHT: General Galloway, I am sure the entire membership of our Association joins me in thanking you for a very stimulating presentation. It certainly touched upon all the subjects of the greatest concern to us today—the means of mobile combat power, air cavalry and the necessity to strengthen it, the role of the *Sheridan*, the status of the MBT70—in fact, the entire foreseeable future. And, as usual, the discussion was marked by interesting give and take.

4th ARMORED PRESENTS HALFTRACK



During the 81st Annual Meeting Colonel Albert H. Ahrenholz, Chief of Staff Designate, 4th Armored Division, presented a World War II M5A1 International Harvester half-track to Major General Richard L. Irby, CG, USA Armor Center for the Patton Museum. Instruction plates on this vehicle found by Div Arty are in French. While its history is not fully known, it may have been lend-leased to our Gallic Allies. General Irby thanked the "Deeds Alone" division for adding a fine specimen to the Armor Museum collection. He noted that more contributions were on the way from other units worldwide.



PATTON MUSEUM PROGRESS REPORT

by Lieutenant General Samuel L. Myers
President, Cavalry-Armor Foundation

It is a pleasure to be able to bring you up to date on the status of acquiring funds with which to begin building our branch historical museum here at Fort Knox.

Before proceeding further, there are two points that I would like to clear up.

First, a short time ago there appeared in the *Louisville Courier Journal* an article about the new Patton Museum which wound up with this sentence, "Money hasn't been coming in very fast and its future is penniless." I don't think that was a very correct statement; I am even positive it is an incorrect statement. I don't think it was very generous on the part of the young man who wrote it, and I think he was expressing his own opinion. It does not represent the opinion of the *Courier Journal* nor does it represent the opinion of those who are making the effort to bring the money in. True, it has been slow, but if any of you have had any experience in raising money for any purpose you know that there are lots of people who talk long and loud about money but when it gets down to putting their hand down in their pocket they are awfully slow about bringing it out. It is going to take a little time to do it. I just wanted to clear up that one point.

This museum is going to go. I did a little arithmetic yesterday and, at the present rate, it is going to take 17 years. That is not very good. But I do think we have some plans up our sleeve that will produce results a little bit sooner. These I will mention later.

The second thing is related. I am not going to stand up here and make excuses. We have no excuses to offer whatsoever. We have not done what we were supposed to do and what we set out to do. We are not begging anybody's pardon. We are just doing the best that we can and we will continue to do so.

Now I shall move to what has happened since the last time you were given a resume. I will start by saying that on 1 January 1970 we were \$78,407.18 better off than we were the previous January. That is some progress. I might add that as of four days ago, considering contributions so far in 1970, we are \$11,888.45 better off than we were on 1 January. So we are not backtracking. When I say we are that much better off, I need to define the term, perhaps.

I am not talking about all the pledges. I am talking about dollars in hand — some in dollars and some in stocks or pledges that are not given to us on a contingency basis. I am not counting pledges with conditions. We have plenty of those, unfortunately. Offers of such pledges have been so careful in their description of how they would give, that it takes a Philadelphia lawyer to figure them out. I do not know whether we are ever going to get those or not. We have a separate account for those which has a great big question mark on it. I am not counting those although some day they may come forth.

During 1969, several things transpired which denote progress. In the first place, we created a Board of Advisors consisting of some very important and influential people all over the United States who are working on raising money for the museum. Some of them are working quite actively. Brigadier General McCarthy, who produced the Patton film, has not only contributed many things for the museum itself, but has given sound advice. I have a feeling that before too long he may be instrumental in getting some money.

We have had the soil testing done on the ground that the government has given us, and it was found to be satisfactory. Last November, we got so optimistic that we said that we were going to make it by January. I am afraid that nobody can blame that optimism on anybody but me.

But, I repeat, it is going to be done. I am going to mention just three items on which I hang my faith that it will be done.

We now have a lease signed by the Secretary of the Army on 21 March 1970, authorizing us to build the museum in the space that has already been given to us by the government. And that lease is long enough that we will have more than built before it runs out.

Now for some good prospects on which I would like to take just a moment. During 1969, a great deal of organization was done throughout the United States and the results are beginning to show. First, in the Army National Guard, under the leadership of General Dawson, the Adjutant General for the State of Kentucky, the entire Army National Guard of the United States has

been organized to conduct a continuous campaign. Project officers have been set up. There are certain areas where they have already been very active. I would like to mention particularly the 50th Armored Division. They have probably given more money without any strings attached than all the rest of the National Guard put together. But there are other units that are coming along very well. Montana and Wyoming are doing very nicely. In Pennsylvania, there is a project officer who is a ball of fire. He has been designated as project officer, not only for the National Guard, but for the Reserve and the veterans organizations as well. He seems to be doing very well. Up in the state of Vermont, they have a man who is producing results. Down in Atlanta, Georgia a Reserve school has been getting out and making hay, and that is a good sign. We have also gotten many veterans organizations organized. But the money which is coming in is not going to get the job done in the time that we would like to get the job done.

We have got to hit the jackpot on some big donations. I am going to say a very few words about these. General Motors sent their president down here to spend a day with us last December. He looked the project over, and he was very favorably impressed. He left here saying that General Motors would help us out. General Motors is, at the present time under their awards system, seriously considering what I hope will be a very generous donation to the foundation. They could give us enough to go ahead on Phase One, at least.

There is another foundation in this area called the Brown Foundation. It was established by the estate of the late hotel owner in Louisville. We have an application there which is being given serious consideration. It could be adequate. I am still very optimistic that one of those things is going to happen. But people who give away large sums of money don't do it lightly.

There is more to be done. However, I am confident that construction of the new Patton Museum will begin soon. Hopefully, next year we will be able to take you out to the site to see the progress with your own eyes.



BRITISH ARMOR

by Lieutenant Colonel John D. Osborne
British Army Liaison Officer, US Army Armor Center



Gentlemen, you will see from the advertisement that we Brits have been in the equipment business for quite a while! I am very glad to have this chance to bring matters up to date and to show you what the Royal Armoured Corps looks like now and through the mid-70s.

Speaking as a member of that Corps I must say that we are in a very fortunate position just now because this is the period when all the plans to re-equip us which were made in the early 60s are coming to fruition.

- *Chieftain* is now in service.
- New reconnaissance vehicles are at the trials stage.
- A new antitank guided weapons system is coming into service.
- An interesting amphibious supply vehicle is now in armoured regiments.
- And a device which will revolutionize field training is now on trial.

These are the things I want to talk about. I have time only to highlight the main developments, but fortunately most of the detail has been in *ARMOR Magazine* in the past few months and therefore must be familiar to everybody here!

Chieftain is obviously the most important of our new equipment though it is now pretty well known to you. There is one at Aberdeen, albeit an early model.

Chieftain was designed specifically for a European battlefield; to survive in a nuclear and chemical environment, to reach out and engage a much larger enemy force at ranges greater than they can hit back, to take punishment and survive, to keep up with anyone else in cross-country movement, and to be a tank which the crew can live with.

Chieftain has the heaviest armor of modern tanks and the biggest gun. It weighs about 55 tons. The 120mm fires an APDS round with a muzzle velocity of about 5000 feet per second, giving a considerably greater penetration at greater range than the 105mm. It also fires HESH, a chemical energy armor defeating ammunition which has a good HE capability as well.

The ammunition is separate. The projectile is loaded first and then the propellant bag charge. This has the same advantage of leaving no brass cartridge as your 152mm caseless ammunition.

In addition, the bag charge is light and has a minimal fire risk because the

charges are stored in water-jacketed racks. This system is proving very successful and I gather will be used again in any future gun we develop.

Perhaps the best thing about *Chieftain* from a tanker's point of view is that regiments in Germany who have them think they are great. Both officers and men are convinced that this is the best tank ever made.

I am certain of it, but perhaps it is just as well that my colleague Colonel Hubertus Ewert is away at the German Liaison Conferences or he might be on his feet shouting "Then why are all the NATO countries buying the German Leopard?"

All our regiments are now getting *Chieftains* and most have them already. The next people to be re-equipped are the armoured reconnaissance regiments, and for them there are two new series of vehicles on trial now.

The first is a tracked combat reconnaissance vehicle series based on the *Scorpion*. *Scorpion* replaces the *Saladin*





armored car and it is quite funny that we who have used armored cars for generations should be going to a tracked reconnaissance vehicle just as you are beginning to look at wheels. *Scorpion* is proving as quiet as *Saladin* is. It is very fast and is good across country.

It has a 4.2 litre Jaguar XK engine. This was chosen because it is an excellent and well-tryed engine, and is readily available. But, we are also examining a diesel version. The vehicle weighs 17,500 lbs fully loaded. It is armed with an improved version of the 76mm gun which has been very successful in *Saladin*. It has a crew of three.

Scorpion is the lead vehicle of a series including:

- *Guided Weapon Vehicle*. Armed with our new *Swingfire* missile.

- *Personnel Carrier*. This is specifically for carrying the ground elements of the reconnaissance unit, which we call assault troopers. They are specialists in mines, demolitions and observation techniques as well as giving local protection to the unit. The vehicle is not a MICV and it is not for carrying infantry.

- *Command Vehicle*.

- *Ambulance*.

- *Recovery Vehicle*.

All these are for the recon unit and will put virtually the whole regiment on one type chassis.

Scorpion is well ahead and will start coming into service in 1972. These others are further behind in development.

The armored car is still very much alive in the British Army. At about the same stage of development as *Scorpion* is the *Fox*. This is in the direct line of descent from classic armored cars such as *Daimler* and *Ferret*. The rationale for this vehicle is that certain tasks, particularly in stability operations, such as convoy escorts and road patrols can far better be done by a wheeled vehicle than by tracks. And this is the wheeled vehicle.

Fox has the same Jaguar engine as *Scorpion*, giving it quite a sporty performance. And it is the first vehicle to have the new 30mm RARDEN gun, which has been developed as an anti-armour weapon to go on this vehicle, on a light version of the *Scorpion*, and on the new MICV when it comes.

The RARDEN can fire the 30mm Hispano-Suiza ammunition, which gives an HE capability. But more important, it fires an APDS round which has been developed for it. This means that it can penetrate any light armored vehicle and the side armor of most MBTs at better than 1000 meters.

The big difference between this and your proposed equivalent is that the RARDEN was not designed with an anti-aircraft capability in mind and is fired in single shots. It is loaded with six rounds which can be fired automatically. But our teaching is that it should be fired in a series of aimed shots. We do

not believe that it is realistic to squirt 30mm ammunition round the battlefield at a rate of 500 rpm. For one thing, the ammunition load in the vehicle and the resupply system will not support this. For another, with APDS each shot must be aimed to be effective.

On the *Fox* chassis we are developing one other vehicle; this one is called *Vixen*. It is wider than *Fox*. It has a turret only for self defense, with a 7.62 machinegun in it. But it has room for a driver and three passengers. It is a liaison vehicle. It will carry, for instance, a battalion commander, and his intelligence officer and his artillery battery commander, which is the normal team for the initial reconnaissance of a battalion task.

Vixen replaces *Ferret* in this role. It is a big improvement because *Ferret* could take only a driver and one other person. So either the CO went unarmored in a jeep with his advisors or went with a string of *Ferrets*.

For long-range antitank defense, tank battalions in Germany are being equipped with a platoon of six FV432 carriers armed with *Swingfire* missiles. The *Swingfire* antitank missile is wire-guided and has a range of 4000 meters. It can be fired from a concealed position with the operator dismounted and separated by up to about 100 meters from the vehicle. It has a whacking great warhead.

The *Swingfire* platoons are for use in a defensive position to cover whichever arc of the battlegroup area offers this long range, or they may be centralized by the brigade to cover a dangerous run-in on one flank or other of the brigade area.

Incidentally, the vehicle it is on is an adaption of our Infantry APC, which looks a bit like an M113 and probably owes something to it in design. This vehicle, called the FV432, is a good one and a number of other adaptations of it are in our tank units as command vehicles, ambulances and maintenance vehicles as well as the missile carrier.

The *Stalwart* is a six-wheel vehicle which is a true amphibian, being powered in the water by hydrojets. (In fact, a soldier in a well-known cavalry regiment went AWOL in one of these a couple of years ago. He drove from Germany into Belgium and then into the Channel heading for home. Unfortunately for this story he then lost his bearings and came ashore several hours later on the coast of France. This is a pity since *Stalwart* would have gotten him home if he had kept straight. We now advise people going AWOL to take a compass.)

It is a five-ton load carrier, with a chassis similar to the *Saladin* armored car and good across country. For the past couple of years we have had them in tank units as the immediate resupply vehicles at company level.

My last subject, which we in Britain are very interested in now, is a training device. It does not seem yet to have a

single well-recognized name. It is called: the laser hit-kill indicator, or the *Simfire*, or the direct fire weapons effects simulator.

What it is, without going into the technicalities, is a laser projector mounted on the gun tube which is connected to the gunnery system of the tank. Provided the gunner has laid correctly and has got the correct super-elevation on his gun for the range he is firing at, and for the ammunition he is assumed to be using; when he fires the gun the laser beam will strike sensors on the opposing tank. The sensors will activate anything you like. To begin with we had them activate a switch to turn everything off including the engine and thus immobilize the tank. However, people realized it could be embarrassing if the tank was at that moment astride, for example a railway line with the 4:14 from Bournemouth due any minute. Therefore the equipment we now have on trial switches off the radios and the laser projector equipment and then sets off a smoke cartridge. But the tank can still move.

The equipment works to a range of 2000 meters and is going to make field training a very much more realistic rehearsal for war than it has been heretofore. We are planning to have enough of these to run brigade exercises with them in Germany.

The equipment is now on trial at our Armour Center at Bovington, and an American firm is currently adapting the system to the M60 with a view to building them here. The January-February and March-April issues of *ARMOR* had a detailed two-part presentation on this development.

Probably the biggest difference in outlook between our armored branch and yours is over the guided missile. We still look to the gun as the principal tank weapon and I believe we shall continue to think this way in the foreseeable future. We see the missile as a valuable but more specialized weapon, to reach extended ranges, and as a means of giving a light vehicle an antitank capability.

Perhaps the reason for the difference is the faith we have in the APDS round as the most lethal killer, and as a very accurate gun ammunition. I sometimes wonder whether it is the lack of practice ranges where you can fire it which has made you give APDS a rather secondary role.

The second big difference between us is your development of the helicopter in armed reconnaissance and tank killing roles. You are way ahead of us on this. For us it is a matter of deciding what we can afford to give up in exchange for it, and that decision has not been made. As a matter of fact we are inviting some people from Fort Knox to the Royal Armored Corps Conference in England in November to talk about air cavalry.

Gentlemen, helicopters excepted, I hope I have persuaded you that the Brits are in reasonably good order.



FRENCH ARMOR

by Major Andre Loussouarn
French Army Liaison Officer,
US Army Armor School



I am very pleased to speak to you about armor in my Army today.

French military policy is designed to deter anyone from attacking our national territory. It is based on the existence of tactical and strategic nuclear armament.

Our ground forces are categorized according to their mission.

First, there are internal defense forces which would include in wartime one mountain division, 10 light armored cavalry squadrons, 10 regional light infantry brigades and 90 local infantry battalions. These units are trained to be employed initially in counterinsurgency and countersurveillance operations. They are also trained for large-scale guerrilla warfare against forces which might invade our restricted territory, either in conjunction with other armored forces or alone.

Second, there is an intervention force including two airborne brigades and one amphibious brigade. This force is designed for overseas employment to assist our former colonies with whom we have defense agreements.

Third, there are our maneuver (also called main or battle) forces which consist of five divisions organized into two army corps. These have surface-to-surface nuclear weapons as well as conventional weapons.

The structure of these divisions was modified three years ago. The divisions are similar to each other and are called mechanized divisions. Each includes a division base, two mechanized brigades and a motorized brigade. The motorized brigades will be mechanized in the next few years.

Each division has its own army aviation battalion and a nuclear-capable artillery battalion, but it has no reconnaissance units. Our armored cavalry squadrons are kept together at the corps level in a reconnaissance brigade now composed of two or three armored cavalry squadrons. In the future these are planned to be amphibious combat vehicle squadrons.

The mechanized brigade includes a

tank battalion equipped with the AMX30 main battle tank, two combined arms mechanized battalions, a 155mm artillery battalion, a brigade scout company, and signal and engineer companies. Each of the combined arms mechanized battalions has two light tank companies and two mechanized infantry companies.

This new organization has tended to better adapt our battle forces for nuclear combat and, at the same time, to give them the most suitable equipment. Continuing studies are being made in the field of CBR protection as well as in the fields of mobility, anti-tank power, and standardized organization.

The potential use of these battle forces in the Western European operational theater determines the direction that equipment studies will take. The climate, soil characteristics and terrain formation must be taken into account. The density of buildings, the importance of the road network and the character of the hydrographic network have all led to the definition of cross-country and road mobility requirements, as well as needed amphibious and underwater capabilities.

The potential enemy is numerous, armored and has high battlefield density. His forces include large allotments of nuclear, chemical and biological armaments. He uses the third dimension fully for his supporting aviation as well as for his helicopters and his airborne units.

To meet him successfully it is necessary for us to possess similar means to be able to adopt the intentionally offensive attitude prescribed by our defense policy. Those means are essentially tanks and antitank and antiaircraft defenses. Their characteristics must enable them to maneuver into a good position to confront the enemy.

Now we will speak of the French concepts concerning armored and antitank equipment. It is reasonable to examine these together because, on the one hand, the effects of some of them determine the characteristics of others. And,

on the other hand, they are often brought together to make a weapons system.

The battle tank, which was the main weapon on the ground battlefield during World War II, is still, and will continue to be for a long time, the basic equipment necessary for a modern army.

Because of its power, in a conventional war, it is the basic element of mobile combat, which type combat is nowadays the rule. The tank is the only weapon which can force the enemy to employ rapid and repeated attacks to overcome our defenses. It is the weapon to give us success. The employment of well-equipped, well-maintained, well-trained tank units is the very objective of the ground maneuver.

For a nuclear war, mobility and protection are the necessary conditions for survival in the face of enemy nuclear fires. These are achieved best by the tank. In turn, its firepower allows us to prepare and to use, in the most effective way, our own nuclear fires.

It must be noted that during recent years, improvements to the battle tank affected only its components but did not bring into question its general structure.

The French AMX30 is an example of a battle tank meeting modern requirements. It was conceived on the basis of having a main weapon capable of destroying all known armored vehicles at ranges up to 2500 meters. As actually designed and produced, its 105mm gun can be employed up to 3000 meters with a 50 percent hit probability on a 2x2 meter target. The gun is stabilized and fires non-rotating, shaped charge ammunition at a high, eight rounds per minute, rate of fire. In addition, there is HE ammunition. The fire control system makes possible great accuracy in both day and night combat.

On the same models, a 20mm automatic gun serves as secondary armament for antipersonnel, antiaircraft and light antimechanized employment. Presently, most models have a 12.7mm coaxial machinegun which can be aimed to a



height of $+40^\circ$ independently of the main gun. Primarily for self-defense, there is also a 7.62mm machinegun having 360° traverse and elevation from -10° to $+65^\circ$. This weapon can be operated from inside the tank with all hatches closed.

The AMX30 has high mobility both cross-country and on roads. It can deep ford waterways while completely submerged. It is capable of fighting for a whole day without resupply. Its logistical support is facilitated by having a multi-fuel engine and unit replacement of components.

CBR protection has been enhanced through armor thickness, a pressurized interior and an air intake filtration system.

You will doubtless recall the earlier AMX13 tank, which came into our army in 1953, and its family of related vehicles. This group is still in service and, in addition to the AMX13 tank, includes a squad personnel transporter, a 105mm self-propelled howitzer, a 155mm self-propelled gun, a 30mm anti-aircraft gun, a recovery vehicle and an engineer combat vehicle.

Now there is also an AMX30 family in development. This includes an AVLB able to lay a 21-meter span for class 40 vehicles in 10 minutes, a recovery vehicle and a *Pluton* tactical nuclear missile carrier.

As you know, the tank cannot fight alone. In many cases at night, during river crossing, in cities, and in woods

it must be accompanied by infantry. The infantry must be able to stay with the tanks. The two must be inseparable. When mounted, the infantry must be able to fight the enemy mounted mechanized infantry.

To satisfy these infantry requirements, we now have the AMX10 infantry combat vehicle. This weighs 13 tons and carries an 11-man squad including a driver and gunner who remain mounted when the riflemen fight on foot. The AMX10 is amphibious with hydrojet propulsion for water crossing operations.

A 20mm turret-mounted automatic gun, with a day/night fire control system can be employed against personnel, aircraft and light armored vehicles. The riflemen can fire their weapons through ports. Mobility and logistical characteristics, as well as good CBR protection, make this vehicle a fully compatible companion to the AMX30 tank.

For a long time, the French Army has been wedded to the concept of a light tank in which reduced protection compared to that of the battle tank is compensated for by greater mobility, a reduced silhouette and ease of camouflage.

The proper technical characteristics will permit mounting very powerful missile, or even high velocity gun, armament on a relatively light chassis. The result is a combat vehicle of reduced cost which, although it cannot replace the battle tank, is perfectly able to take care of itself.

We are now developing such a light tank on the AMX10 chassis. This will have the same protection and mobility as the carrier but different armament. Proposed armament will be a long-range HOT (high subsonic optically guided) or other anti-tank missile or a high performance 105mm gun with less range than that of the main battle tank gun.

These vehicles will complement each other and will be used to equip our mechanized brigades in the future.

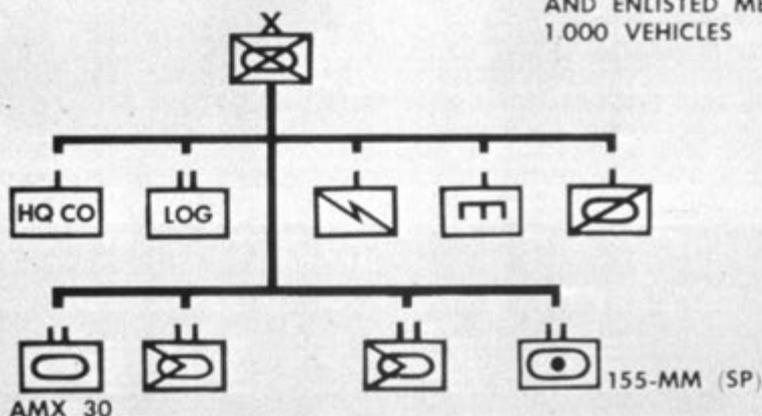
In modern warfare, rear area security, internal defense and the fight against subversion are very important. These are principal missions for our internal defense forces. Furthermore, the dispersion associated with nuclear combat will create gaps and expose flanks which must be covered.

Therefore, there is a requirement for a very light armored vehicle whose principal characteristics are mobility and endurance. Such a vehicle must be capable of moving rapidly on roads or cross-country for great distances in order to intervene against a very fluid enemy. And it must be able to operate far from its base and with reduced logistical support. Thus this requirement must be met by a more economical and less sophisticated vehicle than those organic to the battle corps.

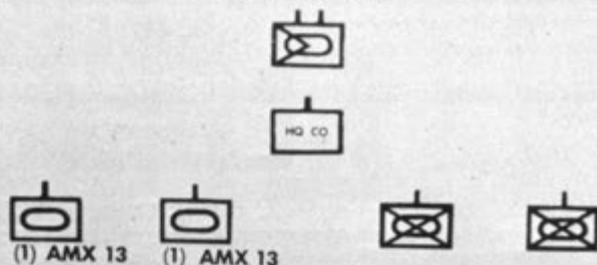
The AML armored car is just such a vehicle. It is lightly armored, weighs five tons and has a 600 kilometer operating radius. Its normal armament is a 90mm

MECHANIZED BRIGADE

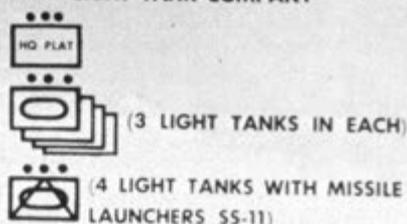
3,600 OFFICERS
AND ENLISTED MEN
1,000 VEHICLES



MECHANIZED BATTALION (COMBINED ARMS)



(1) IN EACH LIGHT TANK COMPANY





smoothbore gun firing a shaped charge shell and having a coaxial machinegun, or a 60mm mortar with two coaxial machineguns. Other armament, such as a 20mm gun or missiles, can be mounted.

The state of mechanization of the potential enemy gives considerable importance to antitank means effective at ranges from zero to 4000 meters.

In addition to those tank weapons already discussed, the French Army has developed a squad weapon for employment against tanks at ranges of 400-500 meters. Furthermore, the SS11 (now called *Harpon*) missile mounted on the AMX13 tank, or on a helicopter, has been much improved over the version

known by the US Army. The remote control is now semi-automatic instead of manual. The gunner only has to keep the crosshairs of the sight on the target. Infrared emissions from the missile in flight are transmitted to a sensor at the launch position. Data is transmitted to a small computer which sends corrections to the missile via a two-wire line which uncoils as the missile flies toward the target.

In addition to the *Hot* and *Harpon*, two new antitank missiles, called *ACRA* and *MILAN* are now being studied. [Additional details on missiles for armored fighting vehicles are in the articles "Missiles for Armor" (Jan-Feb 69) and

"Advances in Missile Armed Vehicles" (May-Jun 70) by Richard M. Ogorkiewicz—Editor.]

Further main armament for our main battle tanks is under continuous study. Even if some of these tanks can be equipped with missiles, it is probable that many of them will retain a conventional gun but with improved capabilities. In any event, France has been a leader in antitank missile development since World War II and remains so today.

Thank you for your attention and patience with my command of English. It has been a pleasure and a privilege to speak with you today.

ARMOR IN THE BUNDESWEHR

by Lieutenant Colonel William D. Carter
US Army Armor School Liaison Officer,
Bundeswehr Armor School

When I received word a couple of weeks ago that I would return to Knox for this presentation, several of the officers jokingly mentioned that the only trouble I would have would be in attempting to give the presentation in English. They didn't realize how close to the truth this statement was. I found out some time ago that I speak German with a Boston accent and I suspect that I am beginning to speak English with a German accent.

Colonel Osborne mentioned just a few minutes ago that he wished Colonel Hubertus Ewert, the German liaison officer to the Armor School was here. Right now, I too wish he was here! Since he is not able to attend, I feel obligated to uphold his side of the story. I am in the rather unique position of not being able to speak officially for the Federal Republic of Germany but I can speak from the standpoint of what I have seen and learned. In this light, the purpose of my presentation is to inform you of the armor developments taking place within the Bundeswehr. During the course of the presentation, the primary emphasis will be placed on the *Leopard* main battle tanks. Following the information on the *Leopard*, I will mention briefly the new infantry combat vehicle—the *Marder*—and a new scout vehicle for the armored reconnaissance units.

The *Leopard* was designed for the European battlefield. The main priorities for development were firepower, mobility and protection for the crew.

We must remember that when the Germans were planning for the *Leopard*, they were not thinking of a defensive weapon. They had in mind that the best defense against a tank is another tank. The tank defense was left to the anti-tank people with their cannon and guided missile tank destroyers plus all of the recoilless rifles and so on found in Infantry units. The *Leopard* was to be an offensive, hard hitting, highly mobile weapon. I think that they have achieved these objectives and I would like to mention a few points about the firepower and mobility of the *Leopard*.

It has a 105mm main gun. This is the same gun that is on the M60 tank. There are also two 7.62mm machineguns. One is mounted coaxially on the left side of the main gun. The other is the anti-aircraft machinegun mounted either at the loader's hatch or, optionally, at the tank commander's hatch. In either position, it can be traversed 360 degrees independently of the turret.

The searchlight is mounted on the gun shield. The planning range of the white light is 1500 meters and the infrared will go out to 1200 meters. When not in use, the searchlight is stored in a specially constructed box in the bustle storage rack.

The fire control system in the *Leopard* was designed with the idea that the tank commander should concern himself only with target acquisition, controlling the movements of the tank and issuing the order to engage a target. He was not to get involved with ranging. For this



reason, the range finder is mounted forward in the turret and is operated by the gunner. It has 16-power magnification and serves as the gunner's main sighting device when he is firing APDs or heat. The gunner can select whether he wants to operate the range finder in the coincidence or the stereoscopic mode. The range finder has both capabilities. When ranging, the gunner keeps both hands on the traverse and elevation mechanism and he operates the range finder with a foot pedal.

As an alternate means of sighting, the gunner has a telescope. This device is jointed and remains always at eye level no matter what position the tube



KRAUSS-MAFFEI



is in. It gives the gunner 8-power magnification. He can fire all types of ammunition with this sighting device to include APDS, HEAT, HESH and the machinegun.

The tank commander has a panoramic periscope with a zoom lens. This lens has 4 to 20 power magnification and is used by the tank commander primarily as a means of observation and target acquisition. The head of the periscope can be rotated 360 degrees independently of the turret. However, it can also be locked in line with the main gun. If need be, it can serve as an alternate ranging means and can be used by the tank commander to fire the main gun in an emergency.

For night firing, the panoramic sight is replaced with an infrared sighting device. This becomes the primary night sighting device under infrared conditions since the gunner can only use his sighting devices with white light.

There is a plan, currently being worked on, to improve the firepower of the Leopard. This program, to be completed by 1973, calls for a completely integrated fire control system. The first step is to retrofit a Cadillac Gage weapon stabilization system in all tanks. This stabilization system corrects for horizontal and vertical movements but it does not correct for cant. During troop tests conducted last year on this system, gunners were able to fire on and hit targets while moving at speeds up to 50 km/ph or 31 mph. Retrofitting the Leopard has already begun and the first tanks with this weapons stabilization system are expected to be received at the German Armor School some time this fall. The other steps in the completely integrated fire control system which are being worked on now are a computer and a stabilization system for the tank commander's periscope.

With respect to mobility, I will not go into all the technical data on ditch crossing ability, and so forth. This has been covered very well in the January-February issue of *ARMOR*.

When you examine and compare this technical data, you can readily see that the Leopard is a top contender in the area of mobility. I would like to point out a few items which I feel are important or significantly different.

The combat weight of the Leopard is 44 tons. It has a water-cooled engine which develops a horsepower of about 900 by American standards. This represents a power to weight ratio of 20.9 horsepower per ton.

Another factor in the area of mobility is that of the Leopard's tremendous water crossing capability. This probably stems from a study made of the terrain in West Germany. Every 12 kilometers there is a stream up to 20 meters in width; every 45 kilometers there is a river between 20 to 50 meters wide; and every 150 kilometers there is a major river. I think the designers had this study in mind when they were working on the underwater capability of the tank. It can ford, without any preparation, to a depth of 3 feet, 11 inches. That is about up to the turret ring. With five minutes of preparation it can deep ford up to 7 feet, 5 inches. That's in the vicinity of the range finder ears. With the addition of a conning tower at the tank commander's hatch, the vehicle can drive under water to a depth of 14 feet, 10 inches. One other outstanding feature of the underwater fording capability is that the engine can be shut off under water and restarted without causing damage to the engine.

The last thing I would like to mention about the Leopard is that it will soon have a new type of track. This track has removable track pads thus making it suitable for peacetime as well as combat situations. The most important feature about the track though is its longevity. This track has been driven a total of 11,000 miles on test vehicles without being completely used up. At the end of the test, it was estimated that the track still had an additional life of 1000 miles. A similar track developed for our M113 APC has reached

14,000 miles. All vehicles will have this new track just as soon as existing stocks of the old track are depleted.

We could say that the Leopard is the father of a family of vehicles. These vehicles, either in being or still in development, have many of the same parts and components of the Leopard. They include: the recovery vehicle, the engineer vehicle, the anti-aircraft vehicle, and the bridge-laying vehicle.

This completes the highlights of the Leopard and its family.

The infantry combat vehicle developed to fight alongside the Leopard is called the Marder. It was designed with the idea of Infantry mounted combat. It allows the Infantry to fight from the vehicle in a CBR environment without having to wear gas masks. With its weight of 31 US tons and an engine developing about 650 horsepower, it has no trouble keeping up with the Leopard. It carries a crew of 10 which includes the driver, vehicle commander/squad leader, gunner, assistant squad leader/rear machinegunner and six riflemen sitting back to back. The main armament is a 20mm gun. There are two 7.62mm machineguns. One is mounted coaxially with the 20mm, and the other is in the rear. There are two ball firing ports on each side of the vehicle. The riflemen can insert their 9mm machine pistols into these firing ports and fire while being completely buttoned up.

The last vehicle for the armored troops, which is still under development, is the 8-wheeled armored reconnaissance scout vehicle. Two candidates for this vehicle are undergoing engineering testing at this time and the troop test is scheduled to take place sometime after the beginning of next year. One of the candidates is made by Bussing and the other by Daimler-Benz. Each has practically the same outward appearance. All eight wheels have power drive and are capable of being steered. Normally the rear four wheels are coupled together so that steering is accomplished by the forward four wheels.

This vehicle can travel 63 mph on the highway. It is capable of swimming and has good cross-country mobility. One feature of this vehicle is the capability of shifting the driver's controls from front to rear. If a scout vehicle suddenly comes upon the enemy, the driver controls can be immediately switched and the vehicle is able to drive towards the rear at the same speed it was previously moving forward. The vehicle has a four man crew which includes the forward driver, vehicle commander, gunner, and rear driver who doubles as radio operator. The armament includes a 20mm gun, a 7.62mm anti-aircraft machinegun, and two antitank recoilless rifles. The recoilless rifles are capable of being fired from inside the turret.

As you can see, German armor is actively developing and producing fully modern, combat effective equipment.



THE BANQUET ADDRESS INTRODUCTION

by Brigadier General Hal C. Pattison
24th President, The United States Armor Association

Our banquet speaker, General Hamilton H. Howze is a third generation Cavalryman on two sides. His 35 years of distinguished service in the United States Army saw him closely associated successively with the horse, the motorcycle, the tank and the helicopter. His interest in military mobility remains very much alive today as General Howze is a vice president of Bell Helicopter Company.

General Howze was graduated from West Point in 1930. During World War II he served in North Africa and Italy with the 1st Armored Division as G3,

Commanding Officer of the 13th Armored Regiment and Commanding Officer of Combat Command A. Assignments to the Cavalry School and on the Army General Staff were followed by his becoming Assistant Division Commander of the 2d Armored Division in Germany in 1952.

General Howze then became Deputy Chief of Staff for Operations for Seventh Army, Director of Army Aviation, Commanding General of the 82d Airborne Division, and Chief of the Military Advisory Group in Korea. In 1961 he was named Commanding General of STRAC

and the XVIII Airborne Corps. During this tour he headed the Army's Tactical Mobility Requirements Board now known universally as the Howze Board. It was this board that pioneered the air mobility doctrine of today.

General Howze's last assignment before retiring from the Army was as Commanding General of the Eighth United States Army and Commander-in-Chief of the United Nations Command in Korea.

It is a signal honor and great pleasure to present to you General Hamilton H. Howze.



BG Hal C. Pattison, GEN Hamilton H. Howze and MG Richard C. Irby at the banquet.



SOME THOUGHTS FOR THESE TIMES

by General Hamilton H. Howze



Actually, I had another speech for tonight and had made all the notes on it. The subject of that is, "Why it is important for good officers to stay in the Army." I shall dismiss that entire subject with one sentence, by saying that I hope you do stay however much the Army may have been under attack in certain periods of its history and by certain radicals, movie actresses and others. It is nevertheless vital that the Army be physically and morally strong.

I shall make no more of that speech. I shall address another subject now and I shall tell you why. I came up in an airplane from Fort Worth this morning, and just before I got off that plane, I picked up a magazine and read the lead article. Of course, I can't tell you all of what that article said, but I did write down some extracts from it. These are quotes. "President Nixon's decision to invade Cambodia and the speech he gave to justify it has precipitated one of the most dangerous crises in this Nation's

history. The arguments by which the President attempted to make this fateful escalation of the war appear a move toward de-escalation contained such extreme inconsistencies and such fundamental violations of logic that it becomes almost impossible to carry on rational debate in its aftermath. With no apparent justification, we are beginning the destruction of a second nation in Asia."

A little later on, the article turned to the matter of dissent and destruction within the country. It said this. "The invasion of Cambodia comes at a time when our Republic is already seriously imperilled by the increasing use by many sections of the government of a broad range of repressive measures . . . the Government possesses virtually unlimited resources for repression, whereas the violent opposition is small and weak, and this means that the potential threat from the authorities is immeasurably graver than the threat from the rebels."

Such a statement is, in my opinion, disloyal. It encourages and abets discord. It is designed to disunite us at a time when the crying need is for unity. It encourages the enemy to further his efforts to prolong the war and ultimately subdue and occupy South Vietnam, and, in my opinion again, borders on treason.

And added to this sort of "liberal" press reaction, we have growing support for measures designed to force the President to withdraw the troops from Southeast Asia in other than a rational, orderly way instead of simply taking him at his word and depending on his good conscience and honesty to withdraw at an appropriate time. Now this will humiliate and weaken at home and abroad what I personally consider to be a patriotic, courageous, sincere, and eminently concerned man, no matter whether you are Republican or Democrat, at a time when he needs support and not vilification.

No sane American wants the war to continue, but too many of us have blinded ourselves as to what the results of a premature conclusion of the war would be.

Now I am going to drop a few names, if I may. When I was United Nations Commander in Korea from '63 to '65, I had to travel a good deal around the

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subdue and occupy
South Vietnam. . . .*



Far East. In that time, I talked to the Chief of Staff of the Thai Army and the Chief of Staff of the Thai Air Force, with Tunku Rahman of Malaysia, with Prime Minister Menzies of Australia, Prime Minister Hoare in New Zealand, General Chiang Kai-Shek of Nationalist China, and with President Park Chung Hee in Korea. Everyone of those individuals looked me straight in the eye and said, "The United States must win in Vietnam." And yet now, many Americans reject the so-called domino theory and contend that the United States can withdraw at once from Vietnam without serious loss of prestige, position, or, indeed, humanity of Vietnam itself. Now General DeGaulle is not very popular in this country, but he said, "War is the worst of all plagues. It has made the world as we know it. It has been an instrument of the best and of the worst. It has brought to birth both infamy and greatness, has wallowed in horrors and shown bright with glory. Once shameful and magnificent, its history is the history of the human race. In the realm of thought as well as that of action, it has been all things to all men and exemplar of eternal truth."

General Wright told me in his letter of invitation that this should be sort of a light banquet speech designed to divert you after a long, hard day of listening to more technical presentations. I must confess it hasn't been very gay thus far, and I have sort of failed to meet the requirement. But I must take advantage tonight of an opportunity to address some of my fellow Americans on this matter of Cambodia.

Now, somehow, this country has got to regain its perspective, and I make three simple points. One is that the decision to go into Cambodia was based on staff estimates and analysis that were exhaustively undertaken — undoubtedly, first in Saigon by the military staff there, unquestionably with the Ambassador participating, next by the Joint Chiefs of Staff in Washington, and you know, most of you, that process, and finally, by the National Security Council itself. Now this process doesn't mean that the decision was necessarily the right one to make. But, it is important that we all recognize that it was a decision not lightly arrived at by a single man, the President.

Now secondly, there is a broad misapprehension. It was not an escalation in spite of all the statements that say it is. Now a year ago, it certainly would have been an escalation, because at that time Sihanouk was still in power and presumably would have ordered his troops to resist our advance, but now what action we are taking we are taking in conjunction with the Cambodian military forces. So we have the same enemy. No more; no less. These are the same troops we have engaged before, but now in their sanctuary and supply areas from which they have launched a succession of attacks in South Vietnam in actual gross violation of the neutrality

of Cambodia.

And thirdly, the action is not inconsistent with President Nixon's stated intentions to withdraw troops from Vietnam as quickly as is prudent and practicable to do so. He said he would be out of Cambodia by the 30th of June. From a military point of view, this is easy to do. We have had no stated objectives there in the terms of terrain. We have no new enemy to defeat. The President could, therefore, tell General Abrams to ream out the cancer and get out six weeks from now.

Of course, you have heard Napoleon quoted many times before, that the "moral in war is to the physical as three is to one." Now what he meant, and what many of us forget, is that it is three times as important that the troops of the Army be properly motivated as it is that they shall be properly equipped. The same remark, it seems to me, applies equally to a nation as a whole.

Speaking of the great civilizations of the past, Toynbee says that "The fundamental cause of the breakdown precedes disintegration. It's that outbreak of external discord through which societies forfeit their faculty of self-determination." We are having, right now, trouble in determining what we want to do.

Mr. Arthur Krock, who has been a distinguished writer and columnist for more than five decades for the *New York Times*, says, "As an eye witness of governmental and other public actions of these years, I formed the opinion that the United States merits its dubious distinction of having discarded its past and its meaning. I have contracted a visceral fear that the tenure of the United States as the first power in the world may be one of the briefest in history."

What has Lenin to say? "... and finally we will encircle the last bastion of capitalism in the United States. We shall not have to attack it. It will fall like a ripe plum into our hands." Now what Lenin said will not come true. It is unthinkable that that could be so.

But it is true that wooley-headed thinking, disloyalty on the part of certain self-styled liberals, and violent dissent by those who openly advocate the destruction of our present society, have indeed precipitated crisis in this country. Now none of us really knows the extent of that crisis, but it is known and we should all recognize that there are forces abroad which are bent on exacerbating that crisis to the utmost limit.

Now what is required? Well, I should say, that those who love America should openly proclaim that affection. They should be capable of rising above partisan politics when the policy of the country has been set by duly constituted and duly elected authorities. And finally, they should be prepared to defend this country against all enemies, internal as well as external, who seek to tear it down.

*... those who love
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who seek to tear
it down.*



THE BUSINESS MEETING

PRESIDENTIAL OBSERVATIONS

by Lieutenant General W. H. S. Wright
23d President, The United States Armor Association

First of all, I would like to thank General Irby and General Galloway again for the first-rate presentation they put on for us this morning. We were challenged, made to think, had an interesting time, and found it very professionally rewarding.

Regretably, General Forsythe had to leave us shortly after delivering his superb keynote in order that he could meet another speaking engagement later today in Detroit. I know that all of you join me in expressing appreciation to him for a very stimulating address which will give us much to ponder over the coming months.

I cannot let the occasion pass without recognizing the presence at the head table of General Hamilton H. Howze, U.S. Army-Retired, who arrived during the proceedings this morning. General Howze is a classmate, and long-standing friend and associate of mine. It is one of my regrets that since I am leaving the office of President of your Association I will not be able to introduce him tonight. But perhaps it's just as well. General Howze and I had extensive service as brand new second lieutenants on the border some forty years ago. We had many moving, terrifying, and hair-raising escapes by flood and fire, both officially and unofficially.

Your Association continues to grow and the *ARMOR* Magazine circulation continues to increase. I think you will agree with me that its contents are improving with every issue and that the format is constantly more professional and more pleasing. I believe that it is the best military professional journal for line officers in existence in the United States today. The paid circulation of our last issue was 9830 which is an all-time high. We hope before long to be able to break the 10,000 mark. And when we do, we will have arrived at a preliminary goal. Financially, *ARMOR* is now in good, sound condition; better than ever before. However, circulation can and should be increased. I am convinced that there are a great many professional Armor officers

and senior NCOs who do not read our journal. I think that they are missing a great help to their professional advancement by not doing so. I hope that if you know one of these you will go to him with missionary zeal and convince him that he should join our Association and read its journal.

The guidance that we are receiving from our new broadly based and widely representative Executive Council is continuing to show great results. And I know we are all grateful to them for their dedication and for their many contributions.

You may recall that in the January-February issue of *ARMOR*, there was a questionnaire concerning a possible changing of the insignia for Armor from the present one to the crossed sabers. This was done because in my various contacts as President of your Association, I heard a great many officers express an interest in the possibility of such a change. I discussed this matter informally at very high levels in the Army Staff and was encouraged to think that a questionnaire might be a useful way of arriving at some sort of consensus as to whether the change should be made or not. This idea was reinforced because armored and air cavalry units generally use the crossed sabers and have gone back to the red and white guidon. The Field Artillery has once again been authorized their unadorned crossed cannons. And the Infantry, of course, still wears proudly the crossed flintlocks of Harper's Ferry fame.

We put the questionnaire in the magazine, and I must say the results were disappointing. Over 10,000 copies of that issue of *ARMOR* were circulated. However, only 638 completed questionnaires were returned to us. This is not considered a broad enough base to be particularly sound or a broad enough base on which to base any recommendations. I might say that of the responses we did receive, 60 percent were in favor of going to the crossed sabers, 30 percent were in favor of retaining the pres-

ent insignia, and about 10 percent thought we should have two insignias, one for Armor units and one for Cavalry units. However, because the sampling was so small, and the results were so disappointing, as of now, I consider the matter dropped.

Now, I would like to speak for a moment about the work of our full-time staff, Colonel Martin and his four assistants. Judging from the magazine, as you can all judge, and judging from the day-to-day work of his staff, as I can judge, they are doing a truly outstanding job. These five dedicated men are putting out a professional journal that I think, as I have said before, is the best in the country. The other combat arms professional journal put out at a large post south of us is staffed by 15 officers and enlisted men plus a couple of civilians; and, excellent though it is, I don't think it quite comes up to ours.

The *ARMOR* Magazine Staff are assigned to the Armor School and we all certainly appreciate the backing they are given by the School and the Armor Center. Without this fine support, this entire professional undertaking, for the benefit of the Armor branch worldwide, would not be possible.

As one result of the presentations this morning we cannot fail to realize that we in Armor are faced with a real challenge to which we cannot, simply cannot, fail to respond. The fate of any revolution, to include a military tactical revolution, if it is successful, is eventually to become the status quo and to become institutionalized. I think the greatest challenge that faces our Association is to keep our membership thinking ahead about the Armor of the future as our keynote speaker did this morning. General Forsythe, I thought, gave us a very refreshing look into what the future of Armor might be and, indeed, the presentations that followed him did the same thing. We must continue to seek innovations and to welcome new and revolutionary concepts. If we don't, we will be a tired revolution and we will die!

The role of Armor as we all know it and as we have heard it presented this morning, is not dependent on any particular piece of equipment anymore than the idea of Cavalry is dependent upon a horse. Don't think the tank is the only vehicle that has overwhelming firepower, mobility, responsiveness, and shock; it is not! The attack helicopter in Vietnam is fulfilling this same role and it is certainly very, very different from a tank. It has all these characteristics of mobility, fire-

power, responsiveness and shock, and it has them in spades.

Alfred North Whitehead said, "The art of progress is to preserve order amid change and to preserve change amid order." I think this might well be the keynote for our branch and for our Association in the years ahead.

[By direction, the Secretary-Treasurer reported that the Constitution requires that five percent of the active membership present in person or by proxy shall

constitute a quorum for the transaction of business; that the active membership on 6 May 1970 was 4326; that 303 active members were present in person and 745 by valid proxy for a total of 1048; that 216 members were required for a quorum; and, that there was a quorum. It was then moved, seconded and voted unanimously to dispense with the reading of the minutes of the 80th Annual Meeting since these had been published in ARMOR.]

REPORT OF THE SECRETARY-TREASURER AND EDITOR

GENERAL WRIGHT, FELLOW MEMBERS OF THE UNITED STATES ARMOR ASSOCIATION:

Practitioners of the black arts, which your present speaker finds himself currently engaged in, generally take one of two approaches in making these reports to the membership. One is to blow one's horn about the "significant" progress and "great" gains made during the past year. The other is to put everything in as bad a light as possible, preferably reading the whole in sepulchral tones, in the hope that the members will vote to raise dues and engage more help and that they will go forth from the meeting filled with fire to recruit 10 new members each. Neither seems wholly suitable here although overtones of each may creep in.

First, the financial picture. In 1967, the first year for which we had modern accounts, professionally audited, we had a net loss of a bit over \$1,000. In 1968, there was net income of about \$3,000 and for 1969 about \$8,000. [Audited financial reports are on page 57.]

In 1967, Book Department net income jumped some \$3,000 to the \$5,000 per year level. It has remained there since. While gross sales are up, we have intentionally kept markups low and are using better and more costly packing materials. Increased postal costs have further reduced net income. Our entire operation is legally, and actually, non-profit. Any surplus generated by the Book Department has gone toward needed office and circulation machinery, for awards, and to underwrite the 1967 and 1968 losses of ARMOR Magazine.

ARMOR Magazine has always been the principal means to carry out our primary mission to disseminate knowledge of the military arts and sciences and to promote professional improvement.

I am happy to report, that thanks to the realistic price structure which took effect on 1 January 1969 and increased circulation, our professional jour-

nal cleared about \$1,950 for 1969. Significantly, this was done despite publishing 20 pages more than normal and using two full color covers, plus introducing a fine paper stock. Interestingly, the cost of the average copy printed in 1966 was 47 cents, in 1967 53 cents, in 1968 49 cents and, in 1969 48 cents. For two issues of 1970, it was about 45½ cents. The average paid-for copy cost was 64 cents in 1968, 59 cents in 1969 and for two 1970 issues about 55 cents.

Our average paid circulation for 1969 was 9,400 per issue which is an increase of some 3,300 compared to 1966 and 1967 and about 2,300 greater than 1968. With the November-December 1969 issue, ARMOR hit an all-time high paid circulation — 9,798.

One point that cannot be stressed too much is the necessity for any magazine, and ARMOR is no exception, to maintain a circulation sufficiently large that costs can be spread over enough copies to keep the price reasonable. If we printed one copy of each issue of ARMOR, we would still have to pay the printer some three-quarters as much as we now pay for a run of about 10,000.

There are still some 7,000-8,000 armor officers on active duty who are not members. Of these, nearly 2,000 are field officers who surely are careerists. This matter deserves the best thought and attention of all of us. There are now about 200 Active Army senior NCO's who are members. We intend to work with the two sergeants major on the Executive Council to improve this discouraging picture. It is my understanding that INFANTRY and the Marine Corps Gazette have made greater gains among these professionals.

The Association's investments in securities continue to weather the storm of today's market relatively well although their value has now fallen below cost.

Our holdings in common stocks had a cost, at 1 May 1970, of \$30,907 and a market value of \$28,861. In addition, we had \$16,000 in Treasury bills. While it may, at first, appear that there is a great deal of surplus cash to use for equipment purchases, awards or improving ARMOR, this is not the case. We have a \$38,000 liability for future issues of ARMOR Magazine due members and subscribers.

Occasionally we receive downright nasty letters which reflect no credit on the writer either with respect to his thirst for facts or his judicious exercise of pen. The thing that hurts is that these letters are from Armor people who write as though they were addressing some impersonal, and possibly quite crooked, business out to do them dirt. I ask that each of you here do your part to let it be widely known that the five of us on the staff are real people who proudly wear green suits (and ours have Armor patches). We do our level best to give good service. An informal, friendly note will get prompt attention. We do make mistakes. When we do, we appreciate help in getting them put right promptly.

Summing up, our Association and journal are in a comparatively strong financial position today. Most of our equipment has been modernized.

But there are more things we can and must do by working together. More good articles must be written for ARMOR. More news of Armor people and units must reach us. More memberships and subscriptions are needed in order to maintain a reasonable price structure. These essential things will only happen if you the members make them happen.

[The foregoing report was accepted. General Wright then asked General Waters to assume the chair.]



REMARKS

by General John K. Waters
Chairman of the Nominating Committee

GENERAL WRIGHT, GENTLEMEN:

Before presenting to you the slate of officers and Executive Council members for the coming year, it is important that I refer to the Constitution of our Association. This provides that the governing body of our Association shall be a president, three vice-presidents, and 14 additional Executive Council members, all to be elected at the annual meeting. It also provides that the Secretary-Treasurer and Editor will be appointed by the Executive Council.

General Wright has moved from the Washington area and is now living on the Northern Neck of Virginia some three hours from Washington. Therefore, he believes that he is no longer able to do justice to the position of President of our Association and has declined to run for an additional term. Your Nominating Committee, respecting his wishes, considered a number of other well-qualified candidates.

For President, the Nominating Committee recommends Brigadier General Hal C. Pattison, now Chief of Military History, Department of the Army.

Born, reared and educated in Illinois, General Pattison received his Bachelor of Science in Business Administration from the University of Illinois. At the same time, he was commissioned a second lieutenant in the Cavalry, Officers Reserve Corps. After several years in the business world, then Captain Pattison was called to active duty in March 1941 to join the 4th Armored Division. He served successively as a company commander, regimental staff officer and battalion commander in the 39th Armored Regiment. During World War II combat, as a lieutenant colonel he was executive officer of Combat Command A. Immediately after World War II, as a member

of Army Ground Forces Board 1, he worked on the pioneer project to develop the helicopter as a military vehicle. Next he was a member of the Tactics Department of the Armor School. After graduation from the Command and General Staff College, he served in the Operations Division of the Army General Staff. From 1949 to 1952 he served in key positions developing the NATO military structure which became SHAPE. Following graduation from the Army War College in 1953, then Colonel Pattison returned to the Army General Staff. He then served as Assistant Division commander of the 7th Infantry Division in Korea. Promoted to brigadier general in July 1956, he became assistant commander of the 1st Cavalry Division in Japan. In 1958, General Pattison returned to his first unit, the 4th Armored Division, in Germany to serve as Assistant Division Commander. It was here that, as his division commander, I had the opportunity and privilege to get to know General Pattison well. His knowledge of, and regard for Armor, is truly impressive. General Pattison retired in March 1962 only to be recalled to active duty in August to become Chief of Military History in which assignment he has served with distinction.

For Vice-Presidents, your committee recommends General Bruce Palmer, Jr., Major General James H. Weyhenmeyer, Jr., and Major General Richard L. Irby. These men have been most helpful over the years with our Association affairs. We are happy that they are again available to serve.

In selecting the nominees for the other 14 Executive Council positions, the committee has observed the guidelines set forth in the Constitution and Bylaws. We have sought to have diversification and

reasonable geographic dispersion. Those selected are able and conscientious men who will participate actively in our affairs. For continuity, seven of those proposed served last year. All 14 are in important Army positions representing key assignments for their ranks. We recommend these 14 to you without reservations. Each of you has the list so I will omit reading the names to you.

Our constitution also provides that an honorary president and honorary vice-presidents may be elected at the Annual Meeting from distinguished members. They are elected for life.

A few years ago, General Crittenger was elected Honorary President. As you noted in his message to us, he has continued to give us inspiration and leadership.

Our retiring President, General Wright, has served us with distinction, devotion and dedication throughout the past year and for many years prior to his becoming our President. It is our further pleasure to recommend to you that he be returned to the list of honorary vice-presidents.

Gentlemen you now have the slate before you, what is your pleasure? Are there any nominations from the floor? Do I hear a motion that we accept the slate as presented and elect those thereon unanimously? Is there a second on the motion that the nominations be closed? Seconded. All in favor say aye. The slate as presented to you is herewith elected unanimously and will become a matter of record. I will now turn the chair over to our new, and 24th President, General Hal C. Pattison.

[The officers and Executive Council members elected are shown on the inside front cover.]

ACCEPTANCE REMARKS

by Brigadier General Hal C. Pattison
24th President, The United States Armor Association

GENERAL WATERS, GENERAL WRIGHT,
GENTLEMEN:

I am flattered and, of course, pleased by this expression of confidence. It was forty years ago that I was first commissioned in our great branch. Since then I have been a member of our Association as it evolved from the Cavalry Association to The Armored Cavalry Association and to The Armor Association.

I will do the very best that I can to

give your Association sound leadership and to serve you well. This summer I will revert to the retired list so I expect to have sufficient time to attend to those things which must and should be done. After eight years in the very engrossing assignment as Chief of Military History, I look forward to embarking on another most worthwhile activity.

It is humbling to know that I follow such outstanding Presidents as Generals

Clarke, Waters and Wright who are here with us today. It seems especially appropriate to recognize the achievements of our most recent past President, Lieutenant General W. H. S. Wright, to thank him for his dedicated service, and to wish him well in his future endeavors.

[Following an ovation for General Wright, further new business was called for. There being none the business meeting was adjourned.]

Application for Membership or Subscription

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

NAME _____ NEW
ADDRESS _____ RENEWAL
CITY _____ STATE _____ ZIP _____

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

1. ACTIVE DUTY MILITARY MEMBER	<input type="checkbox"/> REGULAR <input type="checkbox"/> RESERVE <input type="checkbox"/> ARNG <input type="checkbox"/> USMA	_____ (grade)	_____ (service)	_____ (branch)
		_____ (social security number)	_____ (unit)	
2. OTHER MILITARY MEMBER	<input type="checkbox"/> REGULAR <input type="checkbox"/> RESERVE <input type="checkbox"/> ARNG <input type="checkbox"/> ROTC <input type="checkbox"/> RETIRED <input type="checkbox"/> VETERAN	_____ (grade)	_____ (service)	_____ (branch)
		_____ (social security number)	_____ (unit) (if veteran or retired indicate former unit)	
3. SUBSCRIBER	<input type="checkbox"/> DOMESTIC <input type="checkbox"/> FOREIGN	<input type="checkbox"/> INDIVIDUAL (FOREIGN MILITARY INDICATE RANK, BRANCH, ETC. IN 2. ABOVE) <input type="checkbox"/> MILITARY UNIT <input type="checkbox"/> BUSINESS, INDUSTRY, ETC. <input type="checkbox"/> LIBRARY, EDUCATIONAL INSTITUTION		

Dues for members (including subscriptions to ARMOR) and domestic subscriptions \$18.00 three years; \$12.00 two years; \$6.50 one year. Cadets and midshipmen only \$5.00 per year.
Foreign subscriptions \$22.50 three years; \$15.00 two years; \$8.00 one year.

The Executive Council
 The United States Armor Association:

We have examined the balance sheet of The United States Armor Association as of December 31, 1969 and the related statement of income and expenses and Association equity for the year then ended. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

In our opinion, the accompanying balance sheet and statement of income and expenses and Association equity present fairly the financial position of The United States Armor Association at December 31, 1969 and the results of its operations for the year then ended, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

Peat Marwick Mitchell & Co.

March 30, 1970

FINANCIAL HIGHLIGHTS FOR 1969

1967 loss \$1066.61 1968 gain \$2985.21
 1969 gain \$7892.92

THE UNITED STATES ARMOR ASSOCIATION
 Balance Sheet
 December 31, 1969
 with comparative figures for 1968

ASSETS	1969	1968
Current assets:		
Cash:		
Demand deposits	\$ 8,646.42	7,009.34
Savings account	3,128.57	6,161.82
Total cash	11,802.94	13,171.17
Marketable securities, at cost (quoted market, 243,323 33 - 1969)	41,436.67	30,771.17
Accounts receivable	5,207.51	7,202.18
Inventories, at average cost	4,858.26	2,999.86
Prepaid expenses	4,028.17	1,076.37
Total current assets	67,333.50	55,218.35
Office furniture and equipment, at cost	9,841.39	8,630.54
Less accumulated depreciation	6,060.01	3,522.31
Net office furniture and equipment	3,781.38	5,108.23
	\$ 71,114.78	58,326.22
Liabilities and Association Equity		
Current liabilities - accounts payable and accrued expenses	79.11	86.73
Deferred income - dues and subscriptions	36,001.39	33,096.33
Association equity	34,024.28	25,143.16
	\$ 71,114.78	58,326.22

1969 gain included:
 ARMOR Magazine \$1421.57
 Investments \$1660.56
 Book Department \$4810.79

1968 and 1969 gains led to ...
 new circulation machinery in 1970

Book Sales are important!

ARMOR average paid circulation
 1967-6079 1968-7073 1969-9400

1970 printing costs up 6% ...
 Postal rates going up ...

ARMOR can hold the price line ...
 only if each member ...
 recruits another member ...

You can do it!

The Secretary Treasurer

ARMOR July-August 1970

THE UNITED STATES ARMOR ASSOCIATION
 Statement of Income and Expenses and Association Equity
 Year ended December 31, 1969
 with comparative figures for 1968

	1969	1968
Income:		
Dues and subscriptions	\$ 31,553.18	40,492.84
Registration fees	718.20	506.00
Book, prints, and publication sales	19,424.20	13,737.45
Interest and dividends	1,660.36	1,237.26
Other	600.00	346.86
Total income	53,955.94	56,312.35
Expenses:		
Armor magazine:		
Producing and delivering	36,034.72	29,011.43
Circulation	2,481.18	2,153.19
Promotion and advertising	354.19	440.09
Stationery and supplies	927.78	1,881.68
Total	39,797.87	33,486.39
Association:		
Annual meeting	429.88	442.89
Executive Council	3.60	10.82
Memorials and contributions	150.00	10.00
Awards	818.00	709.62
Cards, by-laws, and decals	320.81	403.76
Total	1,722.29	1,577.09
Book department:		
Books, prints, and publications	13,926.43	8,263.68
Postage	586.92	537.17
Supplies	97.06	331.92
Total	15,610.41	9,132.77
General and administrative:		
Equipment rental and maintenance	359.41	351.59
Depreciation	416.38	708.87
Telephone	733.03	515.52
Staff travel and parking	2,319.25	2,189.85
Rent	4,052.97	3,869.76
Professional services	300.00	500.00
Other	1,319.01	992.73
Total	9,800.03	9,128.34
Total expenses	66,063.27	52,335.20
Excess of income over expenses	7,892.92	2,985.21
Association equity at beginning of year	25,143.16	22,155.95
Association equity at end of year	\$ 33,024.28	25,143.16



81st Annual Meeting Highlights



doctor, lawyer, merchant, chief
OPTIONAL RULES OF THE ADVISOR

by Colonel John K. Brier



In Vietnam today assignment as a Co Van (Senior Advisor) affords potentially rewarding and important opportunities to help our allies achieve their national objectives. Most advisors recognize and respond with amazing skill to their opportunities. All the advisors with whom this author has had contact are sincerely interested in what some call "getting the job done." The Vietnamese officers with whom those advisors serve include a preponderance of dedicated leaders who also want to get the job done. Praise and encouragement for the advisors and their counterparts are in order.

Frequent visits in various parts of Vietnam have proven that there are almost as many ways of being a successful advisor as there are advisors or counterparts. Generally speaking the attributes of a leader so well described in FM 22-100 are sound guide posts for an advisor.

Perhaps the foregoing is not too helpful. No pretense is made to having found the school solution on how to be a successful advisor. But some fairly experienced advisors do share a concern for the advisor who in his sincere efforts to get the job done assumes, or attempts to assume, a role which should be avoided.

Hopefully the brief characterizations of four possible objectionable roles — Operator, art critic, spy, and friend — which follow may help both the advisor and those US personnel with whom or for whom he works determine the optimum role for an advisor. Fortunately, unlike the childhood game of chance concerning doctor, lawyer, merchant, chief, the advisor can and should design an appropriate role for himself.

OPERATOR

The most tempting role for an eager senior advisor is that of an operator. The operator may well picture himself as a modern Lawrence of Arabia. He commands, or thinks he commands, the Vietnamese unit to which he is assigned. As an operator he is unfettered by the constraints of protocol, unhindered by the obstacles of staff coordination, and unimpressed by the sensitive nature of a proud people who have held China at bay for most of the modern historical period. The operator could rationalize his actions in "taking over" by noting that he can "get the job done faster himself" and reminding anyone who dares criticize him that "we can train the Vietnamese to run their own show after the war." Pity the would-be operator. He fails to understand that, like the American colonists of 1776, the Vietnamese prefer to be masters of their own house, however humble, rather than colonials. The operator ignores the fact that by communist doctrine the war will never be "over."

ART CRITIC

An interesting role of the Senior Advisor is that of the art critic. Some people have read about, and perhaps even secretly admire, the brave and objective "independent man on the ground" who calls to the public — and the enemy's — attention the "true situation." He says in public to everyone what

he doesn't have guts to say privately to the man he is supposed to be advising. The advisor who casts himself in the role of an art critic is a theorist who lacks the courage of his convictions to buy stock or take a player's part in the production which serves as his *raison d'être*.

SPY

Fourteen years of US experience in Vietnam have produced some ideas that there is a coup or a crooked deal in every unannounced or unexplained move of a solitary Vietnamese colonel or general. Therefore, some people may believe the advisor must be a spy. The spy is one of the hardest working of all the advisors. He spends countless hours observing his counterpart's every move; the spy listens intently to everything his counterpart says (or is reported to have said) and writes (or is reported to have written). Those countless hours of observing are matched in time with painstaking efforts to inform "higher headquarters" concerning the spy's observation. Higher headquarters has a right and a need to know what is going on in the Vietnamese units which we support. However higher headquarters also has a right to expect some constructive action on the part of each senior advisor.

FRIEND

Undoubtedly the most pleasant role open to most senior advisors is that of the friend. The friendly advisor shares, with little effort, many of the hard won (and often tenuously held) prerogatives of his counterpart, but none of his responsibilities or frustrating moments of decision. It is only fair to note that the friend isn't a complete parasite. In tactful return for invitations to this or that ceremony or some dinner or, perhaps, a genuine native crossbow, the friendly advisor returns favors, provides whiskey, or even engineers darefully timed favorable publicity for his counterpart. Arrangements such as those just mentioned are not necessarily improper — they may even be "the thing to do" — but the motives behind such arrangements are important. If a Vietnamese commander just needed a friend or a buddy that commander would be unlikely to seek a foreigner (who probably speaks little Vietnamese) as his confidant or closest friend.

AN ALTERNATIVE

Like the frustrated Santa Claus attempting to put an electrical train together at three AM on Christmas morning the *Co Van* — as a last ditch effort —

... if we advisors play our proper role, Vietnam will share the liberties she seeks.



might well look both at his instructions and at his country's purpose in Vietnam for a clear view of his proper role.

One dictionary indicates that to advise is to make recommendations with regard to a course of action and to inform or notify. Unless a Co Van is aware of the mission, plans, and operations of his counterpart's organization that advisor cannot offer intelligent recommendations. Hence, the advisor must be observant.

Further, the advisor, to avoid the unsavory detached roles of art critic or spy, must be an involved observer. He needs to know and be genuinely concerned with what is happening in the organization and to which he is assigned. He should feel elated when that organization succeeds; and determined to be more effective if that organization fails. For such is the commitment of the United States in Vietnam — we seek to help the Vietnamese determine their own future.

Above all the advisor must be persuasive. Somehow, somehow, directly, or indirectly, the Senior Advisor must get his counterpart to do the correct thing in the most efficient manner at the most appropriate time. There are many advisory techniques just as there are many advisors. This is proper. Differing personalities require different approaches.

More important than an understanding of techniques is an understanding of the advisor's role. Simply put, the advisor must advise in such a way that his advice is not only accepted by thought.

In conclusion it may be natural to think about the staff officer who adorned his wall with a ditty which went —

*I'm not allowed to touch the throttle
Or ring the bell
But if this train jumps the track
Guess who catches hell?*

Is being a Co Van worthwhile? Too few Americans remember a frostbitten, perhaps frustrated Baron von Steuben who muttered at Valley Forge that one cannot simply tell Americans what to do but must also tell them why. My guess is that he was a "Number One" Co Van. Aren't you glad he recognized his role? Maybe some day, if we advisors play our proper role, Vietnam will share the liberties she seeks.



COLONEL JOHN K. BRIER, Armor, a co-author of *The Tank Company Commander's Guide* and a frequent contributor to *ARMOR*, served as Senior Advisor, RVN National Defense College during its crucial first academic year. He is a graduate of the United States Military Academy, the Armor School, the Command and General Staff College and the US Army War College. Colonel Brier was a tank platoon leader and tank company commander in Europe in World War II. In the Korean War he was S3, 245th Tank Battalion and Assistant G3, 45th Infantry Division. In 1958-1959 he commanded the 1st Squadron, 2d Armored Cavalry. Prior to his Vietnam tour, Colonel Brier was commanding Officer, 2d Armored Division Support Command and Chief of Staff, 2d Armored Division. Currently he is Assistant Deputy Director for Plans, ODCSOPS, DA.

The Runaway

by Major Don F. Snow

It all started as the command and control helicopter in which I was riding prepared to settle on the refueling pad at Blackhorse Base Camp near Xuan Loc, South Vietnam. My earphones crackled with a report from the commander of a tank company operating a few miles away. "Three-zero, this is four-six. My lead vehicle has hit a mine. I need a dustoff for one seriously wounded US — urgent!"

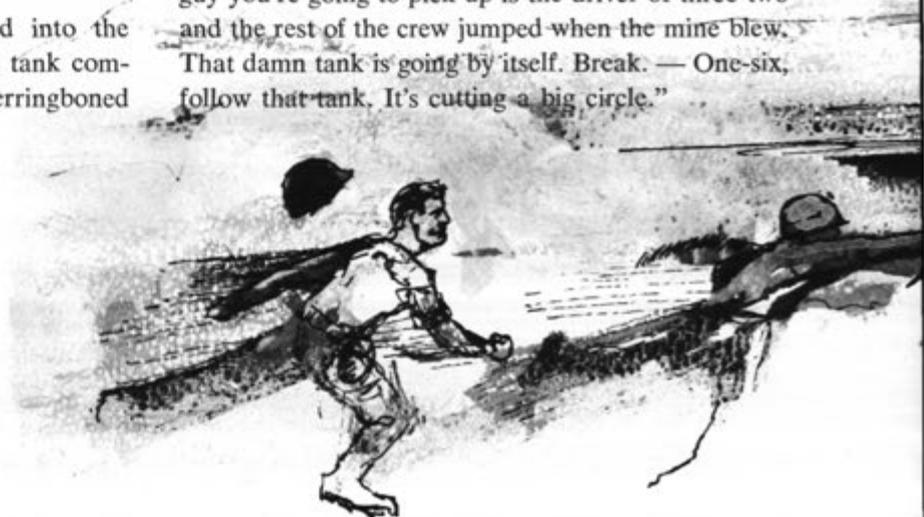
I spoke into the lip mike. "Let's get going to four-six's location. We'll make the dustoff." Then, on the command net, "Three-zero, this is three. I'll make the dustoff. Call six and give him a report. Break. Four-six, this is three. I'll be at your location in zero five. Have your man by the road where I can pick him up."

"This is four-six. Roger. Out."

Minutes after taking off, we dropped into the heavily wooded valley through which the tank company had been moving. Just as the herringboned

column came into sight the radio jumped into action again. "Three-two, this is four-six. Is that you cutting across the field?" No answer. "Three-two, Three-two, this is four-six. Over." Still no answer. I thought I might be able to get him from the air. "Three-two, this is three. Over." Nothing.

I could see where the mine had blown an eight-foot hole in the ground under the lead tank, which had been three-two. The 52-ton vehicle had made a right turn and was heading across the fields at 25 miles per hour. There was no time to contact the stricken tank now with a wounded man on the ground. As the chopper circled and started down to make the pick-up another report came from the company commander. "Three, this is four-six. That guy you're going to pick up is the driver of three-two and the rest of the crew jumped when the mine blew. That damn tank is going by itself. Break. — One-six, follow that tank. It's cutting a big circle."



The chopper was just touching down when I looked back to see if we were clear. I saw two soldiers running toward the runaway tank as it headed straight for our helicopter. I also saw a small yellow dog sitting on the gunshield. He smiled at me and seemed proud to be the sole rider on the tank.

"Take off. Take Off! TAKE OFF!" I shouted to the pilot through my mike. No response. (I later learned his intercom had failed.) I looked back. Both men, in Keystone Kop fashion, had caught the runaway and were scrambling aboard. One jumped into the driver's compartment and waved frantically at us to move.

I looked forward. A small group of men had picked up the wounded man, started toward the chopper, then set the stretcher down and begun jumping, waving and yelling at us. I again looked back and saw the tank closing fast. The would-be driver was standing on the left fender, using every known hand signal trying to get us out of the way. The other man had jumped off. My would-be saviour gave up and stepped off, turning back only to toss the little dog outward.

About this time my pilot looked back and saw tracks, hull and turret within 15 meters. We were airborne in seconds. In fact, less than two minutes had passed since we had landed. As we lifted off, another tank backed out of the way, the wounded man was moved forward and three-two bounced across the road to begin the second lap of what might become the longest unmanned thrust in the history of warfare. It had made one circle about a

kilometer wide and looked as if it would do bigger and better things on the next round.

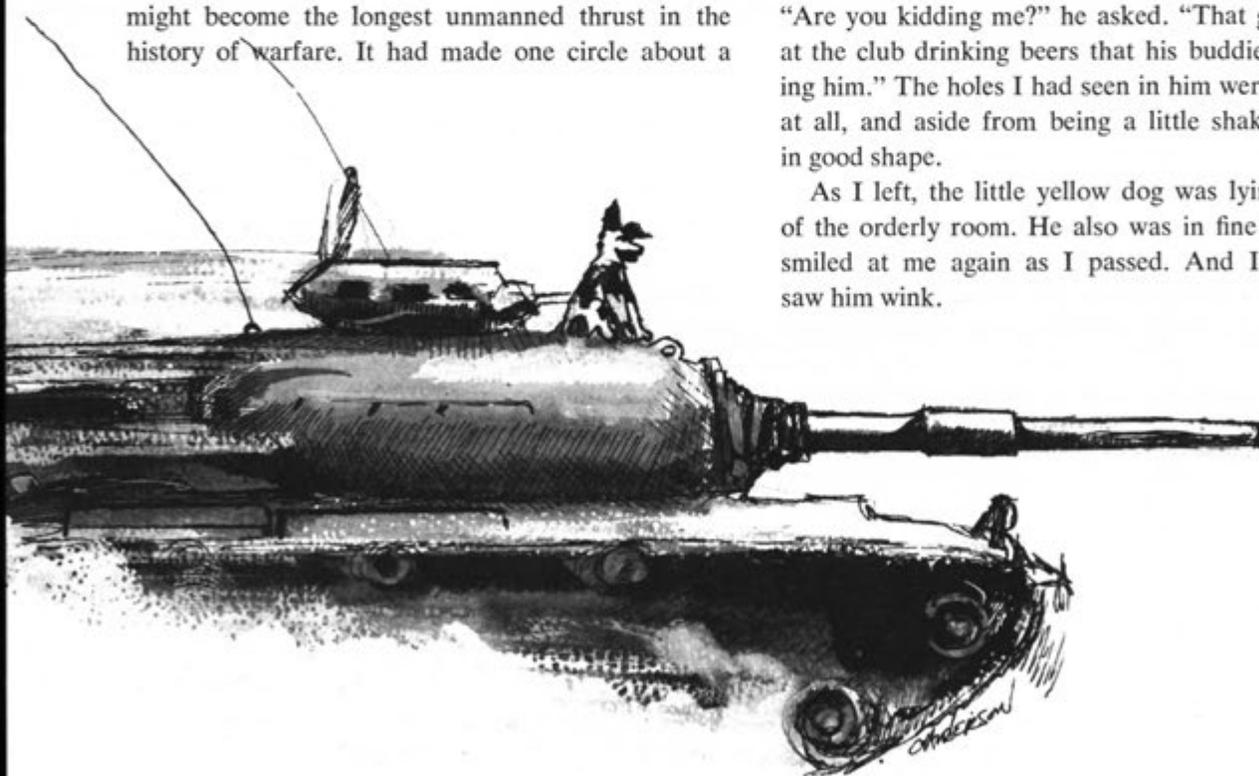
As we made our own circle in our C&C ship I noticed an armored personnel carrier moving away from the pack in pursuit of three-two. The *M113* closed the gap as the driver spurred his steel mount toward the runaway. As he drew alongside, two men jumped to the driverless tank and wrestled with its controls a short time, then jumped back to the APC. Their breathless report came over the headphones. "Four-six, this is one-zero. The controls are blown to hell and the fuel shutoffs are shot. Guess we'll just follow this thing for the next 200 miles while it runs out of diesel."

Again we touched down, and four soldiers carried the wounded driver to our chopper. The man's shirt and trousers had been blown off. He looked pretty bad, with the little purple marks left by tiny particles of shrapnel visible on his chest and abdomen. We sped the man to a medical aid station in less than three minutes and returned to the "action" area.

The tank had run wild for three laps and finally had come to rest in a ditch too steep for it to climb. Four-six had his column back in order and all that remained was to drag the wayward tank into the base camp.

When the company returned to the base camp, I went to see the company commander and found him in the shower. We mumbled about "that damn tank" and I told him I was sorry about the driver. "Are you kidding me?" he asked. "That guy is over at the club drinking beers that his buddies are buying him." The holes I had seen in him were not holes at all, and aside from being a little shaken he was in good shape.

As I left, the little yellow dog was lying in front of the orderly room. He also was in fine shape and smiled at me again as I passed. And I'd swear I saw him wink.





ARMOR OFFICER ADVANCED COURSE 1-70



“Time To Retire The .45?”

by Captain Lester M. Fullen

Just keeping up with the weaponry of today's soldier is a formidable task. *Shillelagh*, *M16*, *M79*, *LAW*, flechettes, *M5*, laser rangefinders, computers — all of these are examples of our wondrous new technology. Yet among the novel sounds of today's space-age battlefield we still hear the flat report of the .45: pistol, automatic, caliber .45, M1911A1, still the issue sidearm of thousands of U.S. soldiers from Germany to Vietnam, is based on an 1892 design of John M. Browning!

What does “old slab-sides” have going for it that has permitted it to remain almost unchanged and unreplaced through a couple of big wars and several smaller scrapes? While every other weapon in our inventory has undergone at least several updates, this old veteran soldiers on.

The basic reason that the .45 has stayed with us is that it has never had a serious contender for its job — that of a secondary weapon. A secondary weapon is not normally used until the situation has developed to a great extent and the adversary is fairly close and needs to be *stopped*. This is where the big bruiser shines. With all aspects considered, the *M1911A1* is hands down the best combat handgun ever placed in general use. This is not just one opinion, but the opinion of many experts in this field.

Test after test, conducted by the Army and other services shows that our .45 is amazingly reliable. Built solidly to withstand rugged use, and with few openings for foreign matter to enter, this pistol keeps firing when others have long since failed. Generous tolerances between moving parts contribute to this

capability to keep shooting. Furthermore, these allow simple and quick disassembly, replacement of parts, and cleaning. Seven round magazines make possible the fast reload capability.

The accuracy of this old soldier is quite often berated, but grab one out of the nearest rack just as issued, clamp it into a machine rest and prepare for a surprise. The average issue .45 will stay within a five to six-inch group at 25 meters. This is what it was designed to do. If you install adjustable sights, work over the trigger pull, slide, and barrel bushing you can have a pistol capable of two-inch groups at 50 yards.

There are many good reasons why this weapon has not been replaced. So, do we really need a new sidearm? My answer is a loud “Yes, Sir!” We have seen the good side. Now consider the darker side.

The major selling point in favor of our good friend is its stopping power. This is undeniable. But the key to stopping the enemy is hitting him. Here is the heart of the issue. Our .45 caliber autoloader is probably the hardest handgun to shoot well of all the handguns in general use today. An ear splitting muzzle blast and a vicious twisting recoil are the two major obstacles the trainee has to overcome. To the man who does not have considerable experience and training, these two factors alone pose almost insurmountable obstacles to .45 proficiency. This weapon is deadly effective in the hands of a well-trained man. But the requisite amount of training is not feasible for the average soldier especially considering that the .45 is usually his *secondary* weapon.

Another shortcoming of this weapon with 59 years time in service is that it has a non-adjustable sight which precludes zeroing at various ranges. The fixed sights as they are issued are not high quality in comparison to those of other pistols on the market today.

The very role that our Army assigns to its handgun (that of secondary weapon in most cases) requires that it be put into action very rapidly, perhaps after the primary weapon has failed. Yet unless the .45 is carried cocked and locked (a round in the chamber, hammer cocked and safety on) it requires some time, and normally two hands, to start shooting.

The low velocity projectile that is so efficient as a manstopper carries with it a high trajectory which makes it very difficult to hit any target beyond 50 meters unless the pistoleer is an expert.

The fast reloadability plus is lessened by the seven-round magazine capacity when the .45 is compared to several more modern auto-loading pistols with 10, 13, and even 15-round capacities. Most experts agree that the barrel to stock angle on our service pistol is poor, adding difficulty to the point shoot proficiency needed in close quarter fighting.

The trigger pull on the majority of issue .45's is horrible, being entirely too heavy and usually having at least one bad creep. This one fault alone makes any type of precision shooting very difficult. The trigger pull can be adjusted but it takes an expert with precision polishing tools.

With all of these shortcomings working against him, is it any wonder that the average U.S. soldier has little confidence in either his sidearm or his ability to hit anything with it?

Undeniably we have a sidearm which can do quite well what it was designed to do in 1911. But it is too difficult to master given the amount of training time the Army is willing to allow.

It seems obvious that, finally, we need to retire the .45 and design a new sidearm. This new pistol should incorporate many of the desirable features of our venerable sidearm. It should definitely be an auto-loader with a minimum of 10 rounds capacity. Quick and easy disassembly for cleaning and parts replacement must be able to be done without tools.

We need a weapon that is absolutely safe but capable of being gotten into action quickly using only one hand. The safety should definitely be operable from both sides. Rugged adjustable sights are a basic requirement. This new pistol naturally must be stoutly built with a minimum of moving parts.

The trigger guard must be large to permit firing with gloves on. An acceptable stock to barrel angle



▲ Colt automatic pistol, caliber .45, M1911A1



▲ Browning 9mm, Parabellum



▼ Smith & Wesson 9mm Model 39

is needed for fast shooting situations. A loaded chamber indicator would be a nice extra and the exterior should be non-reflecting, particularly the sighting plane. Probably the chamber and barrel should be chromium plated to resist rust and corrosion.

The weapon should be designed from the beginning to be fired with two hands as well as one. For instance, custom gunsmiths square off the trigger guard of the *M1911A1* and even check the surface to facilitate firing using a two-handed stance and grip.

And now for the real challenge to our R&D people. Give us a pistol with nearly the same man-stopping capability of the *M1911A1* but which is easier to shoot as the result of lessened recoil and muzzle blast.

Another consideration is a full family of ammunition for this fine new weapon. We will need normal ball, tracer, and shot for survival situations. Maybe we could even have some sort of small flare or signal round.

To assist in initial training and familiarization for the trainee, an air gun approximating the configuration and weight and trigger pull could be built. Also a .22 caliber conversion kit for the basic pistol could be designed and used to simplify further, and to reduce the cost of, training.

Available today are pistols that have many of the features discussed above. The *Browning 9mm* and the French *MAB P15* (also 9mm) utilize staggered rounds in their magazines for a 13 and 15-round capacity respectively. The double-action autoloaders like the Smith and Wesson *Model 39* should be considered as examples of one way to combine safety and cut down on the time required to get the gun into action. These double-action automatics are highly touted by some as the best type military pistol available today. However, they are quite complicated

and require different hand positioning after the first shot. And so far these have not been chambered for any cartridge larger than 9mm.

The first step in this entire project must be to design a new cartridge and then build a gun to fire it. The 9mm of Luger fame is probably a good place to start. Most of the modern armies of the world (excluding the U.S.) have adopted the 9mm as their sidearm caliber. The relative stopping power (on the Hatcher scale) is approximately one half that of the .45 ACP, but perhaps with a redesigned bullet which moves out faster we could have the start we need.

The requirement for compromise will be as great for this new weapon as it is on any new piece of equipment. It appears that we will have to give up a measure of the power of our .45 to have a pistol that is easier to learn to shoot. Perhaps, considering our technological advancements since 1911 we can keep this sacrifice to a minimum. After all, we have been to the moon and back.

Today's sophisticated battlefield demands a more modern weapon than the *M1911A1*. The fluid, fast-moving action of both stability operations and nuclear warfare and the average increasing number of support troops expands the requirement for a new sidearm.

Whether he is the assistant machinegunner, truck driver, helicopter crewman or tanker, the U.S. soldier deserves a weapon that is the best that can be had — one that he has confidence in and proficiency with. This is not the *M1911A1*.

CAPTAIN LESTER M. FULLEN, Armor, was commissioned in 1965 from Henderson State College. He graduated from the Armor Officer Basic Course in 1965 and from flight school in 1966. He was then assigned to the 1st Squadron, 9th Cavalry in Vietnam. A recent graduate of Armor Officer Advanced Course 1-70, he is now assigned to US Army, Vietnam.

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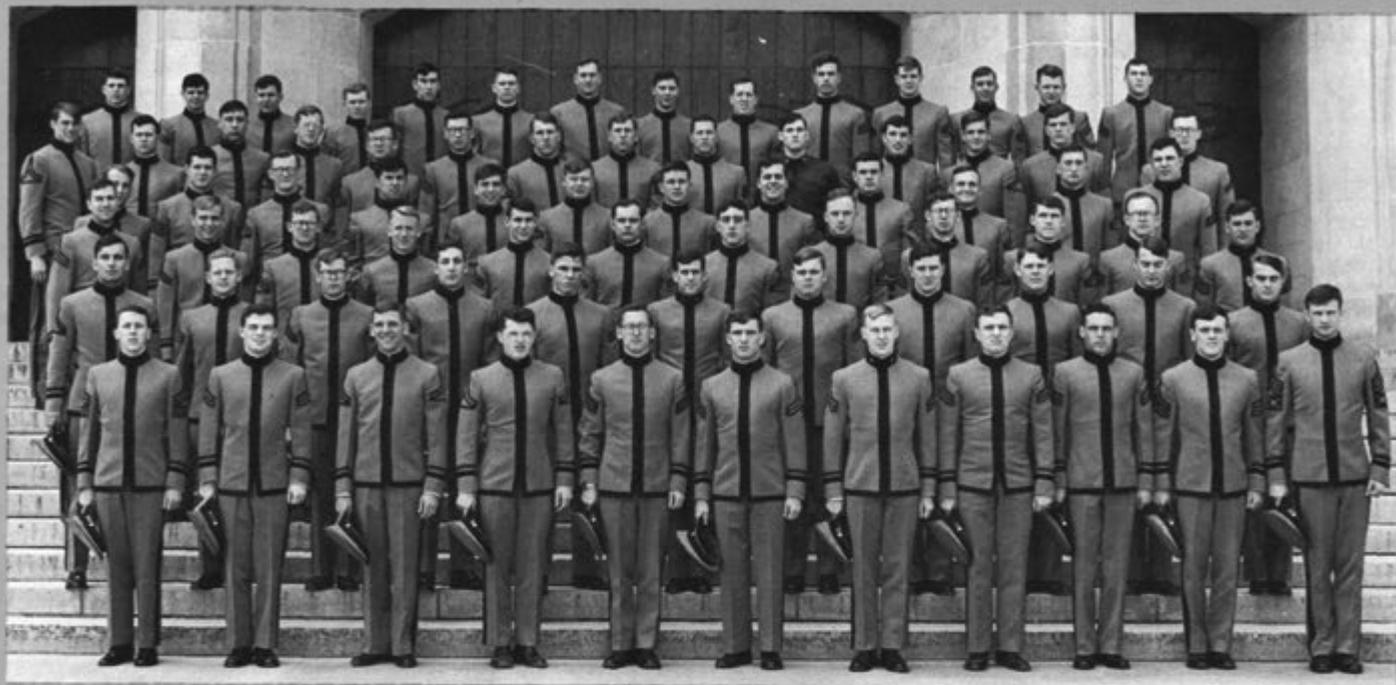
The Cavalry Journal 1887—1946

The Armored Cavalry Journal 1946—1950

ARMOR 1950—1968

are now available on microfilm. Details are available from University Microfilms, 300 North Zeeb Road, Ann Arbor, Michigan 48106.

ARMOR GRADUATES OF THE UNITED STATES MILITARY ACADEMY CLASS OF 1970



Top Row: Lilly, Constantino, Colacicco, McGoldrick, Boies, Jones, McDugald, Quimby, Ryan, Pratt, Haworth, White, Lawrence, Rhoads.

Fifth Row: Walker, McClanahan, Kahalekai, Gandy, Laird, Foster, Sabul, Henn, Davis, Gibson, Brandtner, Ancker, Spear, Forinash.

Fourth Row: Seifert, Snider, Muir, Knight, Hirsch, Rolf, Cossette, Rorick, Etzler, Marvin, Weaver, Gehrki.

Third Row: Galton, Marshall, Secrest, Connors, Watkinson, Anderson, Coleman, Schall, Corfman, Ekegren, Trammel, Treat.

Second Row: Lyons, Snider, Jatko, Etchechury, Maki, Knowlton, Sigmund, Selge, Ryder, Smith, Keller.

First Row: Burns, Alphin, Hudson, Kenevan, Linn, Rold, Pavlick, Cass, Lucia, Senor, Terry.

Absent: Abbot, Aldrich, Brock, Carlson, Carroll, Davidson, Kent, Knorr, Malkemes, Miles, Mozoski, Naymick, Patten, Reilly, Schaf, Severson.

GO ARMOR!

The 91 USMA Class of 1970 graduates who chose Armor as their branch are an impressive group. Thirteen are in the top 100 of the class and, of these, three are in the first 25. The graduate with the lowest General Order of Merit standing is number 520 in a class of 750. Included in the Armor group are the Brigade Commander and First Captain, a regimental executive officer, a battalion commander and eight company commanders. Varsity athletes total 10. Twenty-seven of the graduates have indicated a strong interest in Army Aviation and tentatively have been programmed for such training after a year of troop duty. Initial assignments will see 31 going to Vietnam after a four-month CONUS tour, 47 moving to Europe, nine in CONUS, three moving to Korea and one going north to Alaska.



TO CROSS A STREAM

by AQUATICUS

For a time in Vietnam, the number one recovery man in our unit was the battalion commander. As executive officer, I was his principal assistant and the field superintendent. This overcentralization of supervisory functions came about as a result of a strange penchant in the battalion to sink anything that dared go near the water. There were times when we managed to get as many as three tanks and VTRs, in various combinations, sunk or stuck in one ford at one time.

Now, this is not a very happy situation and it is one that can, with a little common sense, be avoided. Unfortunately, it appeared that the battalion commander was the only one who had any common sense.

For example, one member of the recovery section of a company was ordered to drive his VTR across a stream. He had watched the remainder of the unit across the stream, slowly and correctly, but evidently he panicked because he got in the water and stepped on the gas. He got across, but not before he caused a tidal wave to form. When he got to the other side, he was chastised; it seemed a good bet that he had learned something.

That night, the same soldier had occasion to return to the stream to tow a disabled tank back to the side from whence he had come. Instead of doing as he had been told earlier in the day and proceeding cautiously across the stream, he again stepped on the gas, but this time he did not make it. He got to the middle of the stream and slipped off the road bed. He managed to get the VTR across to the far bank, but not being in position to drive out the exit, he rammed the vehicle against a steep bank. We spent the whole next day trying to get it out.

Another time, a VTR was crossing a stream and failed to follow the guide, slipping off into an entanglement of barbed wire sitting four feet below the level of the water. Such things do happen. But, what happened next never should. A VTR pulling a tank tried to pass the sunken VTR. It did not make it either and together with the towed tank mired on

the opposite side of the ford's roadbed blocking all traffic through the site. So, when the battalion commander arrived on the scene, he wrung his hands in anguish and then made some eloquent pointed comments. I proceeded to direct the recovery, which lasted until late into the night.

There is little to be gained by further agonizing over ineptness at ford sites. However, there is a lot to be gained by examining how an obstacle such as a stream is to be overcome. The key is training and adhering to a few fundamentals.

The first rule in crossing a stream or boggy area is to make an adequate reconnaissance. If a bridge will not hold a combination tank and VTR, then a ford must be found. In our experience locating a ford seldom posed a problem when crossing a major waterway where there was also some kind of bridge. The engineers had learned early that armored troops were not averse to trying any kind of bridge and consequently the engineers had taken the proper steps to build adequate by-passes.

One must determine what the characteristics of the ford are. Just to go and look at the site is not enough. We found that a lack of careful examination by those involved in a crossing was a major cause for losing tanks and recovery vehicles. What has to be ascertained is quite simple. This includes the depth of the ford, the width of the roadbed under the water, the state of the roadbed and the strength of the current.

Reconnaissance of the ford has to be done by getting into the water and actually locating potholes and underwater obstacles such as barbed wire and logs. It is a good idea to ask local inhabitants, if there are any around, if there are any dangerous areas in the river or along the banks. Since they usually do their washing on or around the ford site, they will generally have a pretty good feel for the area. However, they are not always reliable. Moreover, few, if any, have any idea of the capabilities and limitations of a tank or VTR. Therefore, in addition, a strong swimmer has to be chosen to get

into the water. If there is none available, then select a big man and tie a rope around him.

At bridge and ford sites where the Popular Force units were on guard, we usually found them wanting to help in return for C-Rations or cigarettes. Once when we sank a tank, a PF soldier brought along an engineer boat and provided a lot of diving expertise. There wasn't anything he would not do and in the end we gave him a box of C-rations and put in a good word for him at the district headquarters.

After the bottom of the ford is thoroughly familiar to the key personnel in the unit moving across, or to the recovery crew doing an extraction, a plan and orientation are necessary. Neither need be very long, but they must be made and followed.

The plan specifies who, where and how. Usually all that is required is to specify the order of march across the ford (which may be unit SOP,) how fast drivers should go, who they should guide on and where to enter the water and exit. The plan also includes provisions for recovery of stuck vehicles and measures to prevent such occurrences. Once the plan has been determined, the drivers should be oriented. The shorter the orientation, the better. Everyone must be made to understand what is to be done.

The key to a successful crossing is guiding on an easy to see object and, if at night, on one that is well lighted. In addition, crossing must be at a low but steady speed. The tendency is to get into the water and go hell-bent-for election. If the water is up to the driver's vision blocks, he gets a lot of water and this distracts him. The chances then increase sharply that the driver will drive off the roadbed of the ford, stall the vehicle and sink or get stuck.

With a good plan and simple orientation, a confidence is instilled in the driver that has a calming influence. This is important in combat where soldiers frequently are tired and irritable and have a tendency to slip into doing things in a less than perfect way.

Security during a crossing is best achieved by having everyone stay alert and by not bunching up. Everyone should be inside the vehicles since hanging on the outside can be precarious if the enemy takes the crossing unit under fire. If someone is wounded, and falls off the tank, APC or VTR, the chances of drowning rise sharply. A river is no place to have to stop and retrieve wounded.

Bunching up at the ford entrances and exit has to be watched. Spectators, more than the armored vehicles, have a tendency to congregate at the site to observe the proceedings. Such a scene presents a good target for pre-registered mortar or artillery fire.

Having reconnoitered the ford, briefed the drivers and established security, all that remains is to execute what has been planned. With a well oriented group of drivers and a competent supervisor at the site, there is no reason why a stream crossing can not be uneventful. Observation of a few basic points makes it unnecessary for a battalion commander to arrive at the site only to see his fighting vehicles floundering around in the water and then have to straighten things out himself.

"Aquaticus" served as a cavalry squadron executive officer in Vietnam. He states that all reported herein is most accurate. But to protect the innocent (and not so innocent), while at the same time advancing the cause of professional improvement, he has carefully omitted specific references to details.

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 Congress, the Medal of Honor posthumously to:

Sergeant First Class Rodney T. Yano
Sergeant Ray McKibben
Private First Class Garfield M. Langhorn

for conspicuous gallantry and intrepidity in action at the risk of life and beyond the call of duty.

Sergeant First Class Rodney J. T. Yano distinguished himself on 1 January 1969 while serving with the Air Cavalry Troop, 11th Armored Cavalry Regiment, in the vicinity of Bien Hoa, Republic of Vietnam. Sergeant Yano was performing the duties of crew chief aboard the troop's command-and-control helicopter during action against enemy forces entrenched in dense jungle. From an exposed position in the face of intense small arms and antiaircraft fire he delivered suppressive fire upon the enemy forces and marked their positions with smoke and white phosphorous grenades, thus enabling his troop commander to direct accurate and effective artillery fire against the hostile emplacements. A grenade, exploding prematurely, covered him with burning phosphorous, and left him severely wounded. Flaming fragments within the helicopter caused supplies and ammunition to detonate. Dense white smoke filled the aircraft, obscuring the pilot's vision and causing him to lose control. Although having the use of only one arm and being partially blinded by the initial explosion, Sergeant Yano completely disregarded his own welfare and began hurling blazing ammunition from the helicopter. In so doing he inflicted additional wounds upon himself, yet he persisted until the danger was past. Sergeant Yano's indomitable courage and profound concern for his comrades averted loss of life and additional injury to the rest of the crew. By his conspicuous gallantry at the cost of his own life, in the highest traditions of the military service, Sergeant Yano has reflected great credit on himself, his unit and the United States Army.

Sergeant Ray McKibben distinguished himself by conspicuous gallantry and intrepidity in action above and beyond the call of duty while serving as team leader of the point element of a reconnaissance patrol of Troop B, 7th Squadron (Airmobile), 17th Cavalry operating in enemy territory near Song Mao in the Republic of Vietnam on 6 December 1968. Sergeant McKibben was leading his point element in a movement to contact along a well-travelled trail when the lead element came under heavy automatic weapons fire from a fortified bunker position, forcing the patrol to take cover. Sergeant McKibben, appraising the situation and without regard for his own safety, charged through bamboo and heavy brush to the fortified position, killed the enemy gunner, secured the weapon and directed his patrol element forward. As the patrol moved out, Sergeant McKibben observed enemy movement to the flank of the patrol. Fire support from helicopter gunships was requested and the area was effectively neutralized. The patrol again continued its mission and as the lead element rounded the bend of a river it came under heavy automatic weapons fire from camouflaged bunkers. As Sergeant McKibben was deploying his men to covered positions, he observed one of his men fall wounded. Although bullets were hitting all around the wounded man, Sergeant McKibben, with complete disregard for his own safety, sprang to his comrade's side and under heavy enemy fire pulled him to safety behind the cover of a rock emplacement where he administered hasty first aid. Sergeant McKibben, seeing that his comrades were pinned down and were unable to deliver effective fire against the enemy bunkers, again undertook a singlehanded assault of the enemy defenses. He charged through the brush and hail of automatic weapons fire closing on the first bunker, killing the enemy with accurate rifle fire and securing the enemy's weapon. He continued his assault against the next bunker, firing his rifle as he charged. As he approached the second bunker his rifle ran out of ammunition; however, he used the captured enemy weapon until it too was empty, at which time he silenced the bunker with well-placed hand grenades. He reloaded his weapon and covered the advance of his men as they moved forward. Observing the fire of another bunker impeding the patrol's advance. Sergeant McKibben again singlehandedly assaulted the new position. As he neared the bunker he was mortally wounded but was able to fire a final burst from his weapon killing the enemy and enabling the patrol to continue the assault. Sergeant McKibben's indomitable courage, extraordinary heroism, profound concern for the welfare of his fellow soldiers and disregard for his own personal safety saved the lives of his comrades and enabled the patrol to accomplish its mission. Sergeant McKibben's conspicuous gallantry and intrepidity in action at the cost of his life above and beyond the call of duty are in the highest traditions of the military service and reflect great credit upon himself, his unit, and the United States Army.

Private First Class Garfield M. Langhorn distinguished himself at the cost of his life above and beyond the call of duty on 15 January 1969, while serving as a radio operator with Troop C, 7th Squadron (Airmobile), 17th Cavalry, 1st Aviation Brigade, near Plei Djereng in Pleiku Province, Republic of Vietnam. Private Langhorn's platoon was inserted into a landing zone to rescue two pilots of a Cobra helicopter shot down by enemy fire on a heavily timbered slope. He provided radio coordination with the command-and-control aircraft overhead while the troops hacked their way through dense undergrowth to the wreckage, where both aviators were found dead. As the men were taking the bodies to a pickup site, they suddenly came under intense fire from North Vietnamese soldiers in camouflaged bunkers to the front and right flank, and within minutes they were surrounded. Private Langhorn immediately radioed for help from the orbiting gunships, which began to place mini-gun and rocket fire on the aggressors. He then lay between the platoon leader and another man, operating the radio and providing covering fire for the wounded who had been moved to the center of the small perimeter. Darkness soon fell, making it impossible for the gunships to give accurate support, and the aggressors began to probe the perimeter. An enemy hand grenade landed in front of Private Langhorn and a few feet from personnel who had become casualties. Choosing to protect these wounded, he unhesitatingly threw himself on the grenade, scooped it beneath his body and absorbed the blast. By sacrificing himself, he saved the lives of his comrades. Private Langhorn's conspicuous gallantry and extraordinary heroism at the cost of his own life were in keeping with the highest traditions of the military service and reflect great credit on himself, his unit and the United States Army.

From The Armor Branch Chief...

FROM WARRANT OFFICER AVIATION TO FIRST LIEUTENANT, ARMOR

Since January 1969, several hundred warrant officer aviators have been appointed lieutenants in the United States Army Reserve with concurrent active duty. The majority of these appointments resulted from a special Department of the Army screening program, begun in December 1968, wherein career branches were authorized to recommend outstanding warrant officer aviators for direct appointments as commissioned officers.

To be eligible for consideration, each warrant officer had to meet the high standards outlined in AR 135-100. Those elected can be justly proud of their appointments. The expertise, training, and professional experience they bring from their former warrant officer status will be of great assistance in meeting the US Army's and Armor's world-wide requirements. A profile of those commissioned in Armor during FY 69 shows that their average age is 25, educational achievement is about 45 to 60 semester hours of college and they have three to four years active service, of which at least 18 months was as a warrant officer. All had served, or were serving, as aviators in combat. All had clearly shown their potential to be a commissioned officer. Thirty-six percent had combat experience with air cavalry units in Vietnam. Others had served in assault helicopter units or had distinguished records as medical evacuation (Dust-Off) pilots.

The career pattern for these officers will follow the same general guidelines as that of the initial active duty Armor officer, to include basic year group promotions, career developing assignments, and progressive educational development.

All these officers will attend the Armor Officer Basic Course at an early date, although this is normally accomplished in conjunction with the first PCS following commissioning.

Current world-wide aviation requirements will preclude a non-aviation, branch qualifying assignment in the grade of lieutenant for the time being. The first non-aviation assignment will normally be

in the grade of captain following a second aviation tour in Southeast Asia. The non-aviation assignment is designed to give each aviation officer an opportunity to command a company-size unit and to serve as a principal staff officer (aviation or non-aviation) at battalion or brigade level. Prior to the eighth year of commissioned service, each will, with a record of good duty performance, be programmed to attend the Armor Officer Advanced Course.

Subsequent assignments are designed to continue the officer's professional development and to prepare him for future higher command and staff assignments. A variety of assignment possibilities is offered to include command of an air cavalry troop or aviation company; staff duty at battalion/squadron, brigade/regiment, or division level; service school and civilian component duty; and duty with MAAGs and missions.

Selected officers will attend the Command and General Staff College or the Armed Forces Staff College (completion of 8 through 15 years of service). Some will pursue graduate study under the Civil Schooling Program and any may enter one or more of the specialist fields if they meet the prerequisites. Selected lieutenant colonels will be given the opportunity to command at battalion level. This may be a TOE tank or aviation battalion, training battalion or Armored Air Cavalry Squadron.

The Armor Branch goal is to assure that each officer commissioned through this program has the opportunity to advance as a well-rounded, experienced Armor officer with an aviation specialty. We need and want the caliber of officers being selected under the aviation warrant officer direct commissioning program. They have met the challenge of aviation. We join them as they look happily and professionally forward to new and more challenging tasks in the Combat Arm of Decision.

A hearty welcome, Armor Lieutenant, from the officers and men of Armor.

ARMOR INNOVATIONS CENTER

SHERIDAN TRAINING

The *XM40 Sheridan Trainer System*, which is part of the USATCA 1st Brigade's Advanced Individual Training in Armor is currently saving American taxpayers almost \$4,450,000 each year. Comprising a *Sheridan M551* turret with a closed circuit television system the trainer simulates nearly the actual operation and firing. At the present time the 1st Brigade has 14 such trainers. These simulate firing both conventional rounds and *Shillelagh* missiles.

Each *XM40* costs \$275,000. Thus the USATCA initial investment was \$4,250,000. This at first glance, may appear staggering, but actually the machine pays for itself within one year. About 1,390 trainees complete AITA each year. If each trainee fired one *Shillelagh* missile at \$3,200, in just one year the cost would be \$4,448,000.

The real advantage of the trainer system is that, once it is installed, an infinite number of missiles and conventional rounds may be fired.

According to Mr. France Ison, supervisor of maintenance and expert on the *XM40* system, "firing just one missile is merely an experience. To become proficient, many firings are needed."

The trainer operates by monitoring sequences of film through a camera on to a television screen mounted on the turret and also into a telescope through which the gunner observes the target.

The image appears in black and white on the screen but the gunner views it in color. The film sequences have moving and stationary tanks as targets. Target speed, direction and range varies widely. Some of the targets, even zig-zag.

The instructor observes the action on the screen while the gunner observes through his telescope. The instructor also has printed cards describing the

range, speed (5-30 mph) and direction of the target in each sequence.

A film sequence lasts only 30-60 seconds. The gunner must get his round off during this period.

In an actual live firing exercise the gunner experiences a brief period of obscuration at which time the target is hidden from view. This is caused by smoke, dust and recoil. A smoke wheel on the visual equipment of the *XM40* effectively simulates this obscuration. During this period the trainee must keep tracking the target or he will miss.

There is also a gauge on which the flight time of the missile may be set. On the trainer it ranges from zero to 15 seconds. At the completion of the time set, the missile will detonate. On a *Sheridan* this instrument is classified so a dummy instrument has been installed on the trainer.



SPEAK NOW

The Combat Developments Command Armor Agency has begun work on a project that is of personal interest to every Armor soldier in the US Army. The formal title of this task is "The Armor Field Manual Study." But underneath that stiff title is a bustling, down-to-earth effort to determine the real needs of armor field manual users. They are being given the chance to express their ideas and opinions on how best to improve the family of Armor Field manuals (FM 17-1; FM 17-15; FM 17-30; FM 17-36; FM 17-37; and FM 17-95). A survey will be conducted using a questionnaire. This will reach all areas where armor, armored cavalry, and air cavalry units are operating. The user's voice shall be heard. His thoughts will be listened to, evaluated, and incorporated into the preparation and production of his armor field manuals. The study is scheduled to be completed this summer.

CHANGES TO FMS

Users of FM 17-15 *Tank Units, Platoon, Company and Battalion* and FM 17-95, *The Armored Cavalry Regiment*, can look forward to an updating of both manuals. The CDC Armor Agency has completed, and forwarded to DA for publication, Change 1 to FM 17-15 and Change 1 to FM 17-95. These changes will complete the updating of all Armor field manuals for which the Armor Agency is responsible. The oldest Armor field manual, remaining in the hands of troops will be the 1968 edition of FM 17-36 *Divisional Armored and Air Cavalry Units*. However, a change to this manual is being prepared for distribution to the field about December 1970.

ARMOR ORGANIZATION

Two major actions are currently being worked on by the Organization Branch of the Armor Agency. The first is TOE 17-15G, *Separate Armor Battalion, Light*. This TOE is based on the results of the USACDC Armor Agency Troop Test, "The Light Armor Battalion," which was conducted at Fort Riley, Kansas (See ARMOR, Nov-Dec 69). Armor people know that the *M551, General Sheridan (ARAAV)*, was specifically developed for armored cavalry units. But now, this vehicle which is air transportable and swimmable, will also be the primary combat vehicle of a new armor organization — the *Separate Armor Battalion, Light*. This battalion will improve greatly the antiarmor/antimechanized capability of airborne units against their greatest threats — enemy armor.

The second action is TOE 17-195T, *Separate Air Cavalry Squadron*. This is the first time the Armor Agency has had the opportunity to develop, from scratch, a new air cavalry squadron TOE. This first was accomplished through the combined talents and experiences of personnel available at the Armor Agency and USAARMS. Lessons learned in Vietnam gave a wealth of factual data to be considered in developing the new organization for this unit. Previous air cavalry TOEs were developed prior to the existence of USACDC, or during the test of the Air Assault Division. Action on both TOEs should be completed toward the end of 1970.

AIR CAVALRY COMBAT BRIGADE

The CDC Armor Agency Doctrine Division has been developing organizational doctrinal concepts for a proposed Armor unit called the Air Cavalry Combat brigade. This brigade is envisioned as utiliz-

ing primarily aerial mounted direct firepower to accomplish its mission of destroying, disrupting or delaying enemy forces in conjunction with armored, mechanized or airmobile forces. The doctrine and organization will undergo troop testing at a time and place still to be determined.

NEW SEARCHLIGHT TESTED



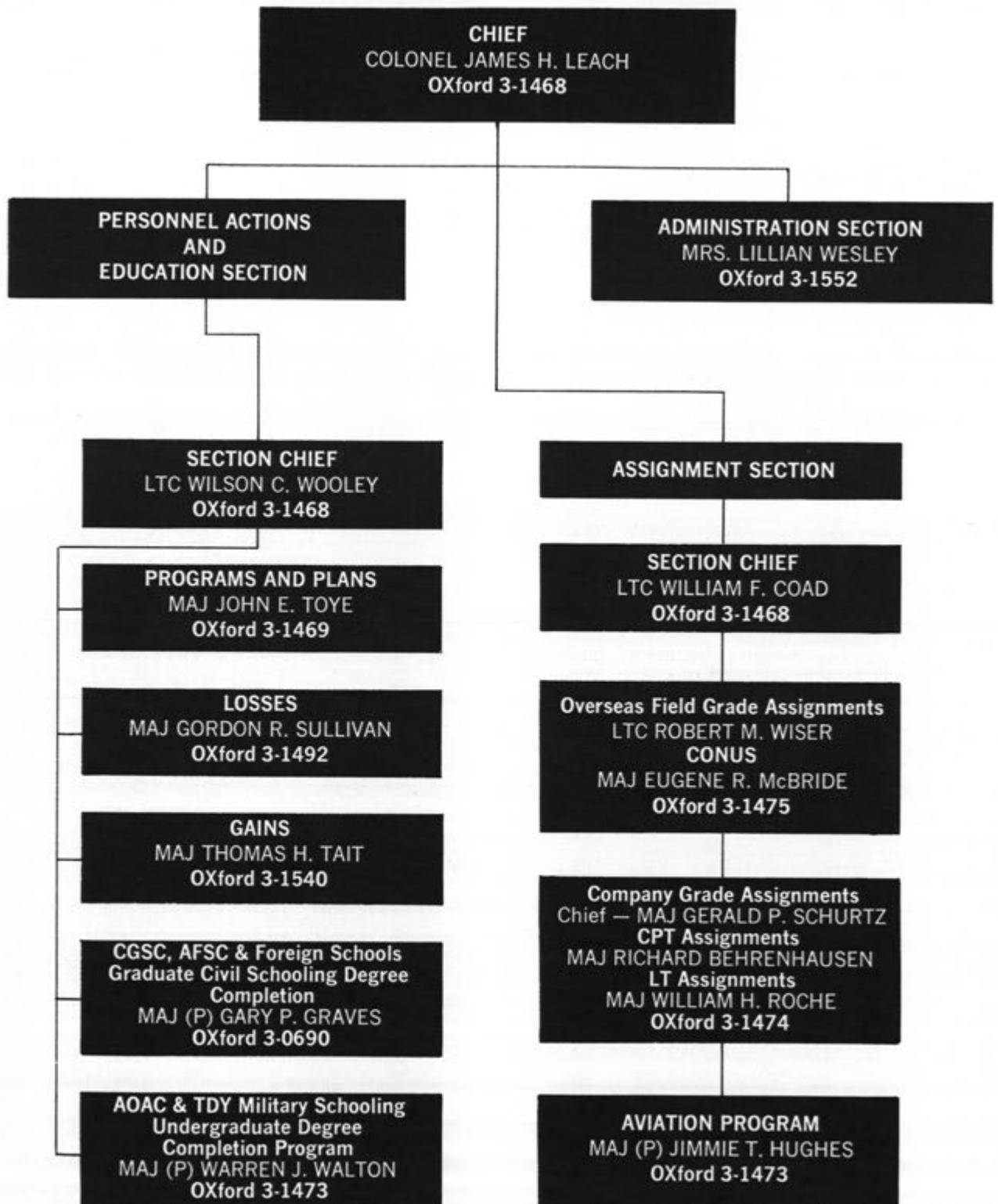
Great emphasis has been placed on improving US Army capabilities for sustained offensive and defensive combat operations at night and during other periods of limited visibility. The 28 volt, 50 ampere *AN/VSS-3* searchlight is an element in the Combat Vehicle Night Vision system part of the program.

Now being tested by the US Army Armor and Engineer Board, the new searchlight is approximately 15 inches in diameter and weighs less than 75 pounds including the shock mount assembly. It consists of a housing, reflector, 1000-watt Xenon Lamp, special infrared filter, lamp cooling system, and mounting brackets. The *AN/VSS-3* provides 50 million peak-beam candle power, with a selective infrared and visual light operation. The light beam may be controlled from a compact beam (focus mode) of one degree to a spread beam of seven degrees.

Initial testing of the searchlight has been done on the *M551 Sheridan* and on the *M113* personnel carrier. A potential exists to mount this device on other combat vehicles requiring an effective light source. The *AN/VSS-3* requires a power input of only 1.0 kilowatt whereas the *AN/VSS-1* searchlight requires a power input of 2.2 kilowatts.



ARMOR BRANCH DIRECTORY



The branch is located in Wing 3, Tempo A, on the corner of 2d Street S.W. and "V" Street. Tempo A flanks Fort McNair on the east. It can be reached readily from the Pentagon by shuttle bus. If you're driving your own car, Maine Avenue or South Capitol

Street are the best approaches. Visitors parking is available in rear of the building. **ADDRESS YOUR LETTERS TO: Office of Personnel Operations, ATTN: OPD-OPAR, Headquarters, Department of the Army, Washington, D. C. 20315.**

The Tarpaulin

Covers a bit of everything gleaned from the service press, information releases, etc. Contributions are earnestly sought.

TAKE COMMAND

LTG James W. Sutherland, Jr., XXIV Corps... **MG James F. Hollingsworth**, US Army, Alaska... **MG Edward Bautz, Jr.**, 25th Inf Div... **BG Marshall B. Garth**, 1st Inf Div (Fwd), Germany... **BG(P) Joseph W. Pezdirtz**, Chief KMAG... **COL Raymond H. Beaty**, 5th Bde, USATCA... **COL Julius W. Becton, Jr.**, 2d Bde, 2d Armd Div... **COL(P) John C. Burney, Jr.**, Seventh Army Tng Cen... **COL Francis Giacomozzi**, 19th Gen Spt Gp, Korea... **COL Kenneth W. Koch**, 3d Armd Cav Regt... **COL Linwood B. Mather**, Spt Comd, 25th Inf Div... **COL Kurtz J. Miller**, Spt Comd, 4th Armd Div... **LTC Loma O. Allen**, FA, 2d Bn, 14th Arty, 4th Armd Div... **LTC Gordon T. Carey**, 3d Sqdn, 17th Cav, 12th Avn Gp... **LTC Gene E. Clark**, 6th Bn, 2d Bde, USATCA... **LTC Ellsworth B. Crowley, Jr.**, Cmte Gp, USATCA... **LTC Rudolph B. DeFrance**, 7th Sqdn, 17th Cav, VN... **LTC Frederic J. Delamain**, 5th Bn, 60th Inf, 9th Inf Div... **LTC John H. Dure**, 3d Bn, 37th Armor, 4th Armd Div... **LTC Howard G. Glock**, Det B53, 5th SF Gp, 1st SF, VN... **LTC Bobby F. Griffin**, 3d Sqdn, 11th Armd Cav Regt... **LTC Joseph L. Haddaway**, 1st Bn, 37th Armor, 4th Armd Div... **LTC Birtrun S. Kidwell**, 2d Bn, 34th Armor, 25th Inf Div... **LTC Noel D. Knotts**, 3d Sqdn, 4th Cav, 25th Inf Div... **LTC Billy J. McAfee**, 3d Bn, 5th Bde, USATC Ft. Leonard Wood... **LTC Robert F. Molinelli**, 2d Sqdn, 17th Cav, VN... **LTC Paul H. Otis**, 2d Bde, USATCA... **LTC William G. Pugh, Jr.**, FA, Rec Sta, USATCA... **LTC Paul D. Quinn**, 2d Bn, 63d Armor, 1st Inf Div... **LTC Maurice F. Spencer**, 3d Bn, Sch Bde, USAARMS... **LTC Daly H. Stanford**, 10th Bn, 5th Bde, USATCA... **LTC John R. Temp**, First Army NCO Acad... **LTC John W. Woodmansee**, 7th Sqdn, 1st Cav, 164th Avn Gp... **CSM Roy C. Easter**, 16th Bn, 4th Bde, USATCA... **CSM William H. Graham**, 3d Bn, 3d Arty,

ASSIGNED

LTG Hugh M. Exton, Dir Civil Disturbance Planning & Opns, DA... **MG Ralph L. Foster**, DCS Int, Hq USAREUR/Seventh Army... **BG Jonathan R. Burton**, Hq USARV... **BG(P) John G. Wheelock, III**, Off Ch Rsch & Devel, Hq DA... **COL Albert F. Ahrenholz**, CofS, 4th Armd Div... **COL C. R. McFadden**, ACS Compt USARV... **LTC Robert S. Antkowiak**, Sr Adv ARVN Armor Comd... **LTC Walter E. Caughron**, Sr Adv ARVN Armor Sch... **LTC Charles G. Madsen**, Adv RVNAF Comd & Staff Coll.

VICTORIOUS

1970 USAREUR Project Partnership Awards ceremony saw **14th Armd Cav Regt (COL M. D. Howell)**

receive first place trophy for units larger than companies but smaller than divisions. Second place in same category went to **2d Armd Cav Regt (COL M. R. Wallis)** and third place to **2d Bn, 14th Arty, 4th Armd Div... CW2 Larry L. Beard**, 2d Armored Cavalry Regiment won 1970 USAREUR Army Aviator of the Year award... **Tank A16 (2LT Leonard R. Hawley)**, **1st Bn, 64th Armor** won 3d Inf Div top tank gunnery honors with 2200 of 2400 possible points... **Gussie Smith Sanford**, wife of **LTC Albert Sanford**, Hq 3d Armd Div was selected as Military Wife of the Year for 1970... Distinguished Armor Officer Basic Course Graduates: 11-70 **2LT John T. Roche**, 12-70 **2LT Robert E. Tuke**, USMC, 13-70 **2LT Joseph P. Masek**, 14-70 **2LT Keith Fender**, 15-70 **2LT Lawrence A. Rainey**, USMC 16-70 **1LT Douglas R. Johnson**... Armor Officer Advanced Course 1-70 Distinguished Honor Graduate was **MAJ James S. Jewel**, Inf. Honor graduates were **CPTs James H. McEliece**, **Robert N. Riviello**, **Joseph M. Flynn** and **Howard P. Born**. Armor Association writing awards went to **MAJs Roy Hooks**, **Sidney E. Lyons, Jr.** and **William T. McCain** and **CPTs Jack S. Chase**, **Lester M. Fullen** and **Howard C. Kirk** whose articles appear in this issue of ARMOR. In addressing the graduates **GEN Bruce Palmer, Jr.**, Vice Chief of Staff of the Army and Armor Association Vice President, counselled "Don't be so intent on pleasing your commander that you neglect your troops."

AND SO FORTH

4th Bn, 69th Armor, 197th Inf Bde, Ft Benning (**LTC Richard W. McKee**) has now exchanged all of its M48A1 tanks (see ARMOR Newsnotes May-Jun 1970) for the newer M48A3 model. The **4/69th** is said to be the last Regular Army unit in CONUS to have used the A1 model... **CPT Michael Tarby, Jr.**, CO, Co A, 4th Bn, 69th Armor has received all his promotions for PVT to CPT except one in the 69th Armor... **Trp A, 8th Sqdn, 1st Cav, 194th Armored Bde** has what may be the oldest helicopter in the Army. Manufactured by Bell Helicopter Co. In 1951 Number 51-13746, an OH-13E, still flies an average of 30 hours per month... **CW2 Chester F. Jezierski** who did the painting for the July-August 1969 ARMOR cover heads the first Army combat artist team to go to Korea... **Canada** has contracted to purchase 74 OH58A Kiawa helicopters from Bell Helicopter Co. to fill LOH requirements in its armed forces... **CPT Fred E. Ferguson** who won the Medal of Honor as a warrant officer in the 1st Cav Div in Vietnam was commissioned in Armor and attended the Armor Officer Basic Course recently.

GENERAL OFFICER
NOMINATIONS

Major General AUS:

Baldwin, Clarke T., Jr.	43
Burke, William A.	2
Clay, Frank B.	12
Kraft, William R., Jr.	8
Pezdirtz, Joseph W.	16
Potts, William E.	19
Shedd, William E., III	4
Smith, James C.	39
Wheelock, John G., III	14

Brigadier General AUS:

Bowen, Thomas W.	69
Burney, John C., Jr.	52
Fairfield, Ronald J., Jr.	30
Hale, Alfred B.	81
Hiestand, Harry H.	18
Maddox, William J.	2
Starry, Donn A.	57

numerals are Sequence Numbers

SENIOR FLIGHT TRAINING FY 1971

COL(P) Ronald J. Fairfield, Jr.
COL Julius W. Becton
COL Frank D. Conant, Jr.
COL Kenneth W. Koch
COL Thompson L. Raney
LTC(P) John P. Cooper
LTC(P) Donald P. Creuziger
LTC(P) Roderick D. Renick, Jr.



General Bruce C. Clarke, USA-Retired, personally presented the 1969 Bruce C. Clarke Award to the 3d Squadron, 1st Cavalry, 1st Armored Division. The award goes annually to the battalion-size Old Ironsides unit using the best training procedures and making the greatest contribution to the division mission. The 1st Dragoons squadron, commanded by Lieutenant Colonel James A. Campbell, also received the Commanding General's Superior Unit Award and the Division Safety Award for 1969. General Clarke was commander of the 1st Armored Division from 1951, when the division was re-activated, to April 1953. Previous winners of the award were the 3d Battalion, 19th Artillery (1966), the 16th Engineer Battalion (1967), and the 141st Signal Battalion (1968).

ARMOR UNIT CHANGES

The inactivation of the 24th Infantry Division and the redeployment of the 1st Infantry Division brought about changes in the troop list of Armor units. Twenty-Fourth Division units inactivated at Fort Riley were: the 2d Squadron, 9th Cavalry; 5th Battalion, 32d Armor; and the 1st and 2d Battalions, 70th Armor. Personnel and equipment of these units were assigned to units of the 1st Division — the 1st Squadron, 4th Cavalry and the 1st, 2d and 4th Battalions, 63d Armor. Assets of the 3d Battalion, 70th Armor in Germany were transferred to the 3d Battalion, 63d Armor of the Big Red One.

As part of the same reorganization, the former 1st Battalion, 63d Armor of the 194th Armored Brigade at Fort Knox was redesignated the 4th Battalion, 70th Armor.

A curious sidelight is that Lieutenant Colonel William F. Coad, commander of the 4/70 Armor, has commanded one battalion with three designations (4/68 Armor, 1/63 Armor and 4/70 Armor) during one command tour.

In addition, inactivation of the 3d Brigade, 4th Infantry Division saw the 1st Battalion, 69th Armor return to the inactive unit rolls.

FROM THE BOOKSHELF

AIR ASSAULT: THE DEVELOPMENT OF AIRMOBILE WARFARE

by John R. Galvin. Hawthorne Books. 365 pp. \$8.95

This is a carefully researched, tightly written chronology of the history of assault by infantry from the air. It begins with Billy Mitchell's proposals for parachute assault on Fortress Metz, then follows the development of parachute and glider forces by armies of the major world powers between the wars, and employment of those forces in all theaters in World War II. Transition chapters tell of the beginning of helicopter operations in Korea, of French airborne operations in Indochina, and of the strategic air assault on Suez in 1956. Then the scene shifts to the development of heliborne forces for the US Army — the Howze Board, air assault division tests, and activation and deployment of the 1st Cavalry Division to Vietnam. Operations of that Division in the central highlands — Pleiku, 1965, in Bong Son in late 1965 and early 1966, and at Khe Sanh in the spring of 1968 are example pieces showing the air mobility concept in action.

Author Galvin concludes with a few words about the controversy over airmobile mix. On the one hand he sees the *heavies* — those who believe airmobile units will always be on the fringe of the real battles; who doubt the staying power of airmobile infantry, and who question the possibility of extensive airmobile operations in battle against a sophisticated enemy. Lined up on the other side are the *lights* — those whose vision on the possibilities of airmobile operation transcends today's equipment performance restrictions and sees the airmobile future as bright with promise of broader horizons.

John Galvin has written a well researched history; his story is compact and straightforward; his conclusions are broad and fair enough to avoid being controversial. As a result, a searching evaluation of airmobile operations in Vietnam and the conclusions to be drawn therefrom remains to be written. Between Galvin's lines is the silent story of controversy that will pull and tug the Army in many directions for years to come.

Like most proponents of airmobile divisions he glosses over the distinction between air cavalry and airmobile infantry. For air cavalry — that is divisional and non-divisional squadrons, and troops of the armored cavalry regiment and separate squadrons — is a horse of one breed. Airmobile infantry is a separate animal of a different family. For, by itself, infantry of the airmobile division is more than

matched on the ground in Vietnam by the organic weaponry of the "unsophisticated" North Vietnamese enemy, largely as a result of his RPG weapons family.

Even hard core advocates of the airmobile division confess in their more lucid moments that their infantry is really a reconnaissance force. It finds the enemy, then backs off while he is "destroyed by external firepower," to wit air and artillery. The enemy, ever sensitive to such things, has the arrival of external firepower well timed and takes pains to be absent when it arrives. If successful, and he often is, he suffers far fewer casualties than when contacted by a force with the organic firepower and conceptual frame of mind to close with and destroy him. If, for example, it could be shown that one-half the enemy casualties produced by an airmobile division were generated by the divisional air cavalry squadron the question is then "What are all those infantry battalions for?"

What can the airmobile division do that an infantry division supported by air cavalry, aerial rocket artillery and helo lift cannot do? Like their airborne forbears, the airmobileers tend to emphasize too much the delivery means and to equivocate about what happens on the ground after delivery is accomplished.

The US Army in the years ahead can ill afford to allocate scarce helicopter resources to larger aggregations like the airmobile division. We must instead concentrate on the true cavalry force — air cavalry — measuring its mix with ground combat units which have the firepower, organization and organic stamina to close with and destroy the enemy, yet to which sufficient helo assets can be made available to air assault when the battle will profit by that tactic.

No foreseeable stride in delivery vehicles could alter that concept radically, whereas improved delivery vehicles merely bring airmobile infantry closer to the old airborne role with a capability to avoid the dispersion that inevitably plagues most parachute operations. So we should not be led astray by bright predictions for new delivery capabilities — it is still the effectiveness of the force on the ground that is the true measure of success. In this regard, airmobile division infantry is little if any better, relative to the enemy, than its parachuteborne predecessors. This being the case, it remains a costly specialized force which is maintained in the active establishment only at the expense of more efficient ground fighting units. One wonders if we can afford the luxury. DAS

ANNOUNCEMENT

ALTERNATIVE TO ARMAGEDDON — The Peace Potential of Lightning War

by Colonel Wesley W. Yale, General I.D. White and General Hasso E. von Manteuffel. Foreword by General Lyman L. Lemnitzer. 1970. \$9.00

An interesting, quite different military-political book is scheduled for publication by Rutgers University Press as this issue of *ARMOR* is being distributed. This is *Alternative to Armageddon*, by General I. D. White, Colonel Wesley W. Yale and General of Panzertroops Hasso von Manteuffel. General Lyman L. Lemnitzer has written the Foreword.

Alternative is addressed not only to professional and non-professional military people, but also to the great numbers of modern youth who are confused in their loyalties by the prospect of military service in wars of attrition, fought at far ends of the earth for what seem to them obscure objectives.

Since the nuclear threat has proved to be largely an empty one, the book urges the creation of an alternative, and effective deterrent, to aggression. This rests basically on the adoption of a military posture by the West, which visualizes swift and violent response to those emergencies that can be shown, to the satisfaction of the Congress and the electorate, to be vital to the national interests. This posture, in turn, rests upon a capability to wage lightning retaliatory war under the leadership of a corps of field commanders imbued with the principles and techniques of highly mobile combat.

After a non-technical discussion of lightning war

characteristics, the authors describe its nature by giving typical battle descriptions. These bring out why the *Blitz* posture promises rapid, decisive and inexpensive results, with minimum disruption of civilian pursuits. It thus defines principles to which modern youth can logically subscribe.

Most importantly, the methodology of command is thoroughly analyzed through the medium of character sketches of famous leaders, with stories of their battles told from the viewpoint of battle control. Techniques and methods of execution are stressed rather than planning, again in non technical language, and applicable to all echelons of command. There is an exposition of future mobile war, to include airborne and airmobile aspects, using actual and fictional examples. The impact of the computer and other electronic technology as a challenge to command in the nuclear age is naturally included.

The book cites the many obstacles to practical leadership training that exist in an urban society and which pose a most serious threat to national defense capabilities. It therefore emphasizes the need for the development of simulation techniques which will test and train prospective commanders of both small and large units through the introduction of realistic battle stresses.

The general logic of *Alternative to Armageddon* was published in part in the May-June issue of *ARMOR* under the title of "The Real Strategic Deterrent." Space necessarily forbade the important discussions of history, future war and command techniques that make this book unique.

Book Order

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Brigadier General James V. Galloway should be added to the list of those nominated to be major generals which appears on page 78. His sequence number is 26.

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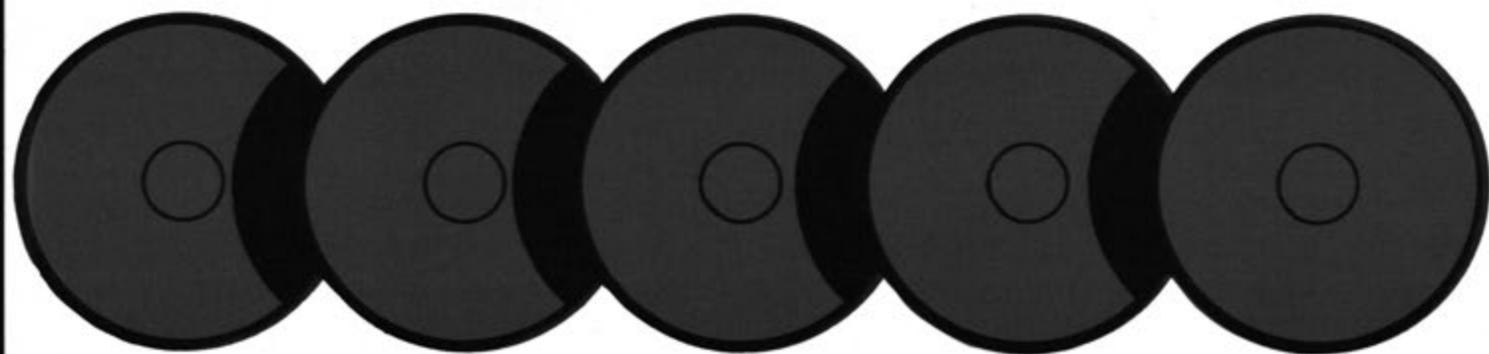
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ARMOR

The Magazine of Mobile Warfare

Volume LXXIX

September-October 1970

No. 5

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COVER

con·cept (kon'sept), n. an ideal of something formed by mentally combining all its characteristics.

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LETTERS TO THE EDITOR



Missiles Vis-A-Vis Guns

Dear Sir:

We would like to comment on Richard M. Ogorkiewicz' condemnation of the US *Shillelagh* gun-launcher system in his article, "Advances in Missile Armed Vehicles," in the May-June 1970 issue. Mr. Ogorkiewicz makes a number of deprecating statements concerning the gun-launcher concept and the *Shillelagh* gun-launcher system. Furthermore he fails to mention a number of serious disadvantages of the all-missile and missile and gun armed vehicles he discusses.

In discussing the *AMX 13* equipped with the *HOT* missile pods, Mr. Ogorkiewicz states that this is better than the gun-launcher because it is more flexible since the missile pods can be left off when not needed and that the gun-launcher is a compromise between missile and gun and thus not as efficient as either a gun or a missile. He also claims the detachable pods allow for greater economy. He fails to state that the use of pods involves extensive modification to the turret, and that any such relatively unprotected exterior mounted system is extremely vulnerable to small arms and artillery fire to say nothing of natural hazards such as trees, telephone poles and wires and buildings. On the other hand, the gun-launcher has no such problem since most of the weapons system is inside the turret, especially the vulnerable ammunition.

With the *AMX 13/HOT* system, not only the missiles, but the pods and the guidance system must be installed prior to use, whereas the only item necessary to missile arm the *Sheridan* gun-launcher tank is the *Shillelagh* missile ammunition. The logistic support needed

for the *Sheridan-Shillelagh* is thus less than that needed for the *AMX 13/HOT*, since two systems with two types of ammunition are obviously not more economical than one system with two types of ammunition.

Tests and field use of the *Sheridan-Shillelagh* show that the gun-launcher is not less efficient but, rather, more efficient than the separate gun and missile. The gun-launcher is not a compromise, it is a new weapons system concept, and a good one. The chief function of the high velocity gun or missile is to bust tanks and hard targets, and the *Shillelagh* does this as well as either a gun or a missile since it is a guidable weapon and has a larger warhead than most tank guns and missiles. The secondary function of the tank gun is to fire non-armor defeating types of ammunition against soft targets and troops. The 152mm gun of the *Sheridan* does this much more effectively than the high velocity tank gun simply because it fires a heavier projectile with no loss in accuracy. Most missile ammunition is completely inadequate in this mission.

The author also has much praise for the German *Jagdpanzer Rakete* armed with the *HOT*. He pointedly directs attention to the fact that the periscoping missile and guidance system allows the vehicle to fire while completely hidden; something he says the *M551 Sheridan*, *M60A1E2* and *MBT70/XM803* cannot do. The advantages of firing while the vehicle is completely hidden are uncontested, but he offers no proof that the *Sheridan*, *M60A1E2* and *MBT70* cannot fire from a concealed position and assumes the missile is launched with the tank exposed. Any guided missile can be launched at elevation and, once clear of barriers, be guided to the target.

Mr. Ogorkiewicz completely overlooks the fact that the missile only armed vehicles have virtually no defense against close-in infantry attack, and that their missiles while either permanently or temporarily exposed are extremely vulnerable to small arms and artillery fire. Conversely, the gun-launcher system allows the vehicle to pick the right type of ammunition with which to engage the enemy.

In addition, he criticized the gun-launcher for not taking advantage of the light recoil of the missile. This is sheer nonsense. It is inconceivable that the *Sheridan* could be equipped with a 152mm high velocity gun that could duplicate the accuracy and destructiveness of the *Shillelagh* system. This system was adopted because the missile

offered light recoil, big punch and could be mounted on a light chassis. The gun-launcher also imparts initial stabilization and acceleration to the missile and gives it a shorter flight time. The free launched or light tube launched missile is unstable in early flight as slow motion films attest. The *HOT* and *SS11* type missiles also must carry all their own propellant, which increases weight. The gun-launched missile is in reality a two stage rocket since it receives significant initial acceleration in the tube by means of a propellant charge, on the order of several hundred feet per second.

It is interesting to note that there have appeared in the European military press a series of references to current development work being carried out with gun-launcher systems of the general *Shillelagh* type in several countries.

MARTIN J. MILLER, JR.

KONRAD F. SCHREIER, JR.
Los Angeles, California

Dear Sir:

The article by Mr. Richard M. Ogorkiewicz in the last issue of *ARMOR*, ("Advances in Missile Armed Vehicles," May-June 1970), is as usual interesting and informative and displays his deep knowledge of the whole field of armor. It is also thought-provoking. I cannot help but reflect on what appears to me to be the most common characteristic of the vehicles he discusses—the fact that the weapons are, in all cases, outside of the armor.

As the author points out, tanks and other armored combat vehicles are essentially mobile weapons platforms. Unfortunately, the weapon—the whole reason for the existence of these vehicles—is extremely vulnerable to even the most modest forms of attack. Rifles, light automatic weapons, grenades, tree limbs—all incapable of inflicting serious damage to the armored vehicle—can easily rob it of its offensive capability.

While, undoubtedly, it is true that the lack of recoil permits the firing of these missiles from very light-weight and, consequently, very mobile vehicles, I cannot help but feel that they are inherently unsuited for use as "tank" armament for at least two reasons. Mobility and firepower, not passive armor protection, are the hallmark of the armored combat vehicle. The externally-mounted wire-guided missile has both the accuracy and power to destroy any target at which it can be launched. Its prolonged exposure to enemy action and the harsh cross-country terrain environment must,

however, markedly reduce the probability of its successful launch. And, even if it does still work when the trigger is pulled, the vehicle must stop, and remain stopped until a hit is obtained, because the guidance wires payed out of the missile are susceptible to snagging and breakage should they be dragged around by the moving vehicle. So, mobile firepower is reduced to moveable firepower—a vastly different thing—at best, or to just mobility at worst.

Missiles such as the *SS11* and *SS12* are large and difficult to handle inside a cramped vehicle. The *HOT* missile, on the other hand is compact and can even be tube-launched. The *HOT* installations on the *AMX13* and *Jagdpanzer Rakete* incorporate open-breech launch tubes which produce no recoil force. Closing the breech would result in some recoil but could permit an internal mounting which takes full advantage of the vehicle armor which is already there. These vehicles and others such as the *AML* and *ELC* can certainly cope with a limited amount of recoil. The *AMX13* has, in fact, the ability to handle a good deal of recoil.

The amount of recoil force produced is a function of the muzzle velocity which is required. Since all of these missiles use rocket motors which continue to thrust during a substantial portion of the time of flight, the muzzle velocity, and recoil force, can be kept reasonably low. This is, of course, the case with the *Shillelagh* missile as launched from the *M551* and *MBT70/XM803*. In those vehicles the missile is launched from a "gun/launcher" which, as Mr. Ogorkiewicz notes, must compromise the requirements of the two projectile types. Such a compromise would be unnecessary if the projectiles were not launched through the same tube! The guided missile could be launched from a short, lightweight tube with a simple breech closure, mounted any place in the vehicle without a recoil damper. The modest torque resulting from an off-center launcher mounting in the turret could be handled easily by the turret control system, particularly when the turret was stabilized to provide an effective fire-on-the-move capability. This "double-barrel" approach can, I believe, achieve the same kind of operational flexibility and economy which Mr. Ogorkiewicz expects from a system of detachable weapon pods without the (inevitable) loss of the detached pieces.

I hope that other *ARMOR* readers, better informed and more experienced

in the use of armor in combat than I, will find the time to express their views on this subject in future issues of our magazine. I am very pleased to note that in recent years *ARMOR* has finally become the truly professional journal that I had hoped it would become.

NATHAN N. SHIOVITZ
Santa Ana, California

The foregoing letters were referred to armor authority Richard M. Ogorkiewicz for his consideration and comment. We are pleased to present his reply in the interest of that "decorous discussion of professional matters" for which ARMOR is designed and for which we hope it would be even more fully used. THE EDITOR

Dear Sir:

In his letter Mr. Nathan N. Shiovitz rightly draws attention to the fact that the vehicles described in my article "Advances in Missile Armed Vehicles" have their missiles outside their armor—if only at launch in some cases. It should be equally clear, however, that these vehicles still represent early steps in the development of missile-armed vehicles. For this reason, they must be regarded as demonstrating basic possibilities and not the ultimate designs. In particular, they demonstrate the possibility of having a separate gun and a missile launcher on the same vehicle as an alternative to the combined gun/launcher which, as Mr. Shiovitz agrees, represents a compromise.

The closed-breech launcher put forward by Mr. Shiovitz as an alternative to the open-tube launcher is certainly worth discussing further. However, in the context of my article, the type of launcher and whether it should be mounted in an armored "pod" or in some other way was secondary to the basic problem of separating the gun from the missile launcher, on which we seem to agree.

The letter of Messrs. Miller and Schreier would deserve more serious consideration if it was more to the point and contained fewer questionable assertions. They start by alleging that the references in my article to the gun/launcher of the *M551 Sheridan* are a "condemnation" of it. In fact, these references merely illustrate some of the advantages of alternative systems. There is no doubt that the gun/launcher solution also offers a number of advantages and some of the points quoted in its favor by Messrs. Miller and Schreier are obviously true. But on other points they appear to be ill-

informed or produce misleading arguments.

For instance, they allege that "missile only armed vehicles have virtually no defense against close-in infantry attack." This is untrue since vehicles with missiles as their main armament can be armed with machineguns, small-caliber automatic cannon and other short-range weapons in much the same way as vehicles with high velocity guns are armed with them for defense against close-in attack.

If they had read my article more carefully than they appear to have done, Messrs. Miller and Schreier might have noticed that it did not criticize the gun/launcher "for not taking advantage of the light recoil of the missile" but for failing to exploit the "lack of recoil." Light as the *Sheridan* obviously is, if the lack of recoil had been exploited, missiles comparable to the *Shillelagh* could have been fired from a very much lighter installation than its gun/launcher system which, it must be realized, has had to be designed to accommodate significant recoil loads.

Finally, Messrs. Miller and Schreier might also have taken note of the fact that nobody, except they, even alluded to arming the *Sheridan* with a "152mm high velocity gun." Their comments on this score are, therefore, irrelevant, to say the least.

RICHARD M. OGORKIEWICZ
London, England.

Combat Armorman Badge

This is in reference to a letter to the editor by 1LT Arthur C. Coogler, Jr., published in the March-April 1970 *ARMOR*.

Lieutenant Coogler's letter was of great concern to me. I have been in Armor for 17 years. During the Korean Conflict, I was assigned twice to tank companies in infantry divisions. While so assigned I was awarded the Combat Infantryman's Badge despite the fact that I was not accomplishing an Infantryman's mission. I would much rather have been awarded a Combat Armorman's Badge. To award the Combat Infantryman's Badge to a combat tank or cavalryman under such circumstances is similar to recognizing a husband as "Mother of the Year."

Armor officers, NCOs and other soldiers are of a different breed than any other branch of the service. Their esprit de corps is always high. They have to keep current a vast amount of general and special military knowledge

and a tremendous amount of skills. It seems fair to say that the average Armorman must have more military knowledge and skills than the average man in any other combat branch.

No great battle in modern war has been won without Armor. It is from this fact that we derive the motto "The Combat Arm of Decision." History has shown that our mobility, firepower and shock effect play a key role in deciding which side wins.

The Combat Armorman deserves a Combat Armorman's Badge. There is no question that he would wear it with great pride.

LEONARD T. MARTIN
1st Sergeant

Co B, 2/72 Armor
APO San Francisco, 96224

First Sergeant Martin's letter brings the total responses to Captain Donald M. Cross's "Why Not a Combat Badge For Armor?" (ARMOR May-June 1969) to a count of less than a dozen.
THE EDITOR

Air Cavalry Squadron

Dear Sir:

This letter is in response to the article "Updating the Air Cavalry Squadron" which appeared in the March-April 1970 *ARMOR*.

Captain Branstuder's suggestions for reorganizing the air cavalry troop were especially interesting since his experience with the 1st Squadron, 9th Cavalry seems to be a sequel to mine. I was the Squadron S3 for the last half of 1967. During much of this period we were anticipating and actively preparing for the arrival of new *AHIG Cobras* and *OH6A Cayuses* to replace our aging *UH1B* and *UH1C* weapons aircraft and *OH13S* scout ships.

Since reconnaissance was our biggest job, we often used weapons helicopters to augment the efforts of the scout platoon. Everyone agreed, for the reasons Captain Branstuder mentions, that the *Cobras* would not be as effective in this scouting role. We decided, therefore, to try a technique that had proven useful in the past. We would form mixed teams of one scout aircraft for low level reconnaissance and one weapons ship for fire support. Since aero weapons teams were called "red" teams and aero scout teams were referred to as "white" teams, we called these mixed ones "pink" teams. The original idea was to provide additional firepower for reconnaissance in particularly hot areas. We felt that this employment might combine the best features of the two new helicopters. The *OH6A* would do

the low, slow reconnaissance. The *AHIG Cobra* would initially remain outside and high, provide general surveillance, make spot reports and be immediately available for rolling in with its much greater fire power.

Having left the unit before this system was implemented, I have no first hand knowledge of the results. But, after action reports and comments of other air cavalry officers indicate that it was later widely used throughout Vietnam. In the same issue of *ARMOR*, Brigadier General George S. Patton mentions the pink team. In the January-February issue he was more specific: "Our habitual employment of air cavalry assets included use of the 'pink team.' . . . We found, through experience, that this was unquestionably the best method of employment.

This is not to say that the *AHIG* itself is a better reconnaissance vehicle than the *UHI* (B, C or M model). Obviously it is not. But, as Captain Branstuder points out, the *Cobra* ". . . is a wonderful piece of equipment in the fire support role." Since the primary mission of the aero weapons platoon is to provide fire support to the other elements of the troop, this last statement means a lot. The *Cobra* can react quicker with greater fire power on a security mission, it is better suited to escort and support the aero rifle platoon, and it can provide general reconnaissance and interdiction over a large area of operations. This last factor may become more important as the density of US units in Vietnam declines.

The proposed organization would certainly assist reconnaissance in the present Vietnam environment, where finding the enemy requires much ". . . snooping around at treetop level and often hovering." The enemy's meager air defense allows this. But what about a somewhat more conventional situation where the terrain is more open and the enemy has some vehicles and better air defense? Here the accent will undoubtedly be less on low, slow reconnaissance and more on "shoot-and-scoot" tactics—both for survival and mission accomplishment.

In summary, I think that the *Cobra's* shortcomings as a low and slow scout ship are more than offset by its other capabilities; that these shortcomings can be overcome by suitable employment techniques; and, that the *AHIG* should be retained as the basic weapons aircraft for the air cavalry troop. If we still need more scouting capability in the troop, we should increase the number of aero scouts rather than de-

grade the aero weapons.

I still think the author's suggestions have merit, however. When the *AH56 Cheyenne* (or some other similar advanced helicopter) comes along, we will likely find that it is too expensive to replace the *AHIG* on a one-for-one basis. Captain Branstuder's idea of an attack helicopter troop is one possible solution.

RICHARD C. STRUDEMAN
Lieutenant Colonel, Armor
USACGSC
Fort Leavenworth, Kansas

The Phantom Strikes

Dear Sir:

This morning I received the two prints of "Old Bill" which I had ordered and the container for my print of "The Evolution of Armor." Opening the latter I found a wallet size calendar with a picture of Elvis Presley. The US Mail has struck again! Enclosed is one wallet size Elvis calendar and a check for two dollars and five cents for another "Evolution" print. Please use the extra nickel to wrap the end of the container with tape to preclude this happening again. Thank you for the speedy, excellent service on my first order. The prints of "Old Bill" are outstanding.

CHRIS PIXTON
Captain, Armor

APO San Francisco 96266

Despite the fact that former SP4 Presley served honorably in the 3d Armored Division we have not taken to sending calendars with his visage prominently featured in place of our exclusively published prints. The \$2.05 has been refunded. A replacement print with the end of the container securely taped has been sent. If others receive strange substitutes on any orders they too should write us promptly. It gives us a chance to put things right. And—we enjoy the funny side of life's vagaries as well as the next fellow. If we didn't, we of the ARMOR staff would all have ulcers, or worse. THE EDITOR.

ARMOR as Saboteur

Dear Sir:

My son wishes to subscribe to *ARMOR*, although he is not eligible for membership in the Association. Apparently I have failed in my duties as an Artilleryman. Enclosed is my check for \$6.50.

Lieutenant Colonel,
Field Artillery

Fifty Years New

SUPPORTING THE JOURNAL

The extent to which the JOURNAL may be developed depends entirely upon the support which it receives primarily from the Cavalry. In this branch lies our greatest potential field for subscribers; and yet it is surprising how many of the cavalry officers, for reasons best known to themselves, have not joined the Association nor subscribed for the JOURNAL. It is true that we have many subscribers in other branches and in other organizations, but unless the cavalry gives the JOURNAL 100 per cent support, it can never reach its maximum development. It should be a matter of professional pride with every officer to take the journal of his arm and to encourage those under his command to do likewise. We like to feel that such is the sentiment among our officers; but it is nevertheless true that some of them allow other things to interfere with their good intentions. In this connection it is a matter of pride to record that the fault does not lie so much with the officers on duty with troops as with those on detached service. The former group have individually shown much interest in the JOURNAL and their support has been greatly appreciated.

There is, however, one way in which officers with troops can materially aid the subscription list and thereby directly increase the effectiveness of the CAVALRY JOURNAL. . . . Every troop commander should subscribe for the troop library or reading room. There are many articles in the JOURNAL of interest to the men, especially to the non-commissioned officers. Frequent invitations to join have been sent to the various troops, but so far the response has not been such as was anticipated. . . . The subscription price is so modest that it cannot be lack of funds.

. . . THE JOURNAL is purely a professional magazine and must not be confounded with the commercial magazines which sell for a nominal sum. Necessarily, therefore, the single issue of the JOURNAL cannot compete in price with magazines of popular appeal. This statement is thought necessary, inasmuch as several officers have recently canceled their subscriptions on the ground that we were the most expensive magazine on the market. We are not on the market at all, but are the professional organ of a scientific association.

Let all of us get behind the JOURNAL and boom the subscription list. Ask your fellow cavalry officer whether he has joined and urge him to do so. See that all of the troops have the journal in their barracks.

It is to be regretted that so much excellent manuscript received by the Editor cannot be published; . . . but we are prevented by lack of funds.

— *The Cavalry Journal*, Vol. XXXIX, No. 121, October 1920





ARMOR OFFICER ADVANCED COURSE 2-70

Mobile Combat Base

A School Solution

by Captain Donald L. Cummings

"Units conducting tactical operations against insurgent forces establish combat bases from which to operate . . . Whenever possible, combat bases are established on highly defensible terrain . . . as small as possible to facilitate security. A combat base is organized with encircling positions prepared from which it can be defended against insurgent attack. Protective obstacles are prepared to support the defensive positions . . ."

—FM 17-1, *ARMOR OPERATIONS*

There is nothing about the doctrine concerning mobile combat bases in areas where insurgents are active that is new or particularly revealing. In fact, what would be more obvious in a campaign against insurgents than establishing a base of operations with good, all-around defenses? Yet, in Vietnam, armor, armored cavalry and mechanized infantry units suffer too many casualties from enemy attacks against their positions. In this analysis of the occupation of a mobile combat base with armored vehicles, emphasis will be placed on those points upon which the armor unit commander must concentrate if he is to survive a night attack.

In my Vietnam experience, it was extremely rare for a tank company to operate pure. Cross-attachments with infantry were the rule, so not only did an Armor officer need to know about his own assets, but he also had to be able to utilize effectively his attached infantry.

During a period of reduced enemy operations, mechanized forces rarely ran into enemy elements during daylight. At night, however, things were differ-

ent. The North Vietnamese and Viet Cong recognized the threat of armor spearheading operations into their base areas, and they went to great lengths to mount night attacks against combat bases to neutralize the mechanized capability of US forces.

Operation *Utah Mesa* conducted from 14 June 1969 through 9 July 1969, by the 3d Marine Division, using the armored resources of the 1st Brigade, 5th Infantry Division (Mechanized), reflects the problems to be encountered by junior Armor officers. Except for one ambush, all of the 1st Brigade's major engagements occurred at night.

Task Force 1/61 consisted of: Headquarters, 1st Battalion (Mechanized), 61st Infantry; Companies B and C, 1/61 Infantry; and Company B, 1st Battalion, 77th Armor. The task force was divided into three infantry heavy teams with the tank company losing two of its platoons and gaining two infantry platoons. A Marine infantry battalion and an ARVN infantry battalion together with two batteries of direct support artillery rounded out the combat elements. The mission was to destroy North Vietnamese Army

elements gathering in the Khe Sanh area for operations against the Allied forces defending the Republic of South Vietnam.

Intelligence indicated that the 54th Regiment, 304th NVA Division was located on the Khe Sanh Plateau. With the exception of three sapper attacks against Task Force Remagen II in May 1969, little enemy contact had been made in the Area of Operations by US forces for several months. When TF 1/61 reached Khe Sanh with no opposition, it seemed to the troops that they were beginning a walk in the sun.

To the unit leaders at all levels, this respite was not regarded with a false sense of confidence. The sapper capability of the enemy was well-known and respected. The sapper attack was the primary tactic employed by the North Vietnamese against US positions; and sappers were highly motivated and well-trained demolitions experts. Their missions to breach perimeters and to inflict maximum damage on the defenders, their use of extensive reconnaissance and superhuman patience were the subjects of too many "lessons learned" prepared by units who had not been ready to meet them.

In a sapper attack, speed and ferocity characterize the action. Teams with satchel charges make their way to preselected targets under the cover of supporting mortar and small arms fire. With the defenders seeking shelter from the incoming fire inside their armored vehicles, and with these same vehicles as the targets of the sappers, vehicle destruction and casualties are widespread. Therefore, the defense of a mobile combat base is a Herculean task for the defenders. The key to defeating the sappers is early detection. Overconfidence, inattention to detail and poor preparation are the causes of US casualties; sappers merely capitalize on the weaknesses of the defenders.

Perhaps, the underlying theme of this topic should be that regardless of where a combat base is established, its defenses must be planned carefully in the full knowledge that the position is in danger despite any apparent lack of enemy activity in the area.

At any rate, the accepted thought that sappers required several days to make their reconnaissance, rehearse, move and execute their attack was painfully dispelled by the experience of TF 1/61. Prisoners captured in five of the six attacks against the various positions of the task force stated that only 24 hours had elapsed between the warning orders and the execution of the attacks.

Landing Zone *Saigon* was a small hilltop southwest of Khe Sanh. It was established as a fire support

patrol base and occupied by Company B, 1st Battalion, 77th Armor; Company C, 1st Battalion (Mechanized), 61st Infantry; and Battery B, 1st Battalion (105mm, SP), 40th Artillery.

When the position was first occupied, fields of fire were cleared as far from the perimeter as possible. The next step was to place each of the five rolls of concertina wire carried by each vehicle into position and to stake it down. Tripflares and beer cans filled with pebbles were then fastened to the wire to give last minute warning. Other tripflares were placed in depth outside the perimeter. It was known that sappers spent several hours crawling toward a perimeter as they felt for trip wires and cut them to prevent detection. A density of tripflares up to 200 meters beyond the perimeter wire was believed to be sufficient, especially since the tripflares were arranged so that one flare supported the other.

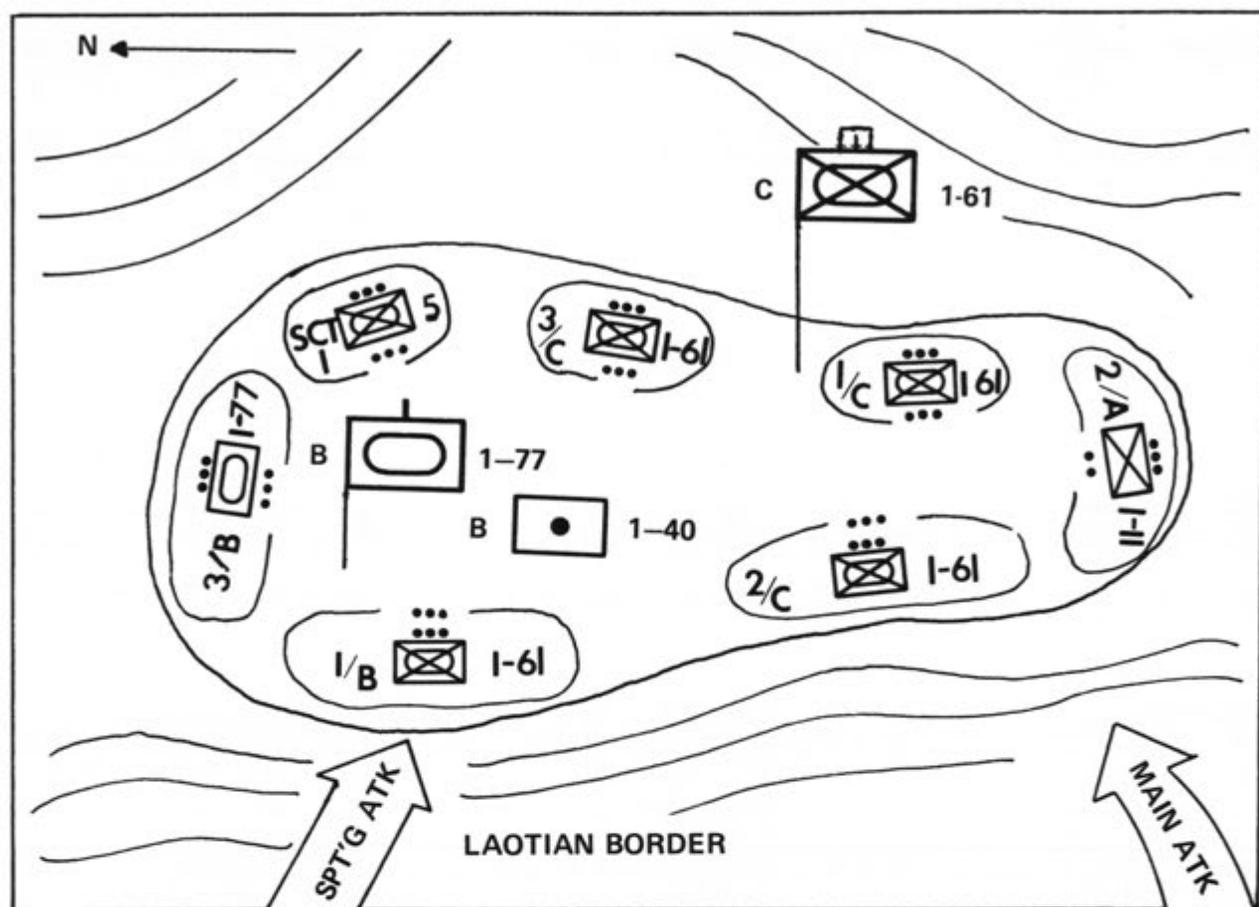
While some men were putting the wire and tripflares in position, four squads were engaged in sweeps around the perimeter looking for signs of recent activity. The patrols searched an area extending 400 meters out from the wire twice daily. The last search was just prior to sunset.

Knowing that vehicles would be enemy targets, none of the infantry were permitted to occupy their vehicles. Instead, the men, their equipment and the Caliber 50 and *M60* machineguns from each APC were dug into positions on the ground. For deception, the machineguns were emplaced after dark. This also prevented men running to the vehicles and becoming additional targets for the satchel charges. Additionally, alternate and supplementary positions were selected and prepared.

The tanks, with a cannister round loaded in each main gun, occupied defilade positions. Infantry provided flank security for the tanks.

The task force commander established the landing zone's chain of command by placing the commander of Company B, 1st Battalion, 77th Armor in charge. This created a central headquarters, fixed responsibility and eliminated any confusion that might have arisen among the three units occupying the base.

Each day that LZ *Saigon* was occupied saw improvements in the defenses. More concertina was airlifted in. A bulldozer dug each vehicle into a better defilade. Overhead cover was constructed to protect the infantry from the effects of RPG air bursts. Claymore antipersonnel mines were positioned both in the wire and beyond the wire in mutually supporting locations. Additional claymores were boobytrapped and placed in trees and bomb



craters. Fougasse was made from diesel and fuel thickener and poured into artillery canisters filled with rocks. These devices were hooked up to claymore detonators and placed beyond the danger range for the defenders. In short, imagination, adaptation and improvisation were used to counteract the skilled enemy who had launched four previous attacks against task force positions with varying degrees of success.

Other measures taken were the daily firing in of artillery DEFCONs. Although the LZ was occupied for 10 days, the artillery fired each day during daylight to let the commander know exactly where his support would fall. An active harrassing and interdiction fire program was executed at night with hand grenades and M79s. This was just to keep anyone lurking around the perimeter honest. The tanks used their infrared searchlights at various times during each hour of darkness. Listening posts were established each night after EENT with communications checks every 30 minutes. Detection devices were emplaced along the most likely avenues of approach. Each device was registered on by artillery and instant fire to cover them was available.

Stand-to began at 0230 daily because the enemy had established a pattern by launching each of his previous attacks between 0300 and 0400.

The final measures taken for LZ Saigon's defense also served a morale purpose. Between the return of the evening patrols and the establishment of the LPs, each weapon was test-fired along the perimeter wire, so as not to disclose its night location. In addition, the commander of each of the units walked among his troops checking their positions, checking to see if they had received information passed to the platoon leaders and to unwind a bit himself.

In the previous attacks, the sappers had successfully breached the defenders' wire. And in one of the actions they had established sniper teams inside the perimeter to eliminate vehicle commanders firing their caliber 50 machineguns. So, in each of the daily meetings of the leaders at all levels, brainstorming sessions were held to discover the weak links in the defense plan. Each discovery was acted upon in the systematic strengthening of the position.

Finally, on the night of 29 June, LZ Saigon received its first attack. At 2100, heavy movement was detected. A half-hour later the LPs reported move-

ment and voices. The base was alerted and at 2330 a tripflare went off. This was followed by an RPG blast — the attack was on.

Heavy fire was poured into the perimeter for about two hours, and then only sporadic small arms fire was taken until dawn. When morning finally arrived a sweep was conducted and only some bloody clothes were found. But early warning had paid off. The defenders had not been surprised. It was later determined that the attack had been a diversion while NVA elements escaped from a base camp discovered by the Marines earlier on 29 June.

During the daylight hours of 30 June, while resupply was being effected and extensive patrolling conducted, the unit commanders discovered the last weak link in the defensive chain — fire discipline. With this problem recognized and action taken to eliminate it, LZ Saigon prepared for another night.

At 0330, 1 July, an infantryman attached to Company B, 1/77 Armor heard movement in front of his position on the southwestern portion of the perimeter. He threw a white phosphorous hand grenade and saw an individual double over. A few seconds later, the southeastern perimeter came under a heavy ground attack. Because of the SOP stand-to, the response of US personnel was immediate.

The commander requested an AC47 "Spooky" gunship as well as artillery. Since their probe on the previous night had disclosed that the vehicles were not manned, the only surprises that the NVA encountered were the fougasse and Claymore explosions and the staggering volume of fire which armor could deliver.

The enemy commander selected a bomb crater as his CP. As he and his group moved into position, an infantryman triggered the four Claymores placed there when the base was established.

The defenders of the LZ went about destroying the attackers with the quiet inner confidence of men who knew they could handle the job. Tanks roared out canister, recoilless rifles spit out beehive and the forward observers put artillery onto the wire. As the artillery provided illumination and direct fire beehive, the mortar platoon of Company C, 1/61 Infantry gave pockets of shocked NVA something else to think about.

The enemy small arms, mortar and rifle grenade fire was heavy, but the perimeter held. When "Spooky" arrived, the ground commander had the plane make two passes around the perimeter and then shift into a pattern to the south in order to harass the enemy's routes of withdrawal into Laos. Gen-



Enemy weapons captured in area of supporting attack. Note flamethrower at upper left.

eral support artillery was called for to further disrupt the retreat.

The perimeter held during many subsequent assaults. At 0530, except for covering fire, the enemy had broken contact and the battle was over. Pursuit and mopping up followed with two wounded prisoners found under a heap of their dead comrades. One man died, but the other stated that his entire battalion had attacked just two hours before. Later interrogation reduced this figure to a battalion (minus) reinforced by a sapper platoon.

The grisly job of searching for dead enemy revealed one most obvious fact — none of the NVA had broken through the wire. Forty-two dead enemy had perished in the attack. Trails discovered by the pursuit of the elements were littered with discarded equipment.

Another point was quite obvious that morning — the school solution of constant improvement to the defensive position was still valid in this "war unlike other wars."

The attacks had come from two directions. The tank platoon had eliminated the assault from one direction completely. But it was not until dawn, when the bodies of 15 enemy, two flamethrowers, 15 Bangalore torpedoes, four B40/B41 rocket launchers and several AK47s were discovered, that the defenders of that portion of the perimeter knew that they had been under attack at all.

Among the additional equipment captured was over 600 hand grenades, several hundred rifle grenades, 10 B40/B41s, 25 Bangalore torpedoes, numerous personal weapons, quarter-pound blocks of TNT, rice mats for placement over barbed wire, and finally, in that bomb crater where the NVA com-



Airstrikes on suspected enemy positions. Mountains in background are in Laos.

mander thought he would be safe, his radio with one frequency still set and six others written on the metal case.

What price did the defenders of LZ Saigon pay? After the fight was over, five wounded walked into the aid station for treatment — no one could believe it. When compared to other sapper attacks during *Utah Mesa* and elsewhere in Vietnam, the LZ paid nothing.

What was learned from the actions at LZ Saigon? First, regard any night position as vulnerable. Carry wire and engineer stakes as well as enough trip flares and Claymores on the vehicles. Five rolls of wire and a case each of flares and Claymores per vehicle is not too much. If available, a section of chain-link fence placed in front of each vehicle makes a good RPG screen. When the night position is reached, begin immediately to clear fields of fire, and conduct a sweep several hundred meters out from the proposed perimeter to clear the area of any enemy hiding in the vicinity. Select vehicle positions, dismount the infantry from their APCs and have them dig in, prepared to fight from the ground. Draw up fire plans for each weapon — platoon leaders and platoon sergeants can be doing that while checking the erec-

tion of the concertina barrier and the emplacement of trip flares, and Claymores. While the unit commander is overseeing everything, he must also plan with his forward observer the artillery defensive concentrations, and have the DEFCONs fired in as quickly as possible.

With the location prepared, the unit commander establishes locations for the LPs. He emphasizes noise and light discipline constantly. If the position is to be occupied only one night, then it all comes down in the morning. But if he is to remain beyond one night, then refinements in the position's defenses must be made.

Time available and the mission of the unit bear directly on the ability of the unit commander to construct a mobile combat base. But he must consider his base as important as anything else he does. It would be folly to claim that the steps outlined will prevent casualties. However, there is no excuse for an officer to suffer casualties in his unit due to overconfidence, negligence or the omission of an important detail. There is really no such thing as too much preparation.



CAPTAIN DONALD L. CUMMINGS, Armor, was commissioned in 1965 from the Virginia Military Institute. Following graduation from the Armor Officer Basic Course, he was assigned to the 1st Battalion, 72d Armor, 2d Infantry Division in Korea, where he served as a platoon leader and S2. In 1967, he returned to CONUS where he was stationed at Fort Leonard Wood in the US Army Reception Station as adjutant and a company commander. In 1968, he joined the 1st Battalion, 77th Armor, 5th Infantry Division (Mechanized) at Fort Carson, Colorado as S2 and he deployed with the Division's 1st Brigade to Vietnam. While in Vietnam, he commanded Company B, 1st Battalion, 77th Armor until his return to CONUS to attend the Armor Officer Advanced Course 2-70. He is now assigned to the faculty of the Armor School.



ARMOR OFFICER
ADVANCED COURSE 2-70

A Community Affair

by Captain David A. Bramlett

The ambush was successful. However, in the division SITREP it barely warranted a two-line entry which concluded in a statistical summary of 7 VC/NVA KIA, 5 IWC (Individual Weapons Captured) and the welcome notation of negative friendly casualties. Predictably, the significance of the ambush diminished at each level of reporting until eventually only the results of the ambush were forwarded; the accompanying circumstances were sacrificed in the interests of brevity and pertinence.

So what? An ambush is nothing more than a method of combat, albeit a particularly ferocious one, that is rarely distinguished except in its normally lopsided results. This ambush was typical with its casualty ratio and violent execution. However, this ambush was unusual.

Composed of an almost unimaginable conglomerate, the ambush force included a US Army rifle platoon, members of a USMC CAP, soldiers of a local PF unit, agents of a PRU cell together with support by the NPFF and RF. This seemingly unwieldy collection of military and paramilitary units functioned under a quasi-OPCON of the US commander, an uncommon feature anytime and partic-

ularly in the atmosphere of October 1968 in I Corps in Vietnam.

Perhaps the abbreviations in the closing sentence of the previous paragraph are unfamiliar to some, although this seems unlikely. With the advent of the term, Vietnamization, a new vocabulary has emerged to include the Combined Action Platoons (CAP) of the United States Marine Corps, the Popular Forces (PF), the Regional Forces (RF), the Provisional Reconnaissance Units (PRU), and the National Police Field Forces (NPFF). With the exception of the CAP Marines, these units are indigenous paramilitary organizations whose explicit and implied missions are to assist in the successful prosecution of the war.

The cooperation and demonstrated capabilities of these units in the conduct of the ambush on 24 October 1968 were early indications of a greater potential for the increased and successful involvement of these organizations in the conduct of the war.

On 14 October 1968, the 2d Battalion, 327th Infantry (Airborne) moved into the populated coastal plains of the I Corps Tactical Zone between the cities of Da Nang and Hué, specifically into the politically sensitive and militarily contested district of Phu Loc, Thua Thien Province. The battalion was charged with the threefold mission of security of Route 1 within the area of operation (AO), of area pacification, and of the elimination of the local Viet Cong forces, main force elements and NVA units known to be operating in the area. Implicit in this mission were the tasks of denying rice to the enemy, of assisting the rebuilding of facilities destroyed in the TET Offensive and of establishing confidence in the Government of Vietnam and Free World forces involved in the conflict.

The battalion commander divided the AO into smaller company AOs, generally by superimposing company AOs on the existing village boundaries within the district. Company C moved into the Loc Tu Village (V) area and established its CP at the Thua Luu Bridge which connected the two major hamlet areas of the village. Deploying one platoon to secure the bridge and the CP, the company commander moved the remaining two platoons into the AO and began to reconnoiter the surrounding hamlets to select squad ambush sites which would be occupied that night or on succeeding nights. This conceptually simple pattern continued for the duration of the operation and was refined through developed ambush expertise, astute analysis of intelligence and dogged determination.

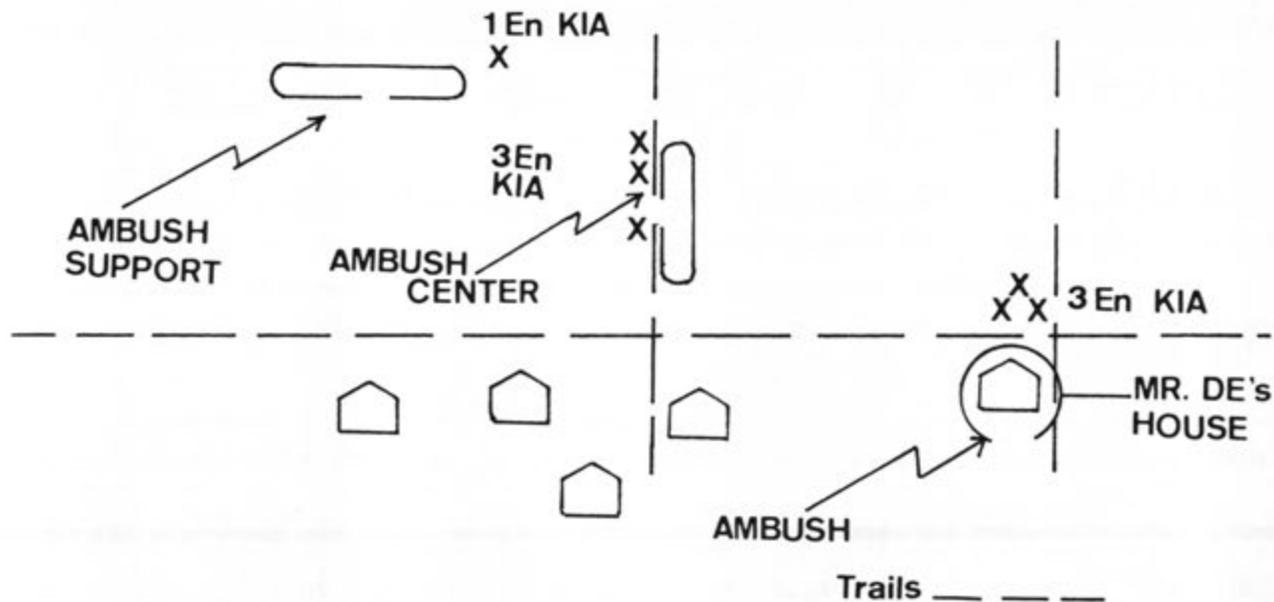
The unit began to experience the same difficulties that had plagued other units attempting similar operations. The inhabitants were reluctant to cooperate or to assist. The villagers were sullen and noncommittal, a somber reflection of the fact that six people had been assassinated in the three-week period immediately prior to the arrival of Company C.

The company made genuine attempts to work with the villagers and specifically with the PFs, the lightly armed local militia. The PFs in the area were advised by a squad of the CAP Marines led by Sergeant William Dovel, USMC. This concept has been well described in Retired Marine Lieutenant Colonel William Corson's book, *The Betrayal*. It earned the sincere respect of those US Army units which worked with the CAP Marines. This particular Marine squad lived in the village area of the PFs, advising the latter in their village security role, assisting the villagers in community projects and taking part in village activities as members of the community. The CAP Marines and their PF cohorts were extremely willing to cooperate and work with the US troops.

Taking selected PF soldiers and CAP Marines along with the US platoons and squads, the company began systematically to integrate the PFs and CAPs into a coordinated effort. The PFs were excellent guides and were significantly bolder and more eager when operating with the firepower and support of a US unit available.

Also present, though less communicative, was the RF unit. The RFs were a degree of equipment and training above the PF, though they had no US advisors. The airborne company commander had no difficulty in convincing the RF commander of the necessity for coordination to prevent friendly fire incidents and to complement each other's efforts. However, the RF commander was reluctant to extend cooperation and integration beyond this coordination, so the Company C commander elected to proceed slowly in involving his unit.

After a week of developing positive harmony and negative results, the battalion commander decided to escalate the integration and sent two more GVN paramilitary organizations into the Company C area. The first was a detachment of the National Police Field Forces (NPFF) to assist in the control of traffic on the bridge, to do civilian questioning and to enforce the law. These police, led by a quiet and competent sergeant, impressed everyone with their dedication, sense of responsibility and uncompromising devotion to duty. Chief Han, a title quickly



assigned to him when the men of the company learned that he was a policeman, was an excellent commander and a trusted ally.

The second addition to the rapidly growing community defense forces of Loc Tu (V) was somewhat different. Its arrival was preceded by the ubiquitous silver and blue helicopter of Air America which brought a knowledgeable individual who carefully explained the organization, capabilities and effectiveness of the Provisional Reconnaissance Units (PRU). PRUs were to be targeted against the VC infrastructure, though the spokesman was uncharacteristically hazy on their actual deployment.

On the following day, a PRU of five men arrived with no further amplification of their role. The company commander assigned them an ambush mission in conjunction with one of the deployed platoons. The PRU leader refused the mission, apparently exercising some ill-defined option. The exasperated company commander restated the mission through his interpreter, but the PRU leader was even less receptive in his native language. In response to the obvious question, the PRU leader cryptically replied, "We search men's minds." Allowing for the usual translation problems, the company commander gained a vague notion of the PRU specialty—interrogation.

Thus, by 23 October 1968, this heterogeneous defense force was completed, though tangible results had been less than spectacular. The villagers were still unimpressed with either the US or the com-

bined effort. The VC and NVA were still roaming throughout the area and the pressures for results were increasing in both chains of command. In the next 30 hours, the above trends were to be dramatically reversed in an amazing display of intensive information gathering, timely intelligence exploitation and unparalleled cooperation.

On the afternoon of the 23d the company commander directed the PRU into a suspect hamlet to conduct a night search of the area to gain information on four individuals listed as VC infrastructure members. This was apparently more acceptable to the PRU leader, whose only question was "What time do we leave?" The unit was augmented with a liaison team consisting of an adventurous MI interrogator (the company had also received an IPW team via the brigade and battalion), the company interpreter and a radio.

The following morning the PRUs returned with four very frightened Vietnamese "civilians" whom they immediately began to interrogate. The four "wanted" individuals were gone, but these civilians were felt to know something about their activities. Three of the four civilians were released after cursory questioning, and only an 18-year-old girl was detained. Mysteriously, the PRU leader announced "She knows something" and then left to enjoy breakfast in the village.

After breakfast, the PRUs returned to the task of "searching her mind." The detainee, a Miss Hein, was more than a little wary of the search. The PRUs

began to increase the intensity of their interrogation with no apparent success. The company commander intervened at this point and suggested that this was a nonproductive effort. He was politely ushered aside by the PRU leader who again announced that "She knows something."

After four hours of interrogation, the detainee related that she was a VC squad leader in the infrastructure and was the coordinator for the rice collection effort in the village area. A band of armed VC would enter the hamlet of Trung Kien that night at 2000 hours to collect rice. They would proceed directly to a Mr. De's house for final coordination. Miss Hein further stated that the force would move along two trails to Mr. De's house and described the route.

The PRUs immediately relaxed their interrogation. The company commander then placed the POW in the hands of the NPF for detailed interrogation on personalities and methods of operation.

Possessing this hard intelligence, the company commander began to plan his reaction. Obviously, the key was Mr. De's house and the two trails into the area. Sergeant Dovel of the CAP Marines assured the company commander that the PFs were familiar with Mr. De's house though they would not be informed of the objective until enroute to Trung Kien hamlet. The 2d platoon leader was called to the CP for a complete briefing on the operation since his platoon would constitute the bulk of the ambush force.

The planning tempo was further heightened by the PRU leader who announced to the company commander "The PRUs would like to make an ambush tonight." The PRU was then assigned a role in the ambush plan.

The company commander and platoon leader decided to form three ambush elements from the forces available, relying on the PFs for pinpointing the objective and the firepower of the combined forces to destroy the enemy. The plan prescribed three squad-sized ambushes with a linear ambush parallel to one of the access trails, one ambush around Mr. De's house and a third ambush to the flank of the objective area to offer security and support. Coordination was made with the RFs to insure that their night locations would be distant from the planned ambushes. Again for security reasons, no detailed information was given to the RFs. The ambush positions were designated and the forces were distributed with the US infantrymen, CAP Marines, PFs and PRUs assigned their respective roles. The composite

force moved under the control of the 2d platoon leader and each ambush site was commanded by a platoon NCO. All components of the ambush forces rendezvoused as scheduled and moved into the hamlet of Trung Kien.

With the PFs acting as guides, the platoon was able to arrive in their ambush areas quickly and did not occupy their positions until the last possible moment to avoid compromise should the enemy routes be under surveillance. However, Ambush Center was a little tardy and did not finish emplacing their Claymore mines until 2002 hours. The machinegunner, in a low whisper, asked his assistant for the time; and when informed that it was 2003 hours, the gunner remarked that the VC were late. As he faced about, he looked at a VC soldier standing three feet away looking down the trail. The gunner opened fire with the *M60*, initiating the ambush and killing the VC. Another member of the ambush immediately detonated his Claymore, killing a second enemy. The remainder of this squad-sized ambush delivered heavy and accurate fire into the area, killing at least one more VC.

Simultaneously, members of the second squad-sized ambush detected three VC milling about in front of Mr. De's house. At that time, a CAP Marine triggered the second ambush by firing a LAW into this group, killing one VC outright. Again, the squad fire was intense and accurate with at least two more VC perishing in the small arms fire.

As these two ambushes were engaging the enemy, the platoon leader called for and received immediate illumination from 60mm, 81mm and 4.2in mortars in addition to 105mm artillery. The third squad-sized ambush then prepared itself to support the other two engaged ambushes as required. Approximately five minutes after the initiation of the first two ambushes, the third ambush engaged and killed a VC who was fleeing the area.

At this time, the platoon leader ordered a sweep of the area in order to reestablish contact and to assess the battlefield. The platoon sergeant then moved Ambush Center forward in a sweep while being covered by the relocated supporting ambush. The sweep force moved quickly into an open rice paddy area where it came under accurate *AK47* fire from a VC hidden behind a dike. The squad returned fire and assaulted the enemy with supporting fire received from the other squad. The results were negative, but the sweep continued. A search was also conducted by the LAW—initiated ambush party.

The platoon leader ordered continuous illumination to prevent the enemy from policing the battlefield and to inhibit his attempts to move from the area. To round out the support, a USAF flare ship arrived on station to provide illumination until BMNT. The first light sweep confirmed four VC and three NVA dead. Miscellaneous web gear and equipment were recovered. Among the enemy dead were the platoon leader and his second in command.

As expected, everyone took credit for the success. This further magnified the impact of the ambush. The PFs and CAP Marines received justifiable praise from the villagers, and their part in the ambush expanded with every retelling—in both languages. The PRUs were elated and received credit for their intelligence work and contribution in the ambush. The company was lavish in its praise of its allies and commendably played down its own part, though it was well recognized within the unit and the battalion. The NPFs were pleased to be a part of a success and became even more determined in their critical but unspectacular work.

The involvement of all elements in the Trung Kien ambush was complete and the participants gained a mutual respect for each other as well as an operational rapport that was to pay dividends far greater than the actual damage wreaked on the enemy that night. The village officials were equally impressed with the combined effort. As a result, their willingness to cooperate and to influence the villagers to cooperate was immediately forthcoming.

After the excitement of the ambush subsided, the units went back to the difficult task of ferreting out information, exploiting the intelligence produced and conducting the necessary operations. But a pattern of cooperation and common mission-identification had been established with this initial success on the 11th day of Company C's operations in Loc Tu (V). The coordinated use of the skills of all parties to the ambush was the critical factor. And the association of these units with an attainable goal, village security, benefitted Company C throughout its four and one-half month stay in Loc Tu (V).

From the preceding it is evident that the true results of an operation are not always revealed by the statistical summaries.

Epilogue

The detainee (POW), Miss Hein, was turned over to Republic of Vietnam district authorities for further questioning. Apparently, her treatment was

a bit harsh and news of this reached the PRU. The PRU commander then requested the company commander to intervene and explain that she had cooperated with the PRU and US forces and should receive lenient treatment. This information was passed through both US and GVN channels with subdued enthusiasm.

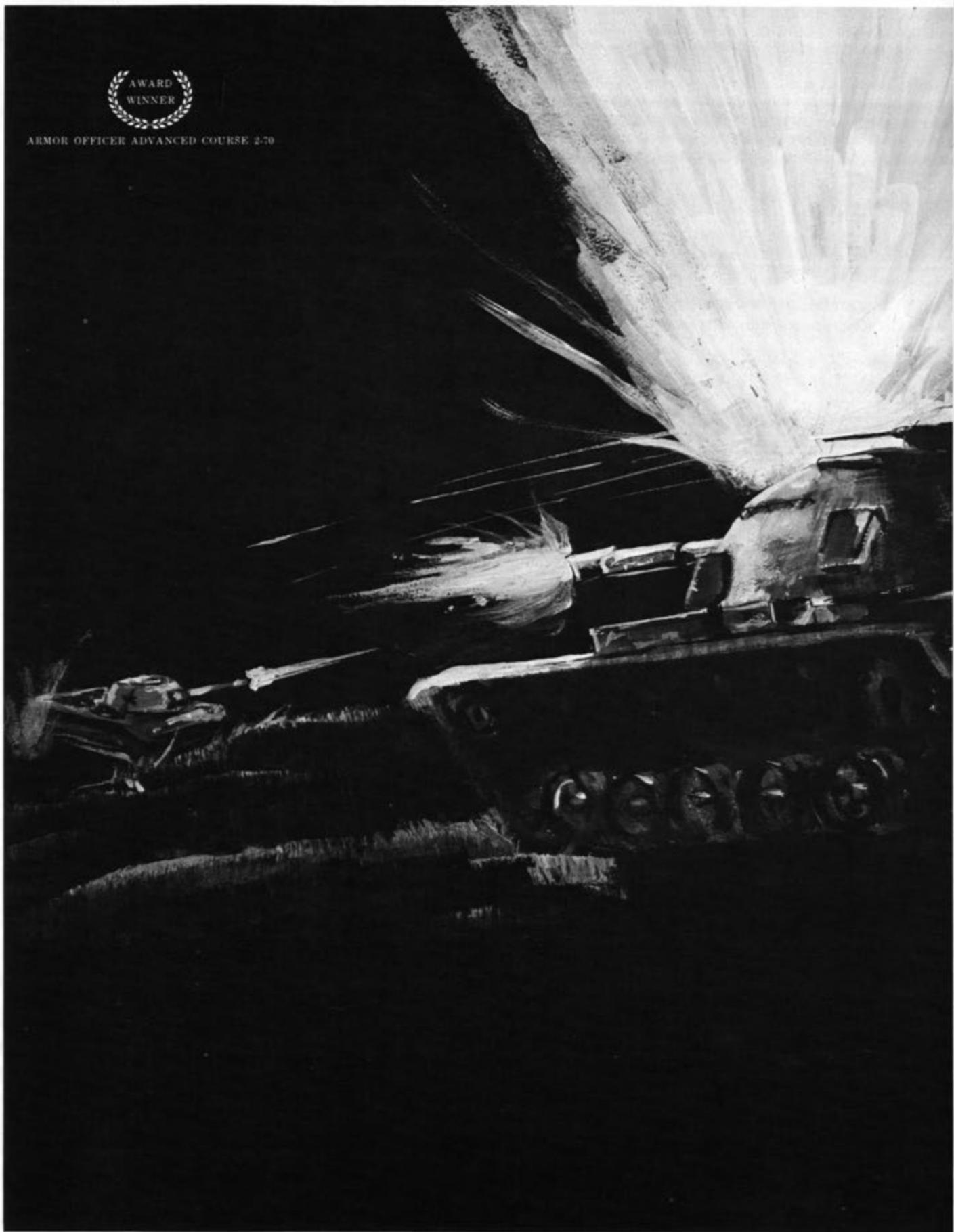
Three days after the ambush, the company commander was startled to find a frightened Miss Hein cowering next to his CP. The PRU and NPF people greeted her as an old comrade-in-arms; the company commander was mortified. Miss Hein then related that she had been released by the district authorities for reasons unknown. She further stated that she had been released by the district authorities and could not return to the hamlet or the village because of the publicity of her part in the ambush; the VC would surely kill her. The PRUs and policemen grimly agreed and again turned to the company commander for assistance for their friend, Miss Hein. She had no money and her only relative was her mother in Da Nang. Thus a chagrined company commander stopped a Vietnamese minibus enroute to Da Nang, bought Miss Hein a *one-way* ticket for 500 piastres and wished her a timid "good-luck" in her new home. Though it was out of his own pocket, the company commander assured himself that 500 piastres to rid the AO of a VC was a bargain at twice the price.



CAPTAIN DAVID A. BRAMLETT, Infantry, was commissioned in 1964 from the United States Military Academy. He has served in Vietnam with the 25th Infantry Division and the 101st Airborne Division (Airmobile) as aide-de-camp, company executive officer, company commander, and brigade staff officer. Between Vietnam tours, Captain Bramlett was assigned as an instructor with the Infantry School Florida Ranger Camp. He is a graduate of Armor Officer Advanced Course 2-70, and is now pursuing graduate studies in English at Columbia University in preparation for an assignment to the US Military Academy.



ARMOR OFFICER ADVANCED COURSE 2-70



TANK VS TANK

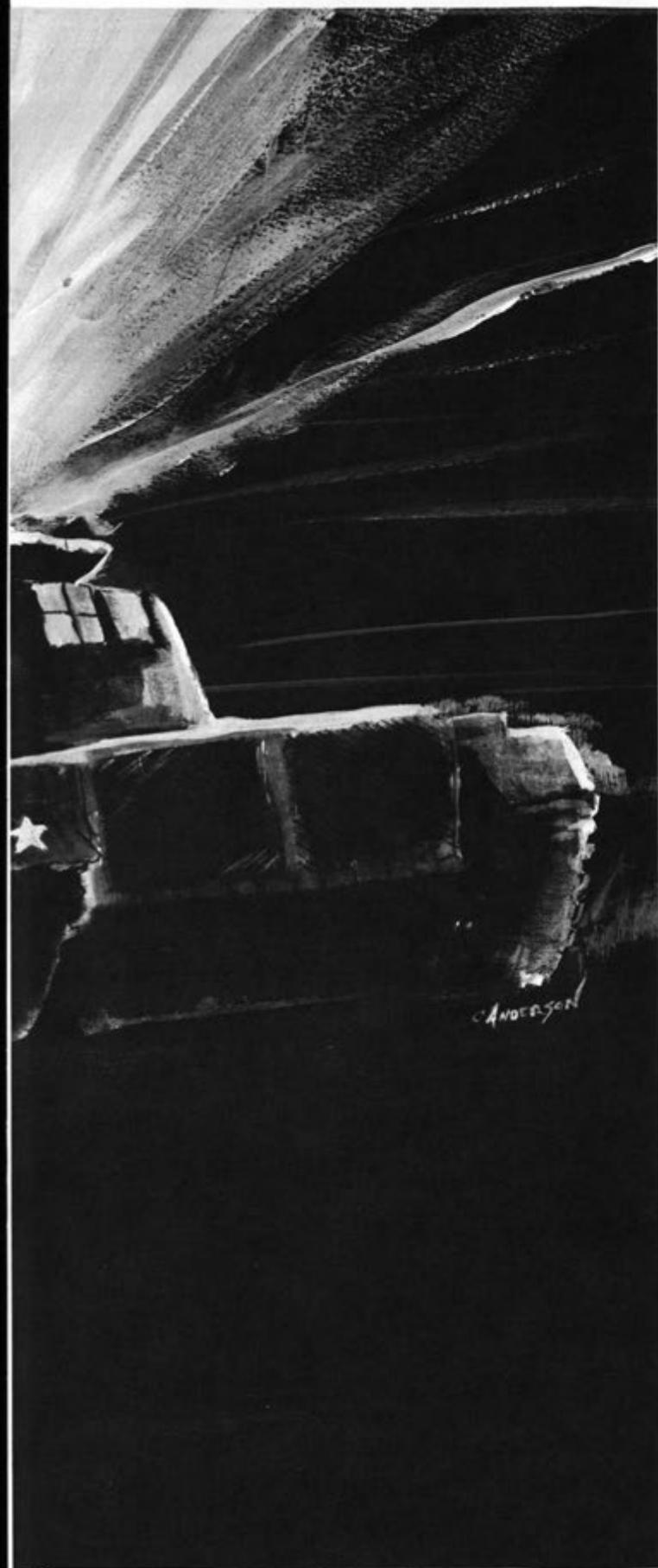
by Captain Gerald R. Cossey

There have been many occasions during the Vietnam Conflict when armor and cavalry units have been called upon to demonstrate the effectiveness of the tank as a fighting vehicle capable of performing practically any mission. Certainly the tank and, even more, the tanker have been given tasks of many varieties, including those for which armor was originally developed and some previously unforeseen. But only once so far has this man-vehicle team functioned in its best role—the destruction of enemy armor.

The date: early evening of 3 March 1969. The place: a far-flung special forces camp near Ben Het, South Vietnam perched in the rugged mountains of the Central Highlands, overlooking entrances from the Ho Chi Minh Trail in the Laos-Cambodia-Vietnam border area. On this night, North Vietnamese tanks and other forces attacked the joint US and Vietnamese defenses dug into the barren hills of the camp. This engagement, although brief, marked the first time since the Korean Conflict, 16 years before, that an American armor unit had decisively engaged enemy tanks.

The North Vietnamese attack, by armor elements of the B-3 Front, came on the heels of a week-long preparation featuring daily Communist shellings of Allied positions in the Dak To—Ben Het area. This was supported indirectly by other enemy attacks throughout South Vietnam which were part of the enemy spring offensive which began in latter February. When this offensive started, American units were ordered into the tri-border area as reinforcements for the local defenders. Included was Company B, 1st Battalion, 69th Armor under the command of Captain John Stovall. Company B, headquartered near the Dak To airstrip and under the direct control of the 2d Brigade, 4th Infantry Division, was given the mission of reinforcing the Ben Het outpost and of securing Highway 512, the only land link between the camp and the main Allied positions at Dak To.

In addition to elements of Company B, Allied



forces at the Special Forces camp included three Civilian Irregular Defense Group companies with their Green Beret advisor team, an American 175mm artillery battery and two 40mm "Dusters." Normally the tankers were deployed as a platoon along the camp's West Hill in partially dug in positions. The remainder of the company occupied strong points and bridge security positions along the 10 kilometer road link or were held as a ready reaction force at Dak To.

The company had arrived in this area of operations on 25 February and had endured the nearly continuous barrages of artillery fire laid down by Communist gunners from positions both in Vietnam and across the nearby Cambodian border. Rarely had the crew members dared to move more than a few feet from their tanks as they were busily occupied either dodging artillery fragments or answering sniper fires and small spoiling attacks with their main gun and machinegun fires.

Until the first of March, the camp had received intensive fires from heavy artillery pieces located in reinforced, dug in positions well inside Cambodia. At times as much as one round every 45 seconds had been rained on the Allied camp for protracted periods. However, the enemy guns were so located that their muzzle glow could be observed from the friendly post thus allowing the Allies to predict the incoming artillery in sufficient time to preclude heavy casualties. In an effort to penetrate the barriers protecting these enemy artillery pieces, the tanks were employed in an indirect fire role, using concrete piercing fuzes. The co-located artillery battery's fire direction center and spotter aircraft assisted with fire adjustment. This met with only limited success since the 90mm ammunition was unable to penetrate the Red defensive positions.

Around 1 March, the enemy artillery fires slackened to the point that incoming rounds were being received at Ben Het only about the time of the daily resupply convoy. Up until then, Company B had sustained about 10 casualties, most of which were minor and were treated on the spot. Several tankers were wounded repeatedly but they continued to return to their stations. By 1 March, only one man had been evacuated through medical channels.

At this time, the first platoon of the tank company held positions on West Hill with four tanks, three of which were emplaced near the crest and were generally facing west overlooking the valley through which Highway 512 wound, as it approached from the Cambodian border. Captain Stovall had come

forward and established a temporary command post in a nearby bunker since his platoon leader had been evacuated to Dak To after suffering multiple fragmentation wounds.

The first and second of March proved to be disconcertingly quiet. The abnormal silence was disturbed only by the mortaring of the resupply convoy and a few interspersed rounds of harassing recoilless rifle and mortar fire.

Around 2200 hours on 2 March, Platoon Sergeant Hugh Havermale reported to Captain Stovall that his men could hear vehicular movement to the west of the camp. Together, the two went forward and scanned the area with a night vision device but were unable to observe anything out of the ordinary, nor were they able to establish even a general location of the reported sounds. However they could hear the unidentified vehicles running their engines for about 20 minutes then shutting down. It seemed that possibly they were warming their engines and performing crew checks of some nature.

On the third of March, enemy activity remained at a low ebb, with only an occasional round of harassing fire being received at the Allied position. During the day, three CIDG reconnaissance patrols were dispatched from the outpost to positions about four kilometers to the north, northeast and southeast. The daily intelligence briefing by the camp commander indicated that an attack by the enemy was imminent and that the Communist forces had an armor capability. Indications were to be transformed into fact a few short hours later.

At 2100 hours that evening, the camp's central hill began receiving recoilless rifle fire from two locations. Between 2130 and 2200 the entire camp came under increasingly heavy mortar and artillery fires. The tankers again began to hear the sounds of engines coupled this time with the distinctive rumblings of tracked vehicles. The men were again unsuccessfully scanning the area with both night vision scopes and infrared searchlights when an enemy vehicle was suddenly illuminated as it detonated some anti-personnel mines located approximately 800 meters from the perimeter. These caused some portion of the vehicle to catch fire. In the light of this small fire, three tanks and an open, tracked cargo/personnel carrier were observed. Immediately, the first platoon crews began taking the enemy vehicles under fire with HEAT and high explosive ammunition. And they began firing final protective fires with other organic weapons. Other tank company people immediately went into action assisting the camp's in-

digeneous forces in manning mortar and recoilless rifle pits or in transporting ammunition and treating wounded defenders.

Shortly thereafter, Captain Stovall received reports of a fourth enemy tank approaching the left flank of the Allied positions near the camp airstrip and a report from one of the CIDG patrols that it was observing an eight to 15 vehicle column moving east toward the camp from the border area. He then called for illumination rounds from the camp mortar squad. The tankers continued their fires, making direct maingun hits on at least two enemy tanks and the carrier, causing them to burst into flame.

In the meantime, Captain Stovall had mounted one of the *M48s*. As he stepped behind the turret onto the back deck, a large fireball followed immediately by the concussion from an enemy tank round exploding on the glacis flung him clear of the back deck. This also blew the tank commander out of the cupola and 10 feet to the rear of the tank. The enemy round inflicted heavy shrapnel wounds on both Captain Stovall and the tank commander. It also killed the loader and the driver who had been manning an externally mounted machinegun. It became apparent that the tank had received a direct hit from one of the Red vehicles after its position was compromised by a descending flare. Nevertheless, the *M48* again joined in the battle as other crews were scrambled to fill its fighting positions.

The exchange of fires continued for a short while. Gradually, the enemy fire began to diminish as it became clear that the attacking enemy vehicles were withdrawing and that a final assault was not going to take place. The tankers scored several more HE hits on one of the enemy hulls which reduced it to a pile of rubble. Reinforcements in the form of the tank company's second platoon arrived. Platoon leader Lieutenant Ed Nickels took charge of the company. An *AC47* "Spooky" gunship arrived on station and began to harass the enemy's withdrawal. The rest of the evening remained quiet with only an occasional round fired by some rifleman, and the normal artillery fires.

The next morning, an investigation of the battlefield revealed two *PT76* hulls and a burned-out carrier which had been left behind by the attacking forces. Further combat patrolling in the area closer to the border turned up an abandoned enemy vehicle assembly area but gave no further information on the enemy unit. Total casualties within Company B were two killed and two wounded. The *M48* tank which had received the direct hit, had no damage

other than a broken machinegun charging handle.

There has yet to be put forth a logical explanation of why the NVA mounted this particular attack on the Ben Het camp. The attack was brief and lacked assault infantry. Indeed, there was not even an attempt to stop the reinforcing units coming from Dak To. There was no enemy gain other than a possible diversion for some other enemy activity. It is quite possible that the enemy was unaware of the presence of the US tanks at the camp since these had been there a comparatively short time and were fairly well concealed in their dug in positions. It seems doubtful that the enemy would have committed his scarce armor resources had he known of the obviously superior armor capability of the defenders.

Nevertheless, the battle of 3 and 4 March 1969 placed a new page in the history of the US forces in the Vietnam Conflict and in the annals of armored warfare. Company B, previously a winner of the Presidential Unit Citation in Vietnam, added a new and bigger tally to its excellent war record and continued its role as one of the select group of Armor fighters in the II Corps area of Vietnam.

Certainly the previous episode is in no way reminiscent of the armor battles of past conflicts. But it pointedly illustrated again that the tank and its crewmen provide the best antitank defense.



CAPTAIN GERALD R. COSSEY, Armor, was commissioned in June 1965 from Western Kentucky University. Prior to attending the Armor Officer Basic and the Airborne Courses, he served as a tank platoon leader with the 4th Battalion, 37th Armor and transportation section leader with the 5th Battalion, 33d Armor at Fort Knox. In December 1965, he was assigned to the 3d Battalion, 68th Armor, 8th Infantry Division in Mannheim, Germany where he served as a tank platoon leader, battalion S4, and company commander. In 1968, he was reassigned to Vietnam, attending the Ranger Course enroute, and served with the 4th Infantry Division staff as an assistant G4, Chief of Supply. In early 1969, he was reassigned to the 1st Battalion, 69th Armor where he served as adjutant, company commander and S3. In July 1969, he returned to CONUS to attend Armor Officer Advanced Course 2-70. He is now on ROTC duty at Alfred University.

Cavalry's Last Indian Fight



ARMOR OFFICER ADVANCED COURSE 2-70

by Major Albert G. Scooler

One might conclude, upon reading the title of this story, that it is about a famous, or perhaps not so famous, battle that occurred during the latter part of the last century. Well, it is not. It does not even involve one of the better known Indian tribes, as will be seen later.

The fight in this story occurred in the early years of the Twentieth Century. The exact date was 9 January 1918. The First World War overshadowed any other actions that took place at that time. Consequently, this fight—the last recorded Cavalry-Indian fight—was relegated to an obscure niche in the history of Cavalry. It was little known other than to the participants.

The Headquarters of the Southern Department of the United States, at Fort Sam Houston, Texas, sent this terse message regarding the fight to the War Department:

"Report No. 251, January 19, 1918:

Reported from Douglas, Arizona, January 10, 1918, that a detachment of American Cavalry, sent into Bear Valley, 25 miles west of Nogales to observe trails, clashed with a band of Yaqui Indians, captured 10, one of whom died in a hospital at Nogales of wounds, according to a telegram from the commander at Nogales."¹

In contrast to the message above, the 12 January 1918 edition of the *Oasis*, a newspaper published in Nogales, Arizona, contained the following story:

"On Wednesday afternoon, a detachment of the Border Patrol, consisting of troopers from the 10th Cavalry and sol-

diers from the 35th Infantry, at a point three miles inside the international line, met a large, well-mounted and well-armed band of Yaqui (pronounced YAH-KEE) Indians, who had crossed from Sonora (State of Sonora, Mexico) to secure a quantity of ammunition which had been cached at a place where they were caught. The ammunition had been put in small sacks, easily handled, and it was a matter of moments for each Indian to dismount, take a sack, fasten it to the saddle, remount and ride away.

"As they were starting, the Yaquis were intercepted by the patrol, and the Indians opened fire at once, missing their target, however. The fire was returned by the soldiers, one Yaqui killed, and another fatally wounded, he died after reaching the base hospital at Nogales, where he was taken, and several others were wounded slightly.

"Some of the Indians succeeded in making their escape, bending low on the necks of their fleeing horses. The bulk of the bunch surrendered and were brought into camp. The sixteen that were captured are now in the guardhouse.

"The important capture reflects great credit upon the soldiers of the patrol. The work of patrolling the border, as conducted by Colonel J. C. Frier of the 35th Infantry, in command of this military district, is efficient, and actively (sic) conducted.



Yaqui Indians captured by Troop E, 10th Cavalry, 9 January 1918. Captain Ryder at right.

"The District Commander is determined that the law shall be enforced, and his men are active in carrying out his intentions."²

This somewhat exaggerated version of the fight differs sharply from the official report, and from the actual story itself. The biggest discrepancy is in the number of casualties and prisoners taken. Another difference is the report of the Indians being mounted. They were actually on foot.

Before recounting the actual story, however, it is appropriate to first examine the backgrounds of both the 10th Cavalry and the Yaqui Indians, to see how these two forces happened to meet in Bear Valley on 9 January 1918.

The 10th United States Cavalry (Negro) was organized after the Civil War as an enlisted Negro regiment, one of two such Cavalry units authorized by Congress at that time. It campaigned against the Sioux, Cheyenne, Commanche, Kiowa and Apache Indian tribes. Its prowess as an Indian-fighting Regiment was exemplified by the name, "Buffalo Soldiers," respectfully bestowed on the Negro troopers by the Indians. The Indians saw a resemblance in the black, tightly curled hair and powerful ferocity of the Negro to the attributes of their sacred buffalo. Subsequently, the regiment acknowledged the tribute by adopting the buffalo as their unit badge.

The 10th had occupied garrisons at Fort Riley, Kansas; Fort Custer, Montana; Fort Sill, Oklahoma; Fort Concho, Texas; and Fort Apache, Arizona; as well as other, less prominent, locations.

It fought in Cuba, and in the Phillipines, then settled at Fort Huachuca, Arizona, with the mission

of protecting and patrolling the US-Mexican border. Its sector extended roughly 300 miles from Yuma to Naco, Arizona. The area was covered by deploying squadrons and troops at camps all along the border area.

It was from Fort Huachuca, that the 10th Cavalry marched to join Brigadier General John J. Pershing and his Punitive Expedition into Mexico. The 10th was one of the principals in the Battle of Carrizal on 21 June 1916. Upon its return from Mexico, the regiment once again assumed the duties of patrolling the border. Its mission and location did not change until October 1931.

Returning to the last Indian fight, the 10th Cavalry's opponent on that January day in 1918, was a band of approximately 30 Yaqui Indians who had crossed the border from Mexico.

The Yaqui, a tribe of Northern Mexico, are of the same stock as the Apache and the Navajo. They had always acted aggressively against the foreigners in their land. They had fought the Conquistadores and successions of Spanish and Mexicans who had tried to subjugate them. Their numbers eventually dwindled, because of the continued fighting, from an estimated 30,000 to less than half that number by the early 1800s.

The beginning of the Twentieth Century saw much unrest in the Indian tribes of Mexico, due in part, to the continuous power struggles within the fledgling Mexican Republic. The various governments in power throughout that period each established its own policies regarding the Indians. The Yaqui, among others, found themselves in a most



Nogales cavalry camp, 1918.

difficult situation, not knowing how to react to the changing government policies. This constant state of flux caused many of the younger, more warlike, Yaqui to join forces with renegade bandit groups, or to fight the Mexicans on their own. Some older, wiser, groups crossed the border, and settled in the farming areas of Arizona near Tucson and Phoenix.

During the period from 1916 to 1929, the Yaqui-Mexican conflict blossomed into full-scale war, and led to the eventual defeat of the Yaqui in 1929. The Yaqui, during this time, raided and robbed mines, ranches, small settlements and the railroads. The main source of weapons, ammunition, and money to support their activities, were the Yaqui settlements in the United States. Bands frequently crossed the border to secure needed supplies with which to continue their efforts. There is no documented evidence of any Yaqui raids against Americans on the US side of the border. However, there were several instances when ranchers and miners met isolated groups, or saw evidence of their passing through the area, such as dead cattle and abandoned campsites.

It was because of these clandestine activities of the Yaqui, as well as the continued smuggling, gun-running, and raids along the border by Mexican bandit groups, that the U.S. had initiated the border patrols. By request of the Mexican government, special emphasis had been placed on curtailing the Yaqui activities. This action was intended to alleviate, in part, tensions between the United States and Mexico, which had been increased by suspicions that neutral Mexico was harboring German spies. As a consequence, the 10th Cavalry had been ordered to redouble its patrolling efforts.

The 10th had a squadron camp at Nogales. It was co-located with the 35th Infantry at Camp Little, "but far enough away so the horse smell and flies would not contaminate the Infantry barracks."³ Detachments from the squadron occupied camps at

Arivaca and Oro Blanco, both located west of Nogales. A troop outpost was also located at a natural border crossing in Bear Valley.

It was to this outpost that Troop E, 10th Cavalry, commanded by Captain Frederick H. L. Ryder, moved in the early days of January 1918. Its mission was to patrol that part of the border intensively. Captain Ryder took his troop along the Oro Blanco Trail, which generally paralleled the border, and sent his trains around by Arivaca, then southward to join the troop at the outpost. The terrain in the area was not heavily vegetated, there being mostly mesquite and scrub oak. There were many small canyons and draws that afforded cover and some concealment to anyone moving in the area. There were no obstacles to dismounted or horse-mounted movement. The ridges afforded excellent observation. In general, the area was conducive to patrolling. In addition to establishing a stationary observation post in a location which covered the area, and more importantly was in visual contact with the main camp, Captain Ryder also sent out daily mounted patrols looking for smugglers, or for signs that they had been in the area.

On 8 January, Phil Clark, a Ruby cattleman and storekeeper, stopped by the camp and reported that his neighbor had found a freshly killed cow, apparently slaughtered by the Yaqui for the meat and leather. It should be noted here that the Yaqui used the cowhide to fashion sandals, much like the Viet Cong do, using old tire carcasses. Based on this information, Captain Ryder decided to reinforce his OP. The next day he sent First Lieutenant William Scott along with the OP detail, with orders to maintain continuous surveillance of the area.

About mid-afternoon on the 9th, the OP detail signalled "Attention" and, after acknowledgment from the camp sentry, signalled "Enemy in sight," pointing towards a low ridge a quarter of a mile

had turned out to be the chief's grandson. The old man died in the boy's arms before they reached town.

The troopers had captured a dozen or more rifles, among them some German Mausers and some 30-30 Winchesters. They had also captured quantities of ammunition, powder, lead and some bullet molds.

The troop was relieved by Troop H the next day, and Captain Ryder took his troop and his prisoners back to Nogales. Within a week, the troop was ordered to the cavalry camp at Arivaca. It had to take the prisoners with it because the Infantry commander at Nogales, "did not want to be bothered with guarding them."⁵

Routine soldier life at Arivaca agreed with the Yaqui. They received three meals a day and a cot to sleep in. They were so pleased with this, that they all volunteered to enlist in the Army. To prove their worth, they worked hard at all the chores given them. One of the recurring details given them was camp police. It was a task in which they excelled. The entire camp was immaculate, especially the stable area. The Indians, after cleaning up after the horses, would stand around, scoopshovels in hand and wait. Whenever a horse's tail went up, they were there, at the spot, so quickly that the droppings did not touch the ground. This procedure, among other things, aided significantly in curtailing the ever-present flies.

The troopers, conversing with the Yaqui in broken Spanish, subsequently learned the reason the Indians had opened fire. They had believed the troopers, with their dark skins, to be Mexican soldiers, operating on the US side of the border. They also told the troopers that they had been in the United States for three months and had been travelling during daylight hours in the area of the fight having been under the impression that there were no troops there.

The Department of Justice soon relieved Captain Ryder of his charges, and took them to Tucson for legal action. After their indictment, and prior to their sentencing, the Mexican Consul, on behalf of the Military Governor of Sonora, attempted to extradite the Indians for prosecution by the Mexican Government.

US District Judge William H. Sawtelle, sensing the group would be executed if turned over to the Mexican authorities, refused the request. On 16 February 1918, he dismissed the charges against the Yaqui boy. On 8 April, he sentenced the remaining Indians to 30 days in jail for "wrongfully, unlawfully, and feloniously exporting to Mexico certain arms and

ammunition, to wit: 300 rifle cartridges and about nine rifles, without first procuring an export permit license issued by the War Trade Board of the United States."⁶ The sentence thus precluded any possibility of deportation for the offense.

The last Cavalry-Indian fight may not have been of great historical or military significance. However, it was characterized by the principles of Cavalry—thorough reconaissance, quick reaction and aggressiveness. And, it was extremely memorable to the participants. As Colonel Ryder stated in the 1962 interview: "Just think, that Indian fight happened over forty-four years ago. . . . Though time has perhaps dimmed some of the details, the fact that this was my first experience under fire—and it was a hot one, even though they were poor marksman—most of the action was indelibly imprinted on my mind."⁷

FOOTNOTES

1. Wharfield, H.B., *10th Cavalry & Border Fights* (Library of Congress Catalogue Card No. 65-25731), p. 1.
2. *Oasis*, Nogales, Arizona, 19 January 1919.
3. Wharfield, H.B., *op. cit.*, p. 5.
4. *Ibid.*, p. 8.
5. *Ibid.*, p. 11.
6. *Ibid.*, p. 12.
7. *Ibid.*, p. 8.

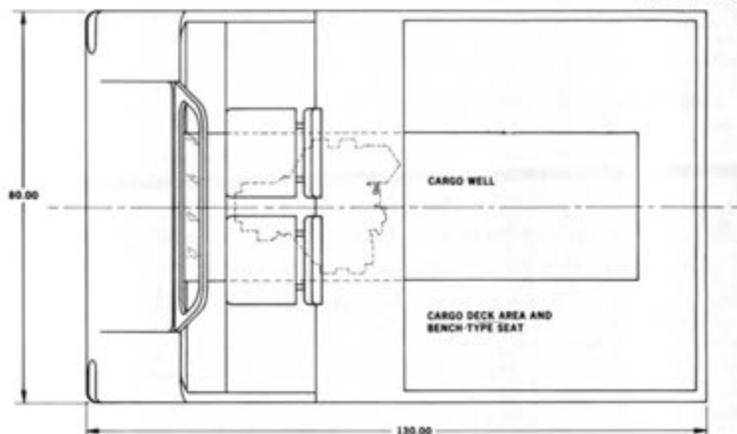
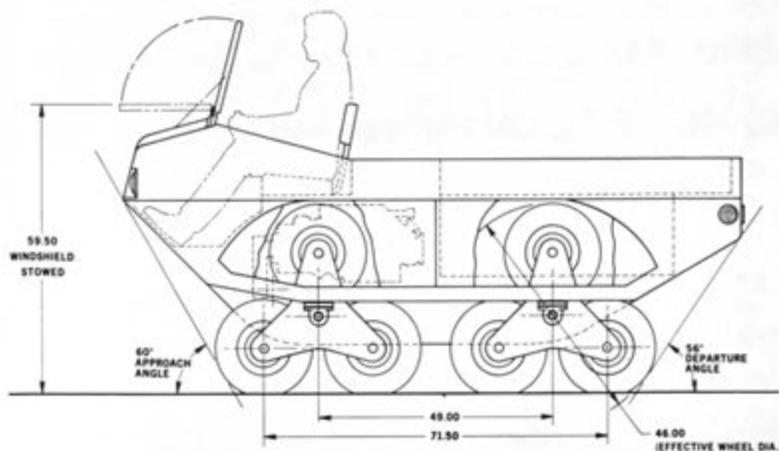
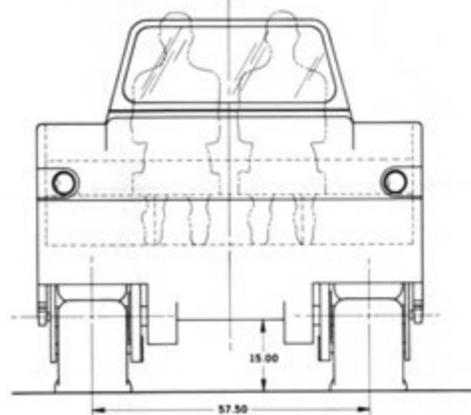
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MAJOR ALBERT G. SCOOLER, Infantry, was commissioned from the Infantry Officer Candidate School in 1962. After completing the Basic Airborne Course, he was assigned to the 1st Battalion, 4th Infantry, 3d Infantry Division in Germany, where he served as rifle platoon leader, mortar and Davy Crockett platoon leader, battalion staff officer and company commander. In 1966 he was reassigned to advisor duty in Vietnam. The following year he joined the Command and Staff Department of the Armor School where he was an instructor for 23 months prior to attending Armor Officer Advanced Course 2-70. He is now attending the University of Tampa prior to another assignment in Vietnam.

the TERRASTAR all-terrain vehicle



by Robert W. Forsyth and John P. Forsyth

To gain and maintain mobility superiority over enemy units, the tactical commander must achieve a high degree of flexibility and responsiveness in his logistical system. Only reasonably complete freedom of movement, both in the air and on the ground, can assure this. Control of the air space over the battle zone and the availability of aircraft, particularly helicopters, permit the former. On the ground, freedom of movement, among other things, implies possession of vehicles able to perform reliably and satisfactorily over the entire operating spectrum — roads, highways, hard, broken ground, swamps, deep mud, marshland, and across streams, canals and rivers. And, to complete the picture, such vehicles must be fully compatible with aircraft; that is, they must be readily transported in, and deployed from, helicopters and fixed-wing aircraft so the full potential of the modern airmobile concept can ultimately be realized.

Over the past few years, operational experiences in Southeast Asia have highlighted and emphasized the need for mobility in marginal terrain. But this need has been critical in all the conflicts in which the

United States and its allies have been involved in the past three decades. Consider the difficulties faced by Allied forces in moving through the rain forests and jungles of New Guinea in World War II, or the problems Slim's British 14th Army encountered in pursuing the Japanese through the lowlands of Burma and across the Irrawaddy River. Or, to relate the discussion to more civilized areas, recall how Montgomery was dragged down by the intricate maze of waterways in Belgium and Holland as he sought to turn the north flank of Germany's *Westwall* during the winter of 1944-1945, and, after breaking through to the Rhineland, the impossible conditions he found there. To illustrate: "Continued rains and flooding put most of the battlefield under water; amphibious vehicles were needed to resupply troops and evacuate wounded; attacks struggled through waist-high water and deep mud."

Thus, Southeast Asia has really only focused our attention again on a long-standing, continuing problem that will remain with us wherever United States' forces may be called upon to operate in the future.

With this background, it is obvious that the need

PHOTOS COURTESY OF THE AUTHORS

for vehicles with good mobility in marginal terrain has been, and can be encountered at any time, almost anywhere in the world, given particular combinations of seasonal weather, topography, and climate. It is also obvious that such vehicles, now and in the future, must be air-transportable and fully compatible with the new airmobile concept of combat deployment and maneuver. Finally, to be broadly useful and economically feasible they must be able to operate efficiently on roads and highways, for, regardless of original intent, experience shows that it is in this "conventional" environment that military vehicles are mainly used.

In most contemporary unorthodox vehicle concepts intended to meet the need for marginal terrain mobility, obtaining low ground pressures and high flotation have been the primary concerns. In addition to the obvious cost penalties inherent in such designs, they are not readily adapted to air transport because of a seemingly characteristic large size, and they almost completely lack an acceptable level of roadability. In the more orthodox, traditional approach to providing for marginal terrain mobility, the use of somewhat conventional track systems is a nearly universal practice. Problems of roadability are also encountered here, and a life cycle costs are typically 10 times greater, on a mileage basis, than those experienced with conventional wheeled vehicles.

The requirement, then, for vehicles with the capability of performing well in marginal terrain and over the entire operating spectrum remains unsatisfied. It was with the idea of meeting this requirement that the *TerraStar* concept was developed.

TERRASTAR ¼-TON ALL-TERRAIN VEHICLE SPECIFICATIONS

Weights:

Curb Weight:	2500 lbs
Payload:	1500 lbs
Normal GVW:	4000 lbs

Dimensions:

Length:	130.00 in
Width:	80.00 in
Height, Windshield Stowed: ..	59.50 in
Tread:	57.50 in
Wheelbase:	71.50 in
Freeboard @ GVW:	14.00 in

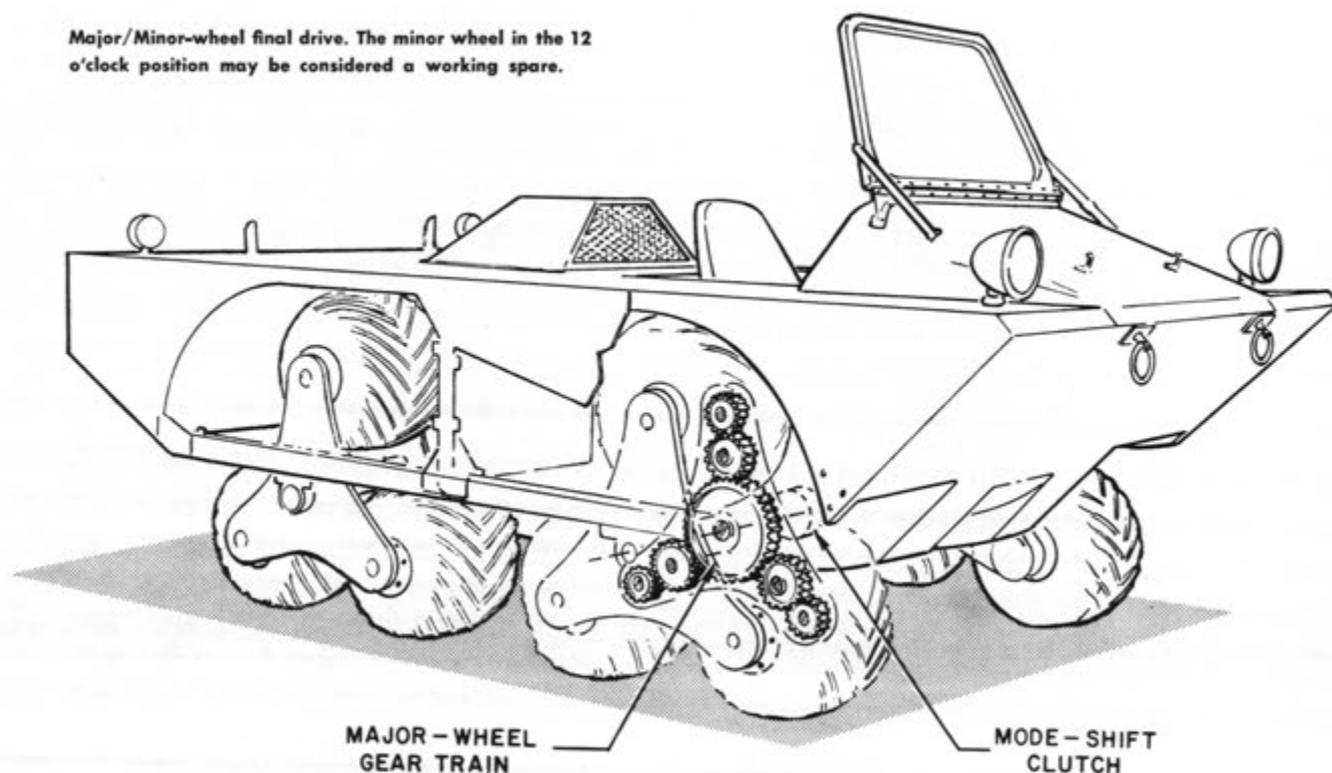
Engine:

Horsepower:	50-60 SAE
Torque:	(ft-lb) 75-85 ft lbs

Performance:

Maximum Speed:	40 mph
Water Speed:	5+ mph
Maximum Grade:	60 %
Side Slope:	40 %
Steering:	Pivot

Major/Minor-wheel final drive. The minor wheel in the 12 o'clock position may be considered a working spare.



In this system, conventional wheels and tires are replaced by "major-wheel" assemblies. These assemblies each consist of "minor wheels" mounted on secondary axles located radially about, and at some distance from, the major-wheel axle. The minor wheels carry wide-base, low-profile, low-pressure tires. A gear-train, housed in the hub, and spokes on

one side of the major-wheel assembly, transmits power to the minor wheels from a drive shaft carried through the tubular major-wheel axle. A clutch is mounted on the drive shaft so it may be engaged, or clutched, to the major-wheel axle, driving it directly and causing the entire major-wheel assembly to rotate.

On highways, roads or natural hard surfaces the minor wheels are driven and operation is similar to a conventional, all-wheel drive vehicle with skid-steering. In marginal terrain, where soft soils could cause immobilization, the major-wheel drive is engaged, causing the assemblies to rotate, producing something like a stepping action, reducing motion resistance and increasing thrust.

Because, in this concept, mobility in marginal terrain (soft soils) is not primarily dependent on low ground pressure and high flotation, proportionately less of the platform area is taken up with the running gear than would normally be the case in an off-road vehicle. The ability to keep overall dimensions within reasonable limits, and to meet air-transportability requirements, is also aided by the fact that optimum functioning of the locomotion system can be achieved without resort to an abnormal or exaggerated geometry.

There are other, less obvious basic advantages or characteristics of the *TerraStar* resulting directly from use of the unorthodox major/minor wheel. Two of



Completing a lake crossing with the Army's TerraStar.



Latest application of the TerraStar wheel concept is this 105mm auxiliary-propelled, air-mobile howitzer developed for the US Army Weapons Command.



these contribute greatly to its potential value as a military vehicle. First, there is the inherent simplicity of the concept. This is evidenced by the absence of conventional suspension components, half-shafts with slip joints, universal joints, transfer cases, and the elimination of differentials. It is also demonstrated by the uncomplicated, straight-forward character of the driver's controls — simple steering levers like those of a tracked vehicle, the usual brake, clutch and accelerator, and conventional instruments. The only unique feature is the mode-shift control enabling selection of the minor-wheel or major-wheel mode of operation. Control of the vehicle is accomplished by identical driver actions on both land and water.

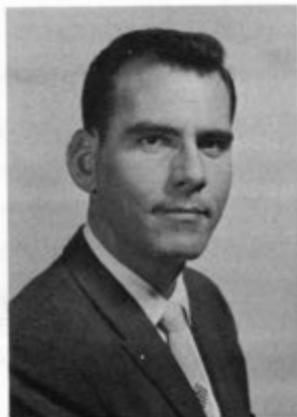
Second, although the *TerraStar* is a wheeled vehicle (a very unconventional one it should be noted) its vulnerability, with respect to tires, is exceptionally low. Each major-wheel assembly carries a working spare. Should a tire be damaged, the wheel assembly is simply rotated to get another minor wheel on the ground, so the vehicle's roadability in the minor-wheel mode is not impaired. It has also been deter-

mined that the loss of a tire on one or more of the wheel assemblies has little effect on the vehicle's performance in soft soils or in water.

Tests of the Army's first *TerraStar* research vehicle have demonstrated the following performance characteristics:

- Soft soil (highly cohesive, stiff clay) Vehicle Cone Index — VCI_1 is 5 at GVW.
- Wet clay slopes of 42% have been negotiated.
- Sustained convoy road speeds have been demonstrated.
- Cross-country speeds of 15-20 mph have been demonstrated.
- Vertical obstacles have been negotiated with ease.
- Water speeds in excess of four mph have been attained at GVW.
- Water entry speeds of over 15 mph have been demonstrated.
- Water exits have been made over nearly vertical banks.

With the *TerraStar*, mobility in severe soft-soil conditions is achieved with no sacrifice in performance on improved surfaces. Production versions of a $\frac{3}{4}$ -ton *TerraStar* vehicle, if made organic to specialized airmobile units, could well perform the logistic and transport missions now carried out with the *M274* Mechanical Mule and the *M151* $\frac{1}{4}$ -ton truck. And its marginal terrain capabilities could measurably increase the effectiveness of such tactical units by providing the option of using and operating from landing zones now considered impractical because of poor terrain conditions. Additionally, since the concept is basically a new method of vehicle locomotion rather than a specific vehicle system, a wide range of other applications are possible.



JOHN P. and ROBERT W. FORSYTH are graduates of the New York University of Engineering. They are jointly responsible for the development of new concepts and designs for military vehicles at Lockheed Aircraft Service Company. In addition to being co-inventors of the *TerraStar* vehicle system, they are responsible for a number of other developments now being applied to military combat and logistical support vehicles. The Forsyth brothers have authored six previous articles for *ARMOR* since 1965, as well as having been published in many other leading military and engineering journals. In August 1962, they won first place in the US Armor Association's Main Battle Tank Design Competition.





SHORT, OVER, LOST or...TARGET

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

WHAT'S HAPPENED TO THE MECHANIZED INFANTRY?

by Lieutenant Colonel John P. Prillaman

Armor and its members have a vested interest in the present and the future of mechanized infantry. While we may still speak of armored divisions and mechanized divisions, a look at the current divisions shows that the major difference between these two divisions is often the name.

Within these divisions, we should not train tank battalions and mechanized infantry battalions. We should train combined arms battalions. This is done by habitually cross-attaching units. A tank company or battalion commander may well find himself commanding more infantry than tanks after he has been task organized for a specific situation. Under these circumstances, and within the combined arms concept, the members of one type battalion have a vital interest in the training and proficiency of the other type battalion.

The state of proficiency of mechanized infantry is a timely subject now in light of the developing situation. The US Army is beginning another period of major readjustment and belt tightening after the build-up and crisis in Southeast Asia. The worldwide distribution and composition of forces is being subjected to examination in the light of a reawakened emphasis upon the conventional European environment. Examination of our capability for conventional operations is certainly in order at this time.

Future conventional war can be expected to be characterized by a predominance of mounted combat, utilizing the three maneuver elements with which we are most concerned. These are tank forces, cavalry forces of both the armored and air varieties, and mechanized (armored) infantry forces. These forces will now be examined from the standpoint of Vietnam's effect upon the personnel, doctrine, and equipment of the force.

Certainly, there have been many adaptations of, and changes in, *techniques* by each of these forces which were necessitated by the specific situation in Vietnam. But, in general, our tank and armored cavalry *doctrine* and organization have changed little as a result of Vietnam. The surprising fact is not that changes have occurred, but rather, how few changes have been required. Our tank and armored cavalry doctrine, equipment and personnel authorizations were, and are now, basically sound.

We have seen successful employment of air cavalry which far exceeded our expectations. Now, the task with respect to air cavalry is to adapt the doctrine for this new capability to meet the requirements of the conventional environment of Europe.

This then brings us to mechanized infantry as a component of mounted combat. It is here that we encounter the most perplexing aspect of our examination. The other components have been strengthened or new vistas have been opened as a result of Vietnam, but this has not held true for mechanized infantry. Mechanized infantry has suffered from a lack of emphasis. We may well ask "What's happened to the mechanized infantry?" The requirement for straight-leg infantry in Vietnam and the increased use of airmobile operations there have contributed to mechanized infantry's present state.

Infantry officers reaching the field grades today are oriented and trained for the airmobile assault or for dismounted combat. They may have had some exposure to mechanized infantry but, in many cases, it has been insufficient to provide the requisite base of trained, knowledgeable officers who can lead a mechanized unit now.

While no statistics are cited here to support the contention that mechanized infantry suffers from a lack of qualified leaders, observation of the mechanized infantry battalions in training today confirms the contention. This lack of training and experience applies throughout the officer and NCO ranks. Furthermore, such training as is being accomplished

is being done largely within mechanized units rather than in the schools.

In this period of the Infantry's necessary preoccupation with Vietnam, the Armor officer has partially assumed the role of the mechanized infantry leader. By virtue of his training, which is devoted to the doctrine of combined arms and to the maintenance and management of heavy equipment, the Armor officer has been better prepared for the mechanized infantry role than has his Infantry counterpart. The Armor officer has filled many of the vacant slots within mechanized infantry units. With respect to personnel, Armor today has a greater capability for employing and leading mechanized infantry than does Infantry. However, personnel and the qualifications of personnel are constantly changing, while doctrine, the second aspect of our examination, changes much more slowly.

Here we are examining primarily the tactical doctrine of combined arms. In that regard, there has been no technological development to date which has reduced the requirement for mechanized infantry to provide close-in protection for the tank. Tanks continue to require infantry and, contrary to the belief of some, infantry requires tanks. The goal for years has been to provide infantry, any type of infantry, with an antitank weapon or weapons which would eliminate the requirement for tanks. This goal has not been met to date. And until it is met, there will be a requirement for tanks with the mechanized infantry to provide antitank protection. The number of tanks employed in this manner will be smaller in some areas than in others depending on the situation. Moreover, the number of tanks required for this role may be reduced with the introduction of improved infantry antitank weapons. But, for so long as the goal of an ultimate infantry antitank weapon is not reached, our current combined arms doctrine remains valid. And, the combined arms forces will consist of tank and infantry maneuver elements.

Vietnam experience has not changed the role of mechanized infantry within the combined arms force nor has it materially changed doctrine for employment. However, because of the nature of the enemy forces, mechanized infantry can be employed in Vietnam without tanks, and it has been employed predominantly in that fashion in that environment. However, this is not a valid method of employment in the European environment where the tank threat is great. Specific techniques and procedures used in Vietnam may or may not be carried from Vietnam

to Europe. The techniques of when to dismount, how far the infantry should be from its carrier, use of the caliber 50 machinegun, where members of the squad ride, and other such things are functions of the situation. Techniques and procedures are in a constant state of change to adjust to varying environmental situations. Nonetheless, the basic doctrine of mechanized infantry employment has largely been unchanged by Vietnam.

The final factor for examination is equipment, and specifically, the equipment which gives mechanized infantry its mobility. An essential characteristic of infantry is its ability to fight regardless of the means of transportation provided. Whether the infantry force is moved in helicopters, boats, or APCs, performance of the basic infantry mission requires that, at some point, it fights on foot. This holds true for mechanized infantry employed as part of the combined arms force, as well as for airborne, airmobile or straightleg infantry.

Throughout the history of the development of the armored personnel carrier from the halftrack to the *M113A1* the goal has been to develop a better squad carrier, permitting the infantry to remain mounted longer. Now, with the projected development of a mechanized infantry combat vehicle (MICV), an additional goal is being emphasized — firepower. In mounted combat this characteristic exists by virtue of the vehicle's main armament and the firing ports to be used by the squad members. Specific identification of the main armament or the vehicle prototype is immaterial to our examination. It is enough to assume that the vehicle will have a swim capability, will carry a rifle squad of some size between nine and 12 men, will mount a rapid fire weapon system of 20-30mm size, and will have firing ports and vision blocks for the squad.

How does such a vehicle change the employment of mechanized infantry within the combined arms force? The answer is — really not at all. The squad with the MICV has a greater ability to remain mounted longer since it can deliver a higher volume of more accurate close-in suppressive fire. One axiom of mechanized infantry has been to remain mounted as long as possible, and this axiom is still sound. With the MICV, the infantry can remain mounted longer. But, even with the MICV, we will still look to mechanized infantry to fight dismounted, to seize and hold terrain, to provide close-in protection to the tanks of the force, to precede and clear the way for tanks where the situation requires and to accomplish the many tasks

that only a dismounted force can accomplish. The MICV will, therefore, be primarily a squad carrier, although the vision blocks and firing ports will permit better orientation of the squad as it moves in its carrier, better on the move firing ability, and better reaction when it dismounts.

Since, primarily, the MICV must be a squad carrier, mounting a rapid fire cannon on the carrier poses some thorny questions. How can an adequate ammunition supply be carried on the MICV and still leave space for a squad with all its gear? With ammunition stowage limitations, how often and by what method must resupply be accomplished? How many squad members must be eliminated to provide an adequate ammunition supply? If the squad must be reduced to any degree, why not use a tank instead? The proposed weapon is larger and has more punch than the current caliber 50 machine-gun on the APC. If we begin assuming capabilities or missions for the vehicle beyond those of the current APC, are we approaching a tank-like role?

A tank-like role for the MICV might be desirable where the enemy had no tanks. But it might be disastrous in a European war. The result of all our design progress might look uncomfortably like the M5 tank of World War II with its 37mm gun, although the MICV could shoot faster.

Is the MICV actually being designed primarily as a squad carrier or to meet another, as yet unspecified, role? With a rapid fire cannon on the vehicle there are bonus capabilities which might be utilized in unusual circumstances. For example, it is possible that the MICV could engage in MICV versus MICV combat in a surprise meeting engagement in a movement to contact, in exploitation or in pursuit. However, to imply that these bonus capabilities represent a daily required capability seems erroneous. If the MICV is to be so much more than a squad carrier, a re-examination of Infantry proponenty might be in order.

There are other changes in mechanized infantry equipment which are foreseen for the future. These changes would center around an improved antitank capability and would include *TOW*, *DRAGON*, and *LAW*. However, these appear to represent improvements rather than basic changes requiring modifications to the role or tactical doctrine of mechanized infantry. Changes in organization will naturally flow from major changes in equipment, and organizational changes could result solely from budgetary considerations. However, regardless of possible future equipment changes, mechanized infantry is

emerging from Vietnam basically unchanged and still mounted in the *M113*.

What has happened to mechanized infantry as a result of Vietnam, is almost solely in terms of personnel. The necessary emphasis upon training for Vietnam has reduced the pool of trained mechanized infantry officers, NCOs, and other enlisted men. In assessing our ability to fight a conventional war, it would be easy for the military planner to overlook the personnel deficiency and to concentrate upon the upgrading of equipment. What has happened to mechanized infantry is that we have a proven doctrine for employment and we have acceptable equipment for the moment, but we lack the trained people to make it all function effectively.

Sometimes we hear the argument that mechanized infantry would not have suffered from a lack of interest if Armor had had proponenty. And another argument is sometimes advanced that with the mounted combat capability to be made possible by a MICV, mechanized infantry should belong to the mounted arm. I believe, however, a more rigid polarization along branch lines is not the long range solution. The fact is that the division between Armor and Infantry branch missions is sharp and distinct in writing, but this is often disregarded to accomplish a task. Efficiency and combat readiness dictate maximum use of available resources. Some even see a merger of Armor and Infantry as a solution.

There is no quick and easy solution for improving the mechanized infantry force. Improvement is primarily a matter of education and training. These are tasks which are not quickly accomplished. This matter requires the best thought and most effective action of all of us, Armor as well as Infantry. A quick trip through the pages of the *ARMOR* and *INFANTRY* Magazines would seem to indicate that the mechanized infantry has received all too scant attention from both branches.

LIEUTENANT COLONEL JOHN P. PRILLAMAN, Armor, is a graduate of the Virginia Military Institute where he was commissioned in Armor upon graduation in 1953. His assignments include two CONUS tours with a tank battalion of the 1st Armored Division and two overseas tours with the 11th Armored Cavalry Regiment, in both Germany and Vietnam. He is a graduate of the Armor Officers Advanced Course and the Command and General Staff College. Following a tour as a tactics instructor at the Armor School he is now a student at the Army War College.



by Major Richard V. Doty

This article was written to be helpful for those who have anything to do with air cavalry. It is based both on the results of researching after action reports and on personal experience. In addition, many hours were spent talking with others who have commanded air cavalry troops.

The air cavalry concept has already brought about changes in the force structure of the Army. More changes will certainly follow. It now seems very likely that the air cavalry squadron will take its place next to the armored cavalry squadron in the division of the future. The air cavalry squadron will become more and more important in strategic and tactical tailoring.

Full comprehension of the principles of employment of air cavalry is vitally important to commanders at all levels. Today, there is evidence that, for a number of reasons, these principles are not always fully understood. Many officers are not exposed to air cavalry prior to combat. The few field manuals dealing with the subject are not always up-to-date. And finally, air cavalry units come in a variety of shapes and sizes.

Commendably, ongoing efforts in our service schools are doing much to bring about a fuller understanding of air cavalry. But many want, and need, further information before they can reasonably expect to attend one of the schools.

The scope of this article has been restricted generally to the air cavalry troop. However, some of the ideas set forth are applicable to the air cavalry squadron. The advantages of keeping the troops of the air cavalry squadron under the control of the squadron commander will not be discussed here because, although this is the preferred employment, today the troops are normally under the operational control of one of the brigades of a division.

In Vietnam, the air cavalry troop has become the most potent weapon of the commander who wants to find the enemy. As a primary source of intelligence, concurrently providing a high percentage of the kills, the air cavalry troop has proven itself essential not only to cavalry and armor operations but to all others as well. The air cavalry troop's capability of performing reconnaissance over large areas in a minimum of time is constantly keeping the enemy off balance and gradually eliminating sanctuaries that the enemy has long used.

Because the air cavalry troop uses the helicopter as its basic vehicle, some commanders tend to think of the troop as another Army aviation unit. This is just not true. Understanding the air cav troop capabilities is the key to successful air cavalry operations. This must be understood by all officers who deal with air cavalry. Primarily, Army aviation units conduct combat support missions whereas air cavalry units conduct combat operations. The use of the organic helicopters in the air cavalry troop is essentially the same as that of the tracks organic to the armored cavalry troop.

For all practical purposes, the helicopter is the weapon of a highly trained and qualified crew. The basic mission is reconnaissance. To perform this mission and thus provide the commander with the information he needs, the air cavalryman engages the enemy in order to develop the situation. The air cavalry troop habitually operates in the ground environment making maximum use of cover and concealment and its fire power and mobility.

A close look at the aero rifle platoon will disclose another highly trained reconnaissance element that may fight as infantry in order to accomplish its re-

The Air Ca



connaissance mission. The aero rifle platoon's mission is to gain for the troop commander detailed information that the aero scouts may not be able to provide. Another factor, of which the men of the aero rifle platoons are justly proud, is that when a major battle starts, they frequently are the first friendly troops to engage the enemy on the ground.

The air cavalry troop spends a good deal of its time looking for a fight, the rest is spent fighting. Regardless of the vehicle—the horse, the tank or the helicopter—the name of the game is CAVALRY.

The commander who has an air cavalry troop under his control should consider many factors before assigning the troop a mission. The air cavalry troop is designed to perform reconnaissance in a brigade size area of operation or across a brigade front. This can include coverage of many hundred square miles depending on how far the commander wants to go.

If the commander wants to engage the enemy, he must be certain of having the capability to react to the findings of the troop. As it is frustrating to the hounds to be called off the fox, it is so with the troop that has developed the situation up to the point that

a major ground force is needed to insure destruction of the enemy only to find out that the supported unit has neither the capability nor troops available to react. The widely acclaimed success of the 1st Squadron, 9th Air Cavalry can be directly attributed to the fact that the 1st Cavalry Division (Airmobile) has a built-in reaction capability and maintains a posture of readiness to use it. So too, the armored cavalry squadrons have a similar capability, with their inherent mobility, to stir up fights beyond their means to finish. This can be an acute problem for the brigades of the infantry division which, seemingly, always can use more helicopters or armored personnel carriers.

When the decision is made to react, the air cavalry troop commander is the one best prepared to command the reaction effort. He is familiar with the area of operations and fully aware of the existing friendly situation. The air cavalry troop commander will also probably be the most experienced commander in the use of artillery and tactical air. His designation as initial commander will insure continuity. He should remain in command until more than two company size reaction elements are committed. At that time, command of the operation should go to the reaction force battalion commander.

One brigade commander habitually used an air cavalry troop commander as a reconnaissance task force commander. The troop commander had under his control his own troop and two ground cavalry troops. He turned over control of the operation only after employing more than two rifle companies from a reaction battalion. In most cases, the third company was not committed and the results of this method of operation were extraordinary.

Maintenance management is another area that requires the interest and understanding of the supported unit commander. To provide continuous reconnaissance, the air cavalry troop will usually have more than half of its helicopters on the ground. This is sometimes hard for the commander to accept. However, if he wants day in and day out reconnaissance, he must understand the principles of management of these assets. Experience will show that an Air Cavalry Troop performing its mission with four *OH6A*, four *AH1G* and four or five *UH1H* helicopters will keep the squadron or brigade jumping. Within the area of maintenance management lies one of the big advantages of not fragmenting the troop. Using gun and scout teams all over the area of operations will lead to maintenance down days that will leave a sour taste with everyone involved.

valry Troop





Somewhere along the line the commander must decide if the results of night reconnaissance operations by the air cavalry troop will outweigh those produced by the same resources employed in daytime reconnaissance. The troop does not have in its TOE any quantity of night vision devices. It is really organized to perform daylight reconnaissance. If a strong requirement arises for night reconnaissance, the troop can be tasked with this mission, but the commander will have to forego daytime reconnaissance for the most part. Night visual reconnaissance usually does not produce much and the troop simply is not equipped or manned to perform night and day operations for more than a few hours. Army Aviation units can provide this support with OV1 aircraft especially instrumented for night reconnaissance. The results of daylight reconnaissance performed by the troop will be of much more value to the commander.

Because of the growing reliance on Army aviation, the commander must be careful not to work his way into a position where he will task the air cavalry troop with missions that are outside normal mission parameters. The scout, weapons and lift helicopters together give the troop the means to accomplish its mission. If the troop is tasked with a mission that takes any of the three away from the troop commander's control, the ability of the troop to perform reconnaissance is severely limited. There should be little doubt that the results of the troop's reconnaissance efforts will be of more importance to the supported unit than accomplishment of an Army aviation support mission.

While the air cavalry troop is capable of spreading its wealth to all troops in an armored cavalry squadron or to the battalions of a brigade, this mode of operation has some serious drawbacks. The most significant is loss of combat power caused by the fragmenting of the troop. Moreover, the elements of the troop are slowed to the pace of the supported unit. Actually, using the troop in this manner takes away one of its strongest attributes, speed. The commander should find that the most successful method will be employing the troop in its entirety under its troop commander.

Use of tactical air strikes is essential to successful air cavalry operations and the supported unit must recognize this. If the troop commander goes to the area of operations with tactical air in his arsenal, the troop can afford to be just a little bit more daring. Firm arrangements must be made to insure that when air cavalry helicopters draw enemy ground fire this constitutes "troops in contact." This arrangement will insure fast and accurate fire support for the troop and will get the Air Force to targets of opportunity faster than any other method.

While the air cavalry troops in Vietnam are organized under several different TOE, the majority of the troop commanders agree on organization for combat. This usually sees two *OH6A* scout and two *AHIG* weapons helicopters in the reconnaissance teams. Two such teams can normally meet the troop's daily mission requirement. Standing by in a forward area will be the aero rifle platoon with at least four of the *UH1Hs* of the lift section. The troop or mission commander will use a *UH1C* or *UH1H* for his command and control ship. From the command and control ship aircraft he directs the reconnaissance effort and provides the communications link between the supported brigade or squadron

and the troop. Furthermore, since the command and control ship has additional radio capability, it should be used to call for artillery and to direct tactical air strikes.

To insure continuous reconnaissance in the area of operations, one reconnaissance team is committed at a time, with the teams replacing each other on station. Another advantage of this method of operation is that it keeps a fully armed and fueled team readily available when enemy contact is made.

Vietnam experience indicates that a team of two observation helicopters does not survive well without attack helicopters covering it. Some troops use one observation helicopter and one gunship to make up a team, but unless a similar team is within the immediate area, this has some serious drawbacks. When the enemy is found, the observation helicopter is used to cover the gunship in its target attacks. The *LOH* is far from an attack helicopter and cannot do this job well. In fact, there is strong evidence that using the *LOH* outside of its design capabilities can cause materiel failures.

One thing that should be clearly understood is that the mission of the weapons helicopters of the air cavalry troop is to provide direct fire support for the scouts and the aero rifle platoon.

Whether the guns stay at low level with the scouts or keep a higher altitude is pretty much governed by the factors of METT. When used at a low level, the gunships can double the reconnaissance effort. But, on the other hand, the enemy will often hide rather than shoot when he can see the *Cobras* overhead. The preferred employment seems to be to start the reconnaissance at fairly high airspeeds, scouts on the deck and *Cobras* at altitude. As the reconnaissance continues, the troop or mission commander can move the *Cobras* to the most advantageous altitude.

The decision to insert the rifle platoon should be that of the troop or mission commander. Since the rifle platoon is going to have to be on the ground in order to get a better look and to develop the situation, the squadron or the supported unit must provide a reaction force that can be employed by the troop immediately. While not mandatory, it is at least desirable to insert the rifle platoon within range of supporting artillery. When the rifle platoon has developed the situation to the maximum of its capability, it should be extracted. Even when a reaction force is committed, the aero rifle platoon should be extracted. It can then be used as the troop commander directs while he continues the reconnais-



sance. At some point the squadron or supported unit commander will decide that the ground forces have the situation in hand and will allow the air cavalry troop to expand its reconnaissance away from the contact area.

The air cavalry troop, whether organic to the armored cavalry squadron or to the air cavalry squadron, can contribute greatly to the accomplishment of the mission. Having developed successful techniques, the air cavalry troop has earned its first string place on the Armor team. There is every sign that it will earn an even larger role in the future.

MAJOR RICHARD V. DOTY, Armor, was graduated from Florida Southern College in 1960. Following nearly two years with Company D, 66th Armor at Fort Campbell, he attended the Officer Fixed Wing Aviator Course at Fort Rucker, Alabama. After earning his wings he remained at the Aviation School as a company executive officer and company commander in the School Regiment. Following graduation from the Armor Officer Career Course in 1965 he served in Vietnam as assistant operations officer and section commander with the 92d Aviation Company. Returning to CONUS he completed rotary wing training and was assigned to the 7th Squadron, 17th Cavalry at Fort Knox. He returned to Vietnam with that unit in 1967. During 21 months with the 7/17 Cav he served as Headquarters Troop commander, operations officer, and executive officer of Troop B and commanding officer of Troop A. After an assignment on the staff of the Aviation School he attended the Command and General Staff College from which he was graduated in June 1970. He is now assigned to the CGSC faculty.

WHITE STARS FELL ON TWO TANKS

by Samuel Shull

One of the first forms of recognition of a deed of valor was the laurel wreath, which the early Greeks placed on the bare heads of their heroic army officers. Later, the Romans too adopted the laurel wreath as a symbol of the wearer's heroism. Had these wreaths been of metal, they could be considered the first Medals of Honor.

Since then, chiefs of state have rewarded officers for heroism, and a medal became the official symbol of their extraordinary bravery.

At first, only officers were eligible for recognition of their acts of bravery. Then, upon the organization of the American Continental Army, General George Washington ordered that, in accordance with the American concept that all men are equal, the common soldier, as well as the officer, was to be given official recognition for exceptional acts of bravery. The order read in part: "The road to glory was open to all." The Purple Heart decoration was designed to comply with this order, and three were conferred on soldiers during the Revolutionary War.

The Congress created, in 1862, the Medal of Honor. This medal was awarded soldiers in recognition of their acts of bravery or self-sacrifice performed in actual combat with an enemy, in a manner above and beyond the call of duty. The medal consists of a blue ribbon, reflecting a shower of 13 white stars. Embossed on the pendant is the word that defines the human quality needed to perform brave acts in combat, "VALOR."

During World War I, 95 Medals of Honor were awarded to army personnel. Two of these medals were awarded to members of the United States Tank Corps. Both recipients were corporals in the First Provisional Tank Brigade.

This brigade, consisting of the 344th and 345th Battalions, was organized in 1918. Under the command of Lieutenant Colonel George S. Patton, Jr., it entered the first phase of the Meuse-Argonne offensive on 26 September 1918, near the towns of Chappy and Varennes, France.

Near Chappy, Patton was seriously wounded by a shell fragment. Major Sereno E. Brett replaced Patton and continued in command of the brigade until after the Armistice was signed. His personal report of the Operations of the First (304) Tank Brigade, ending 10 November 1918, is a graphic description of how the brigade helped to pioneer armor warfare.



SAMUEL SHULL, a native of New Jersey, is a retired business executive turned historian and writer. Having served in the Tank Corps in 1918 and later commissioned in the US Army Organized Reserve, his interest in the military has continued over the past 52 years. He is now writing a group of articles about the tankers who pioneered armor warfare during the First World War.

Equal credit is due to the 301st Battalion of heavy tanks, the only other American unit in combat, for its exceptional service in the British sector, while attached to the British 2d and 4th Tank Brigades and the American 27th and 30th Infantry Divisions.

At a position about one mile southwest of where Patton was wounded, a detail of tanks from the 344th Battalion drove in to the edge of Varennes.

Their mission was to lead the advance of some Missouri and Kansas doughboys of the 35th Infantry Division.

The tanks employed were *Renault* light tanks, borrowed from the French. They were of an early design, and, after closing the hatches and engaging in combat, they soon became an inferno. They would fill up with choking fumes from hot oil, gasoline, and the caustic gases from their guns. The clanging of pistons and engine exhaust, the bursting of shells, and the hammering of small arms fire on the outside of the turret created a deafening noise.

One of these tanks was driven by Corporal Donald M. Call of New York City and commanded by Lieutenant John Castle of Morristown, New Jersey, who acted as gunner.

As they advanced in the face of heavy enemy fire, a direct shell hit tore away half of the turret in which Castle was serving his gun. Castle was wounded, the tank was disabled, and flammable materials were ignited.

Dazed from concussion and choking from the effects of acrid cordite fumes, Call crawled out of the tank and sought refuge in a muddy shell hole. Shortly, he realized that the wounded lieutenant had not followed him out of the burning tank. He then returned to the tank, assisted the wounded officer out, and carried him one mile, through intense enemy sniper and machinegun fire, to a place of safety.

For this heroic act, Corporal Call became the first tankerman to be cited for a Medal of Honor.

The Meuse-Argonne Drive continued. And, on 4 October 1918 near Montebeau Woods, France, Corporal Harold W. Roberts, of San Francisco, California, a member of the 344th Battalion, United States Tank Corps, was moving his tank into a clump of bushes to shelter a disabled tank. The terrain was muddy from recent rains, and the tank slid sideways down an incline into a deep, water-filled shell hole.

Knowing that only one of them could escape, Roberts exclaimed to his gunner, "only one of us can get out, so out you go." Roberts pushed his companion out a rear hatch, and he himself was drowned



Lieutenant Donald M. Call

as the tank filled with water and settled on the bottom of the shell hole.

Corporal Robert's heroic act was recognized in a citation, awarding him posthumously a Medal of Honor. The Medal was presented to his father, John A. Roberts, at an appropriate ceremony.

After the Armistice, Corporal (by then 2d Lieutenant) Call was ordered to General Headquarters for the A.E.F., where General Pershing presented him with a Medal of Honor, and, in addition, the famous Pershing accolade, "He is a fighter."

BIBLIOGRAPHICAL NOTE

The descriptions of the actions which led to the awards of the Medal of Honor to Corporal Donald M. Call of New York and Corporal Harold W. Roberts of San Francisco are from War Department General Orders Number 13 and 16 of 1919 respectively.

Defense Against Armor in the German Army

by Major i. G. Rolf A. Huettel, Deutsche Bundeswehr

NATO is vitally concerned with antitank defense because of the strong tank and mechanized forces that pose a threat to Central Europe. The NATO nations continually exchange ideas and doctrine to achieve the best possible defense. The Federal Republic of Germany has made a large contribution in the field of antitank weapons and doctrine. Therefore, it is most appropriate to study the weapons, organization and doctrine used by the Bundeswehr today. THE EDITOR.

During the Battle of Cambrai, in the fall of 1917, the German Army was faced for the first time with the task of defending itself against armored vehicles called "tanks." Without any special preparation, and after being surprised initially, it was successful in opposing this new weapon which combined protection, mobility and firepower. The task was accomplished by field artillery employing direct laying techniques and concentrated charges.

As a result of the experience of World War I, by 1939 the 3.7cm (37mm) *Panzerabwehrkanone* (PAK or antitank gun) had been developed and introduced into all regiments and divisions. Early in World War II the caliber of antitank guns was increased to keep pace with the thicker armor and the improved design of newer tanks such as the Soviet T34. This major development climaxed in the famous "88" (8.8cm PAK) which had been derived from an antiaircraft gun.

Concurrently, the increased appearance of massive, mobile enemy armored forces made it necessary to adapt the German antitank weapons to meet enemy capabilities. Thus, antitank weapons had to be mounted on vehicles and become self-propelled. As a result, an 8.8cm SP antitank gun, the first independent design, was built as early as 1943. Then during 1944, a number of different armored vehicles, called *Panzerjäger* or tank hunters, which were close to today's concepts of shape and silhouette, came into being in quick succession.

Actually, the requirement to make the antitank gun mobile was not new. It had originally been posed in 1937. It is interesting to note that this was

first done by the creator of the German armored force, Generaloberst Guderian. He not only had the boldest concepts of that time for the employment of an independent German armored force, but he also envisioned a means of defense against massive armor attacks. This was to be an independent mobile antitank defense force properly organized, armed and trained for antitank operations. However, the first attempt to achieve this through the use of assault guns and tanks was not successful. This was not the result of an unsuitable concept, but came about because the necessary materiel was not available.

Present-day war, with its changed weapons, demands a modern adaptation of the original concept. However, today's antitank doctrine has been soundly based on the experience acquired in the past rather than on untried theoretical concepts.

The general military situation and, in particular, the number of tanks held by the Warsaw Pact Nations, indicates that defense against armor will play a decisive role in any future warfare in Central Europe. Tanks and armored vehicles are likely to be encountered everywhere and at any time. Thus, fighting against tanks, and their destruction, becomes an important part of the mission of all troops.

Even though this means that all combat arms are to be employed in defense against armor, to be realistic we must make a clear distinction between the roles of various types of units based not only on their capabilities but also on the aims to be achieved.

All combat arms, one could even say all branches of the service, must be capable of destroying enemy tanks, whenever and wherever they appear. To ac-

comply with this mission, they are equipped with various antitank weapons.

MISSION OF THE COMBAT UNITS

In the armor and armored infantry brigades, the infantry and the tanks are the main elements to engage enemy armor.

As a combat arm, the infantry has units and elements which are specifically organized, equipped and trained for this purpose. These tank hunters must be flexible. They must defend and at the same time be capable of going into the attack. These troops are of course supported by artillery and the air force. Individual antitank weapons together with the weapons of the tank hunters are not sufficient alone to accomplish the antitank defense mission. The offensive employment of armored units, artillery and air force elements attains a decisive importance. And, in nuclear engagements, artillery and air force influence will even be greater.

ANTITANK WEAPONS

The following special antitank weapons are standard in the Bundeswehr:

- *Kanonenjagdpanzer* (tank destroyer w/ 90mm gun)
- *Raketenjagdpanzer* (tank destroyer w/SS11 guided missile)
- 106mm recoilless rifle
- Antitank guided missile 810
- *Heavy Panzerfaust*
- *Light Panzerfaust*
- Rifle grenade

The *Panzerjäger* (tank hunters), whose main mission is to fight and destroy enemy tanks, are equipped with the first four. The last three are weapons with which all branches of the service, especially combat and combat support units, are equipped. Together these weapons are used to carry out the antitank mission of all units.

TANK HUNTER ORGANIZATION

The special antitank weapons (i.e. the gun and missile tank destroyers and the 106mm recoilless rifles) are concentrated in tank hunter companies and their tank hunter platoons. These are building blocks which the brigade or battalion commander can employ to fit the situation and mission. The tank hunter companies are independent units in the sense that they are under the direct command of the brigade and, like a battalion, have organic supply and maintenance elements.



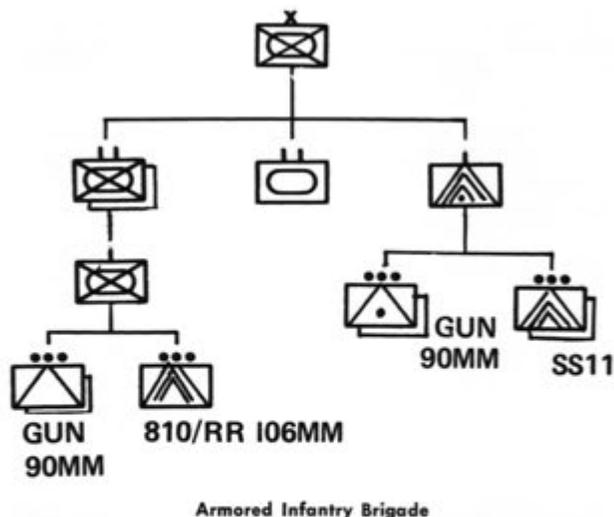
Above: ATGM 810

Below: *Raketenjagdpanzer*



Below: *Kanonenjagdpanzer*





THE MISSILE/GUN TANK HUNTER COMPANY (PzJgKpRak/Kan)

One such company is part of every armored infantry brigade (*PzGrenBrig*). It has two missile type and two gun type tank hunter platoons. This company may be employed either directly by the brigade or it may be attached to an armored infantry battalion (*PzGrenBtl*). It is also possible to place the company in direct support of a battalion. The presence of the tank hunter company in the armored infantry brigade allows the brigade commander to keep his tank battalion intact since he does not have

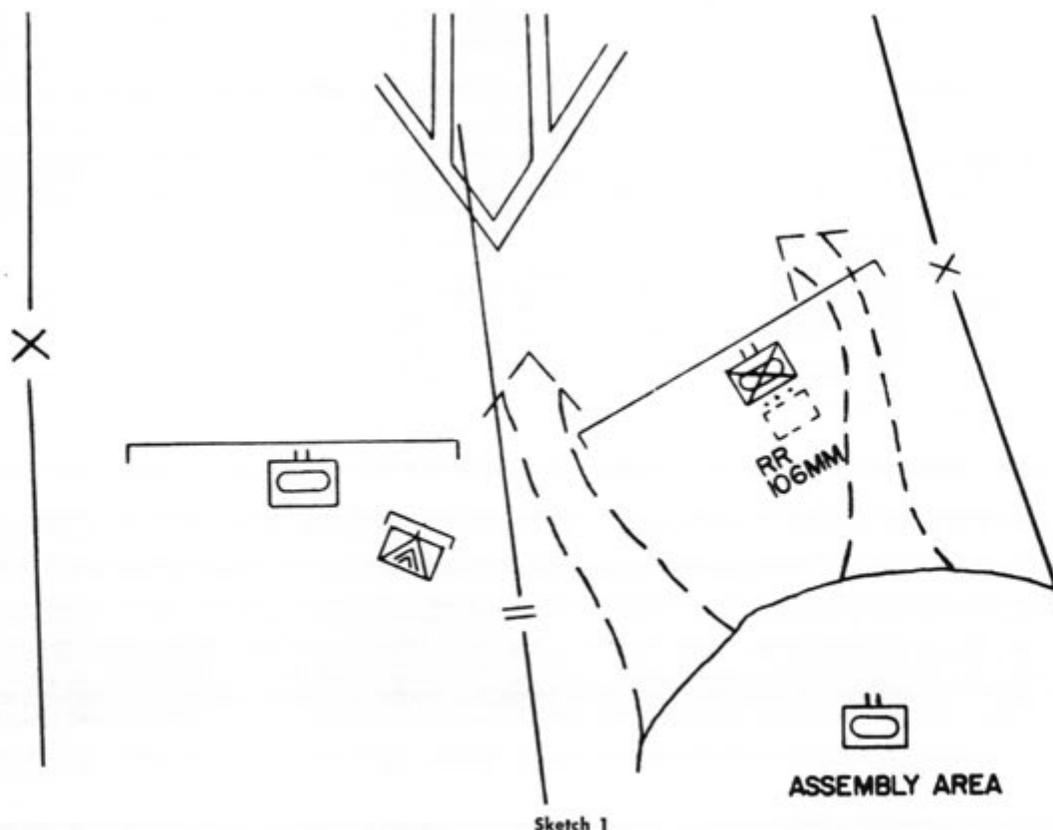
to split it up to provide antitank defense. Sketch 1 shows one possible employment of this unit.

In this example the 106mm recoilless rifles of the armored infantry battalions are shown grouped into platoons. However, the teams are usually employed with the armored infantry companies. The 90mm gun tank hunter platoon of the motorized armored infantry battalion has been attached to the tank hunter company. An alternate position has been reconnoitered for the tank hunter company between the motorized armored infantry battalion and the mechanized armored infantry battalion. The tank battalion and the other mechanized armored infantry battalion shown in the assembly area are earmarked for a counterattack.

THE MISSILE TANK HUNTER COMPANY (PzJgKpRak)

Each armored brigade has one of these companies consisting of three missile type tank hunter platoons. There is no 90mm gun tank hunter platoon. This company is employed, together with one or more combat maneuver battalions, where the terrain allows the use of missiles due to the anticipated long engagement distances. Sketch 2 shows one possible employment.

The 106mm recoilless rifles of the armored infantry battalion are shown grouped as a platoon.



However, in many situations, they will be employed with the armored infantry companies. The tank hunter company may be attached to the tank battalion, or it may be placed in direct support of the tank battalion. The tank battalion shown in the assembly area is earmarked for a counterattack.

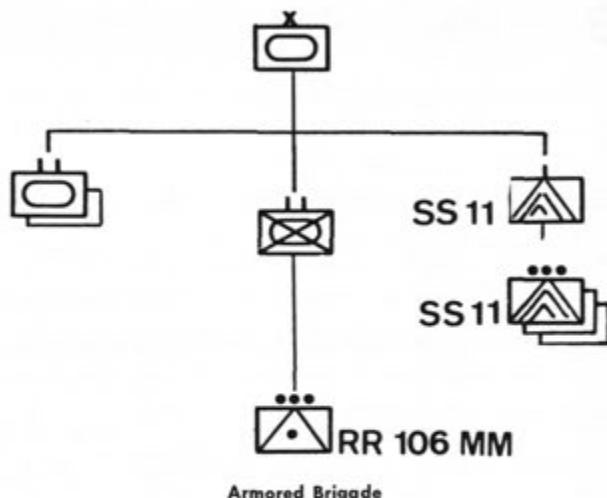
TANK HUNTER PLATOONS

In addition to the tank hunter companies in the brigades, the armored infantry battalions of all brigades have platoons equipped either with 90mm tank destroyers, *model 810* antitank guided missiles or 106mm recoilless rifles. The type of equipment depends upon whether the battalions are equipped with mechanized infantry combat vehicles, armored personnel carriers or wheeled vehicles.

TANK HUNTER ANTITANK DEFENSE PLATOONS

The armored infantry battalions of the armored infantry brigade each have two 90mm gun tank hunter platoons and one antitank defense platoon equipped with *810* antitank guided missiles (ATGM) or with 106mm recoilless rifles. During operations, these platoons may be attached to the tank hunter company of the brigade.

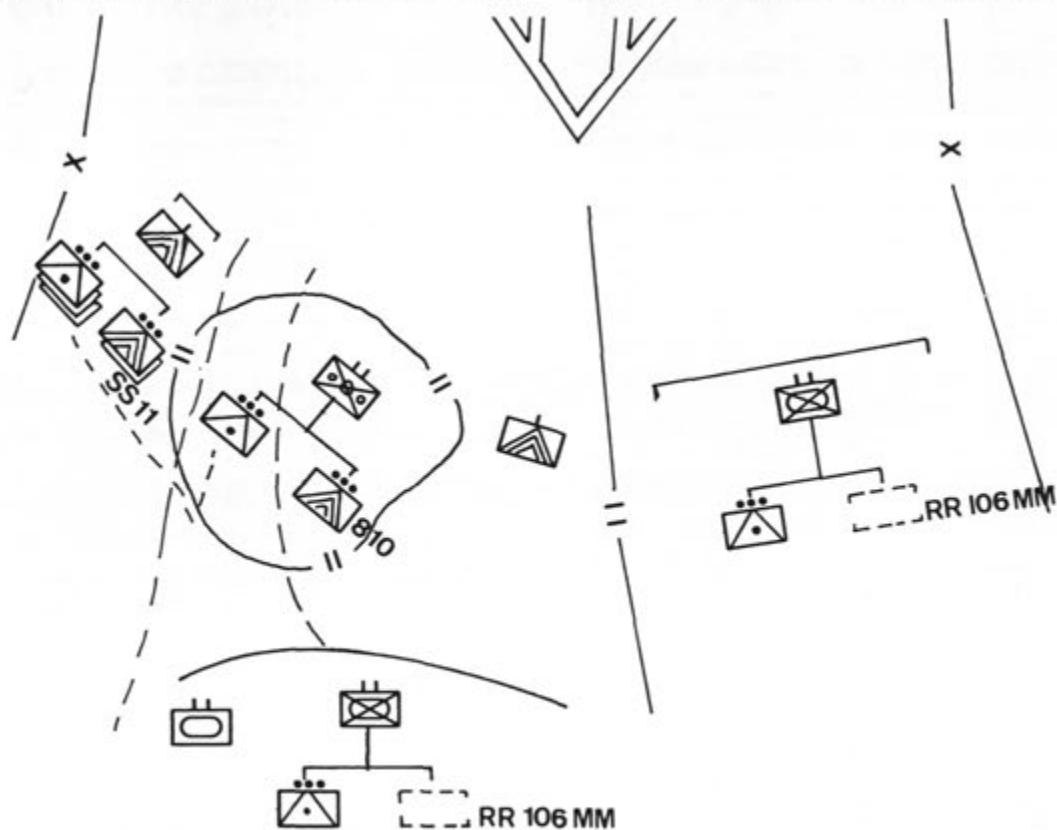
Rather than the *810* ATGM antitank defense platoon and the gun type tank hunter platoons, the



armored infantry battalion of the armored brigade has 106mm recoilless rifles, which are allocated to the line companies or employed concentrated as a platoon.

INDIVIDUAL ANTITANK WEAPONS

In addition to the tank hunter companies and platoons, armored and infantry brigades have numerous individual antitank weapons, including the heavy and the light *Panzerfaust*, and the rifle grenade. The weapons are distributed so that each squad has at least one *Panzerfaust*. In addition, every soldier



Sketch 2

armed with a rifle has a weapon, the rifle grenade, which he can use to destroy a tank at quite a distance. Division units and corps units have similar provisions for antitank defense.

This entire antitank organization results from the German Army concept that battle tanks or armored vehicles may be encountered everywhere and at any time. Wherever enemy tanks may appear, forward of the FEBA or in the depth of the defense sector, they would be hit with annihilating firepower from the tank hunter companies and platoons together with the antitank weapons of all arms.

WEAPONS AND CAPABILITIES

Not only the organization, but also the equipment must be in consonance with the overall concept that a defense capability against enemy tanks must always exist everywhere. This means that weapons with which an enemy tank can be fought, in the daytime or at night, must be constantly available. Some weapons would engage an enemy tank before it could fire on identified targets. Others must be available to defeat an enemy tank even after it has already penetrated friendly lines.

The antitank defense requirement must be viewed in the light of the Central European terrain which is marked by high population density and numerous isolated wooded areas. These two factors make it so that only about 50 percent of armor targets can be identified beyond 1000 meters. Thus, the majority of antitank weapons require an effective range of no more than 1800 to 2000 meters. The existing mixture of tube weapons and guided missiles ranging from the rifle grenade to the SS11 ATGM and having a multiple overlap of effective ranges, meets this requirement.

If the engineer antitank defense capabilities, highly important in densely populated areas, are considered in connection with antitank operations and the artillery and air force capabilities as well, it becomes obvious that the German Army with its antitank power is quite capable of limiting the penetrating effect of armored attacks to a very considerable extent.

ON BALANCE

Central to the German defense against armor concept is consideration of the threat in the Central European area with its peculiar terrain conditions. This threat determines the organization of the friendly defense. Special attention must be given to

the number of tanks anticipated to be in an armored attack. Since it is impossible to know in advance the specific type of defense which may be necessary, units must be organized, equipped and trained in such a way that they can quickly adapt themselves to the many forms which combat might take.

The principles of the present German Army anti-tank defense concept can be expected to remain valid for the future. Nonetheless, automatic tube weapons, guided missile systems and individual anti-tank weapons can certainly be improved in several respects. Introduction of a fully reliable individual antitank weapon capable of destroying tanks at 1000 meters is an urgent requirement for the future. Furthermore, in the defense against enemy tanks, the third dimension, to include the use of helicopters, will also have to be used to give further mobility to antitank operations.

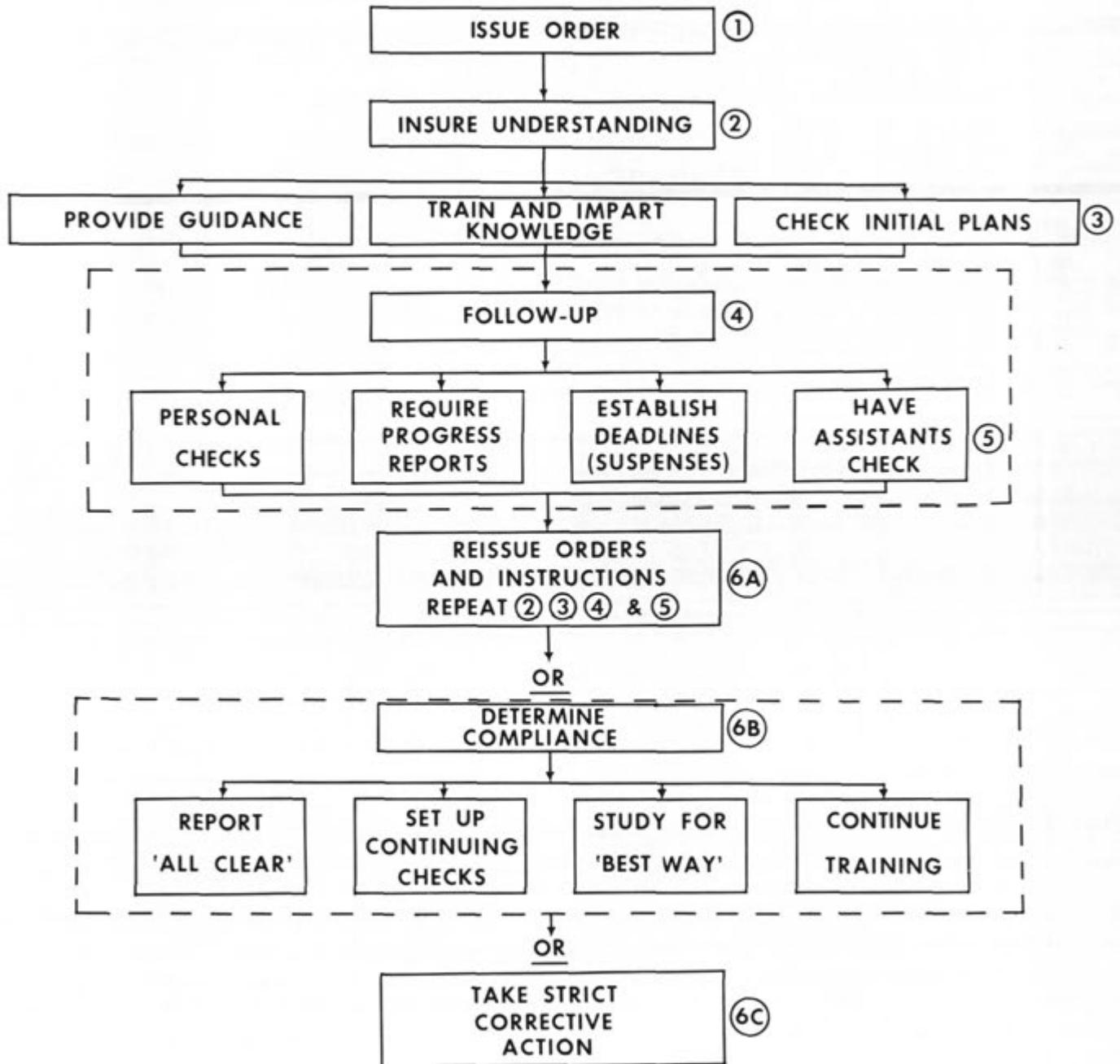
In spite of any gains made in the perfection of the individual and other weapons systems, it remains imperative that the overall system of antitank operations be kept balanced. It should never be forgotten that in the field discussed herein as elsewhere, "the best can be the enemy of the good." Availability of the right weapons, having ease of operation and the possibility of economical, effective supply and maintenance, at the right time, at the required place, and in sufficient quantity will remain decisive now and in the future.



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THE ORDER

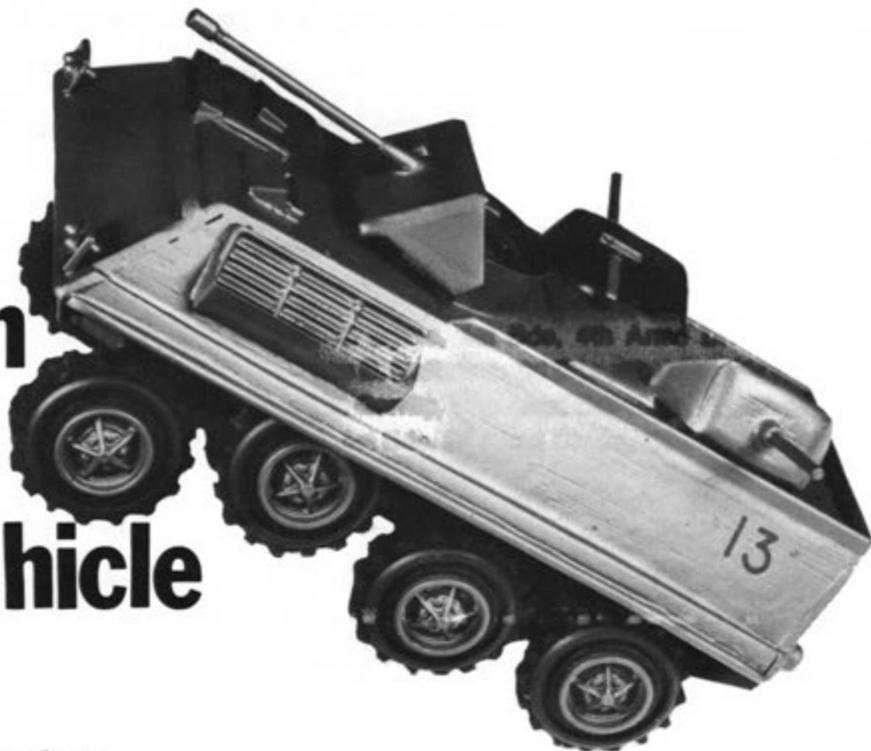
ISSUING THE ORDER IS ONLY 5% OF THE TASK. THE FOLLOW-UP IS THE OTHER 95%.



by Colonel Ace L. Waters, Jr.

An Approach To The Scout Vehicle Dilemma

by Lieutenant Colonel Burton S. Boudinot



During the past several years, thousands of words have been written, and many more have been spoken, on the subject of the Armored Reconnaissance Scout Vehicle (ARSV). What follows is a short dissertation on scouts, together with some thoughts on an Armored Reconnaissance Scout Vehicle configuration.

Generally speaking, throughout history the scout has been lightly equipped. He has always had to be relatively mobile because of his mission. In fact, the scout has not always been a uniformed soldier. Often he was a hired tribesman or hunter, sometimes a mercenary and frequently a patriot. He was skilled in survival, knew the land and understood and respected his enemy. Mobility and communications were the key to his success. For years, the un-

protected horse and light weaponry were associated with the term "military scout."

The motorized vehicle is relatively new to the scout. Nonetheless, during this century the armies of the world have covered a broad spectrum in seeking a mount to replace the versatile pony.

The latest entrant in the race is the helicopter. However, as fine a development as this is, we have found that the helicopter-borne scout does not replace the ground scout. The requirement now is for a better mount for the ground scout.

In Vietnam, we have again had a look at the motorcycle as a scout vehicle. Perhaps we should take a more serious look at the dune buggy concept. Certainly these configurations are mobile.



WOLTZ STUDIO

LIEUTENANT COLONEL BURTON S. BOUDINOT, Armor received his commission in 1953. His troop assignments over the past 17 years have been primarily in armored cavalry with duty in Korea and Germany and more recently as Senior Advisor to the 1st ARVN Armored Cavalry Brigade in Vietnam. Staff assignments, with time out for the Armor Advanced Course, Command and General Staff College and attendance at the University of Omaha, include the Armor School, 2d Armored Division, Army Aviation School, a special assignment to Turkey, US Army CDC Armor Agency and J3 MACV. An ardent advocate of armored and air cavalry, he has contributed several articles to *ARMOR* during the past decade. LTC Boudinot is currently the commanding Officer of the 6th Reconnaissance Squadron, US Army Training Center, Armor at Fort Knox. His unit has the mission of training scouts for worldwide assignment to Armor units.

However, it must be recognized that the military characteristics for US Army scout vehicles currently specify that they be armored. Why? Because the scout has to fight. He has the dual role of being a sneak-and-peek artist and a combat soldier. In addition to being mobile, he must be well armed and protected by more than an armor vest.

For the mounted warfare of World War II, Korea and Vietnam, the light scout car, the armored car and the jeep proved satisfactory more often than not, and they were surely an improvement over the horse. But, in their now known forms, they do not meet today's requirement fully.

The M114 command and reconnaissance vehicle is not the answer to our problem. I will not belabor this sore point other than to say that it was a good approach which did not hit target center. The M113 (ACAV) is a splendid cavalry vehicle and a godsend to Allied troops in Vietnam. But again, it is not a true scout vehicle and certainly not a scout vehicle to meet the requirements of the 1970-1980 period.

From discussions during armor conferences in CONUS and in Vietnam we can fairly well ascertain what the role of the scout is going to be in the 70s. He may well be involved in low intensity conflicts at the least and more extensive operations at the most. Come what may, there will be a lot of scouting and patrolling.

The ground scout must be well equipped. But the "desirables" should not become "essentials" when determining the overall characteristics of his vehicle. Cost is an important factor. A scout vehicle should not cost an excessive amount to procure; and its operating costs should be minimal.

The illustrations presented here show a small, high speed armored scout vehicle to be assembled from common hardware. It seems to me that from our industrial complex can come immediately the diesel engines, wheels, tires, bearings, armor plate and most of the other items needed to fabricate an excellent mount for the scout.

The capability to provide a sound, dependable and effective scout vehicle has been within the state of the art for years. The vehicle portrayed is not revolutionary, it is quite simple and can be easily modified to accommodate some of the direct and indirect fire weapons systems under development.

We must keep the basic role of the armor scout and his daily mission clearly in focus. We must give him the vehicle he needs. That vehicle is not as complex as one might think.



All models constructed by the author



Some Thoughts On The EIGHTH ROAD To MOSCOW



by Diades

Last Fall ARMOR Magazine published an article titled "The Eighth Road to Moscow" in which Lieutenant Colonel Dave R. Palmer speculated on the possible invasion routes to be used in the event an American army should be called upon to enter the Soviet Union in a future war.

The author is to be congratulated for his wide reaching exercise of imagination in creating this article, which should generate considerable interesting discussion in the pages of this journal. It is hoped that the following remarks will also stimulate thinking about the Soviet Union. This rejoinder is divided into two parts: the first an historical analysis of the previous invasions of Russia; and the second, an analysis of the invasion routes suggested in the previous article.

The Palmer article takes as its point of departure W. G. F. Jackson's *Seven Roads to Moscow*. However, there have been at least 10 major confrontations involving the Russians; and, significantly, the Russians lost all three of those not mentioned—in 1854-5, 1904-5 and 1914-17. In each of these wars the opponent was able to achieve his aims without attempting to seize Moscow. These examples may hold important clues to future events.

With this in mind, let us examine the historical record to see what these 10 invasions or wars can tell us about the conditions for success and failure. The first and most successful invasion, by Rurik, resulted in the creation of the Russian state. It was so successful that Rurik's descendents even managed to get the chronicles of the event changed to indicate that he was invited to the country. Invited or not, he arrived to find the area full of warring city states and tribes so bent on each other's defeat that they

were incapable of united strong resistance to his Varangian band.

In 1240, the Tatar-Mongol army of Batu, Gengis Khan's grandson, likewise found a Russia split into warring principalities bent on each other's destruction. Even the disaster at the River Kalka in 1223 had not awakened them to their peril. The Mongols did not even have much trouble recruiting Russian nobles to perform the routine suppression needed to keep the population under control. In 1396, Timur did not find much united opposition either, but was diverted from conquest of Moscow by the more lucrative spoils available in China. His chief antagonists in Russia were not the Russians but the various Tatar-Kalmyuk peoples of the Volga region.

When the Polish troops of Sigismund occupied the Kremlin, in 1610, their way had been opened by many years of multi-sided civil war which reached almost total anarchy. They were aided by sizeable portions of the Russian population and when this support vanished so did the Poles.

Charles XII in his turn was successful until Peter I was able to mobilize the Russian population. The Swedish defeat at Poltava was largely due to the disaffection of the Ukrainian and Cossack forces from the cause of the invader, and to Peter's ability to suppress peasant unrest in his own rear areas.

Napoleon launched his coalition army into Russia on the crest of a revolutionary tide with which the French had swept Europe. Many hoped he would proclaim a new order in reactionary serf-ridden Russia at least as sweeping as that which he had in Italy. Had he managed to inspire the peasant masses to rally to his cause, the results would have been incalculable. As it was, the Tsar was able to turn his

defense into a "Fatherland" war. Commenting on his failure later, Napoleon made the lame excuse that he had not wanted to shed innocent blood in such an uprising, as if he was ever deterred by the prospect of bloodshed.

The gross errors committed by Hitler in actually thrusting aside the help being offered to him by a population hoping to be liberated are too well known to require further comment.

What about the other three confrontations between the Tsar and foreign invaders? In 1854 a combined landing force of British, French, Turkish, and Savoyard troops landed in the Crimea in the major campaign of a war that also saw fighting in Transcaucasia and naval demonstrations along Russia's sea-coast. After two years of fighting, marked by unrest and growing insufficiencies in the Russian Army and in which the Allies had not given Tsar Nicholas I the opportunity to develop mass patriotic support, Russia capitulated without her capital or major cities being seriously threatened. The Allies gained their limited objectives and the Russian government set about major internal reforms.

In 1905, Japan was likewise able to defeat the Russian army and navy and gain her objective thanks in large measure to the revolution which had erupted on the Russian home front. This defeat also resulted in the Russian government undertaking reforms needed to regain public support. The defeat in WWI with its intended revolution and the social changes made by the Bolsheviks fall in the same pattern.

Russian history shows that to be successful an opponent should attack while the country is riven by internal war, or should appeal for the support of the disaffected social elements, or at least should conduct his war for limited objectives while taking advantage of whatever internal discontent may be available. This lesson is really not very surprising, as it is the basic one of military history generally.

An examination of the contemporary Russian scene shows that the basic elements remain the same. Russia is a multinational empire containing many groups with deep-seated antagonisms. The mass of the population is as subjugated and alienated from the ruling class as it ever was. Discontent is beginning to break out in the intellectual class and will soon spread to the ruling elite itself. Many of the minority groups are of doubtful loyalty to the Soviet state. Nevertheless, the Soviet citizen remains an intensely nationalistic individual, whether he be Russian, Georgian, Uzbek or Mongol. He may be counted on to resist stubbornly any invasion which

the ruling class can characterize as an attempt to conquer his own native land. The Soviet citizen is constantly subjected to a propaganda campaign designed to remind him of the past attacks by the Germans and of the present dangerous intentions of both the Chinese and the Germans supported by Americans. This campaign is largely successful since it plays on deep-seated emotional attitudes which many Soviet people hold toward these neighbors. This same emotional attachment to the motherland gives rise to the interesting phenomenon that one of the chief opposition groups in the USSR today is actually neo-Slavophile in outlook.

The development of nationalism generally makes one wonder if in fact conquest is any longer a practical possibility. Certainly, the lack of examples of successful conquest since the advent of nationalism makes it doubtful that any but the most foolhardy would try. It is not nuclear weapons, but nationalism which makes the holding of a conquered nation cost more than it is worth. One can look to the continual trouble Russia has in Eastern Europe to see that a conquest which 150 years ago would have resulted in the area being smoothly absorbed by the conqueror is impossible today.

The historical record indicates that the following principle should govern US strategic thinking. The US should not consider invasions of the USSR in combination with German or Chinese forces or using any other strategy likely to generate a spirit of national resistance.

The continued development of a silent resistance based in youth and national minorities within Russia will make the country vulnerable to revolutionary forces should the leadership ever lose its grip or be seen to falter under pressure. Such an event could be the outcome of a major Soviet adventure in China or perhaps even the Middle East. Should such a revolution occur it would be extremely violent.

One of the chief tools used by the Communist rulers to maintain their control over the dissident minorities is the threat of "Capitalist encirclement." One way the US could promote internal trouble in the USSR would be to remove every possible opportunity for the Soviet leaders to claim that they are under threat of attack. The US should seek to reduce the external pressure which helps hold the USSR together. The writing and publication of articles which can be used by Soviet spokesmen to illustrate the bellicose and aggressive nature of the United States certainly does not adhere to the proper strategy but itself plays into the Soviet hand and helps their

... the sum of human knowledge is doubling every 10 years, it is indeed essential that we free our imaginations . . .

propaganda campaign. Judging from the Soviet reaction already published in the April 8th issue of *Red Star*, the article on the "eighth road" is already serving their purposes. The Soviet author remarks that "many Americans have good memories and a sober opinion of the contemporary international situation. They do not want a new war. They want to live in peace with the Soviet Union and they understand that the fate of the whole planet depends on the condition of American-Soviet relations." But he continues by remarking that this article reflects opinion not confined to the author alone.

American authors therefore realize that the Soviet Union will use every opportunity to use their articles in an attempt to contrast the "peaceful" Soviet Union with the "war-mongering" ideas in the United States. This technique is credible to many Soviet citizens because a similar article in a Soviet journal would almost surely reflect the opinion of high ranking officials.

Having considered the history of Russia, let us now turn our attention to the question of a hypothetical invasion of Russia considered purely as an exercise in military geography. This analysis of the geographic features of the Soviet borders should not be construed to mean that invasion of Russia using any of these routes is considered a rational choice for US policy. In the article on "the eighth road to Moscow" the author mentions the four routes, North, South, East and West. He dismisses the arctic route as being "virtually unassailable" and the southern route as being girded about with "militarily impassable mountains."

Of the western route he states, "that whole section of the world is heavily built up and becoming more so all the time," and therefore he believes a campaign in the west "could assume all the disadvantageous aspects of city-fighting." Remarking "that while every invasion from the west failed, all those originating in the vicinity of China succeeded," he goes on to illustrate how a future army could invade Russia by way of China from bases in every major

country from Japan to Australia. The essential characteristic of this invasion army is its use of revolutionary technological developments which will have made it immune to the tyranny of space and time. Along the way he makes some startling remarks about the Japanese who "handily over-ran great stretches of the Chinese nation" and various American generals who counseled against military operations in Asia. All of this poses a problem to one who would wish to deal with these ideas in an orderly way.

Let us start by noting that the Japanese in eight years of fighting hardly scratched the surface of China and also that to dismiss the cited opinions of American military leaders in the face of events in Korea and Vietnam without even mentioning the latter is rather strange, to say the least. Finally, a count of our historical examples above reveals that eastern attacks score two successes versus one defeat and western attacks score three successes versus four defeats, although two of the losers captured Moscow.

The chief failure in this proposed invasion through China is one of logic. The author dismisses the arctic and southern approaches as physically unsuitable and then bases his whole argument on technological wonders that will overcome all barriers. The fallacy should be obvious.

At any given level of technological achievement it should be safe to assume that the technology can be made to function wherever we are. An evaluation of strategic approaches therefore should be made on the basis of their inherent characteristics. The point is, any technology which can overcome Russia's eastern approach barriers could surely cross the southern or northern barriers with even greater ease.

A look at the geography will illustrate this point. To consider distance first. Having crossed a distance greater than that from Gibraltar to Moscow just to get from the Chinese coastal ports to the Soviet border at for instance Alma Ata, one then has to travel a further 1900 miles to reach Moscow or about equal the distance Moscow-Basra, or Moscow-Madrid, or twice the distance Moscow-Murmansk. Or to put it another way, Chicago and Washington, D.C. are closer to Moscow than are the Philippines, and Argentina is about as close to Moscow as is Australia. Next consider the mountains. Russia's southern border comprises the Caucasus, which can be passed easily only at Derbent, the Black Sea, which is navigable, the Caspian Sea which is landlocked, and Kopet Dagh, which poses no particular barrier, and in the southeast corner the Pamirs, which certainly do pose a problem. Not counting Siberia, the

Eastern border is covered by the Tien Shan and Altai ranges with lesser ranges and the Turfan depression in between. All in all, mountains are a worse obstacle in the east than in the south. Climate is another factor. If the Arctic area is cold then the central Asia-Russo-Chinese border area is both cold and hot. The average monthly temperatures at Arkhangelsk for the three coldest months are 8°, 12° and 2° F. and the three warmest months are 53°, 55° and 59°. The corresponding temperatures at Murzab on the Sino-Soviet border are 1°, 4°, 5° and 50°, 56°, 56° but at Semipalatinsk they are 3°, 4°, 9° and 67°, 67°, 71° and at Tashkent they are 30°, 37°, 37° and 77°, 78°, 80°. What this means militarily is that an army operating across the Sino-Soviet border must be equipped and supplied to operate in both arctic cold and desert heat while one operating from Murmansk and Arkhangelsk south would need a much narrower range of supplies. Indeed it would appear that at the present level of technology it should be possible to conduct a sea-borne invasion via Murmansk directly from the US more easily than to cross China. Nor should a sea-borne invasion of the Ukraine and Kuban be ruled out.

The author is somewhat vague on the questions of will we be fighting the Chinese government, or on their side, and will we be using nuclear weapons or not. But on both issues, either answer poses problems. The historical inability of the Chinese government to secure complete control of their central Asian borderlands suggests that we would have sizeable opposition forces in our rear areas in either case. If we were to employ nuclear warheads in the transpolar artillery support, then our troops would be downwind and most likely within the circular error probable. If we were to use ICBMs to deliver conventional explosives, then the extravagant cost must be considered wasteful in any technological environment.

Turning attention back to the western approach — we find that none of these geographical obstacles appear. Indeed, the chief deterrent seems to be quite the opposite, an urban growth which threatens to stifle the movement of military forces. Of all, this is perhaps the most difficult argument to accept. The distance from Kalliningrad to Odessa is about 750 miles and that from Leningrad to Rostov-on-Don about 900. There are no urban developments in Russia which could turn this immense front into a megapolis in the conceivable future. From a military point of view the scene is rather the reverse. Such development of the transportation network as is oc-

curing can only increase military mobility. It is hard to conceive a future technology which could render a locale serviced by a few railroads and roads actually worse logistically than an area serviced by none at all.

It is quite true that one cannot study possible future wars based on outmoded methods of the past. Still, to gain a feeling for what future technology might accomplish, and to understand what problems it must overcome, one should base projections of the future on known past reality. For operations in Western Russia, this means starting from WWII. At that time the Germans, possessing a largely horse drawn army which lived off the food of occupied areas to a much greater extent than is our want, were less dependent on road and railroad network for supply than we are today. Yet they found the Russian road and rail system so inadequate that they organized special oil field brigades in a desperate and unsuccessful attempt to obtain the necessary fuel for their few tanks from a source close enough to the front lines.

The next source of data for projecting future operations is the present. The Soviet Army has recently concluded a large military maneuver in Western Russia in which massive quantities of armor were employed. The details of this maneuver were reported in the Soviet press, so it is to be hoped that it is even now undergoing careful scrutiny by armor experts in the US who will give us their opinions in due course in the pages of *ARMOR* Magazine. For the present discussion, suffice it is to say that the Soviet operation did not appear to be hampered by excessive amounts of city-fighting. With the pace of technological change accelerating so that at present the sum of human knowledge is doubling every 10 years, it is indeed essential that we free our imaginations for the task of addressing the future. Yet the acquisition of new knowledge does not mean the ignoring of past knowledge. New technology will be employed by humans whose characteristics, one learns from history, are not changing so rapidly, and it will be employed in a geographic environment which, while changeable, will still be governed by certain relationships of space and time.

Diades is a knowledgeable scholar in the field of Russian military history and geopolitics. A holder of advanced degrees in these disciplines, and a Russian linguist as well, he has taught both European and Russian history at the college level. The views he sets forth above, like those which LTC Dave R. Palmer expressed in the article "The Eighth Road to Moscow" (ARMOR, November-December 1969), are personal opinions published here solely to stimulate serious thought and study by the military professional.

From The Armor Branch Chief...

THE ORDER OF MERIT LIST

The Order of Merit List (OML) is an important management tool used by career branches within the Officer Personnel Directorate, OPO to establish the relative standing of an individual officer among his branch contemporaries. The OML is used to identify "best qualified" officers while making career management decisions. For example, it assists in determining nominations of officers to attend higher level service schools such as the Command and General Staff College, senior service colleges and their equivalents. Branch OMLs also are furnished AUS colonel and lieutenant colonel promotion selection boards to assist in the selection process as the board sees fit. Currently, OMLs are prepared only for promotable captains, majors and lieutenant colonels to meet the foregoing personnel action requirements.

A person's position on a specific branch OML is based on a comprehensive evaluation of his overall record in comparison with those of his career branch contemporaries. The officer's qualification record and efficiency reports as well as other documents in his file are thoroughly reviewed and carefully analyzed following established procedures and criteria in developing his standing. While particular attention is given to manner of performance (MOP), all indicators of the officer's merit and overall potential such as military and civilian education, combat experience and awards and decorations, are considered collectively. The detailed analysis of an officer's record

which is necessary to establish his position on the Order of Merit List also serves to highlight career development needs. Thus, the OML serves a useful purpose in career development planning, individual counselling and related actions. It materially assists effective personnel management by making available a systematic and objective evaluation of the officer by experienced career management people. Furthermore, it helps to standardize the selection process.

An officer may obtain from his career branch his relative OML position (upper, middle or lower third) when he appears on an OML compiled for the purposes outlined in the preceding paragraph. It should be noted that OMLs are prepared only as needed and are not revised continually.

PREFERENCE STATEMENT

Would you like to be overseas within six months of reassignment and then be reassigned on the basis of a three-year-old preference statement? We believe that you would not. Therefore, update yours as needed. Before mailing your preference statement to Armor Branch, always make an extra copy for your personal file. Unless we hear from you we must work on the premise that the preference statement in your Armor Branch file is still valid.

LIEUTENANT ASSIGNMENTS — A SUGGESTION

Whenever possible, local commanders should assign Armor lieutenants to branch material duties preferably at the company troop level.

ARMOR — The Magazine of Mobile Warfare

SPEEDY SERVICE REQUEST

- Change my address effective _____
- Hold my magazines until further notice.
- Send application blank(s) to _____
- PLEASE _____



_____ CURRENT ADDRESS

_____ NEW ADDRESS

WANTED!!

_____ ZIP

THE POST OFFICE CAN NOT FORWARD ARMOR TO AND FROM APO ADDRESSES



GENERAL HOWZE PRESENTS AWARDS

On the afternoon of Tuesday, 2 June 1970, General Hamilton H. Howze, Honorary Vice President, presented United States Armor Association Award sabers to the two top 1970 Armor Graduates of the United States Military Academy. Honored on the eve of their graduation were Cadets Wayne E. Corfman and William A. Knowlton, Jr. In addressing those assembled at Trophy Point for the presentation, General Howze emphasized the importance of maintaining high standards in the Army and outlined the importance of the Army to the Nation today as well as in the past. He stressed the growing need for mobility in military operations and the part Armor, as a highly mobile arm, must play on the ground and in the air.



Lieutenant Knowlton stood 24th in the 1970 class. During each of his four years, he was designated a Distinguished Cadet and was on the Dean's List. His initial assignment is to the 3d Armored Cavalry Regiment at Fort Lewis. Following the Armor Officer Basic, Airborne and Ranger Courses, he will join the 11th Armored Cavalry Regiment. He is the son of Armor Major General William A. Knowlton, Superintendent of the United States Military Academy.

Lieutenant Corfman stood 21st in the 1970 class of 750. During each of his four years at West Point, he was designated a Distinguished Cadet and was on the Dean's List. His initial assignment is to the 8th Squadron, 1st Cavalry at Fort Knox. Following the Armor Officer Basic, Airborne and Ranger Courses, he will join the 11th Armored Cavalry Regiment. He entered the service from Nevada, Ohio.



ARMOR INNOVATIONS CENTER

AIT CREW CONCEPT

Realizing that esprit de corps and crew competition are essential factors in the achievement of high maintenance goals, USATCA's 1st Brigade has started using a "Crew Concept." In addition to enhancing maintenance, the crew concept has proven to be effective in stimulating motivation and reducing disciplinary problems.

The program is simple. The trainee is assigned to a tank commander at the beginning of the training cycle and remains in the same crew on the same tank until he completes AIT. The trainee identifies himself with a particular crew, tank and tank commander and directs all his energies to the improvement of this group. The continued presence of the tank commander insures close supervision of the trainee with resultant improvement of training effectiveness and prompt identification of problem areas.

While teamwork is an established fundamental of armor operations, its importance is often overlooked in individual training. USATCA's 1st Brigade has made teamwork a very real part of the training of future tankers.

INTEGRATION OF AVIATION INTO THE COMBINED ARMS TEAM

Since the completion of phase III of the Tank, Antitank Assault Weapons Requirements Study (TATAWS), the Combat Developments Command Armor Agency has spent much time evaluating the employment of aerial vehicles in executing armor and cavalry missions.

Events in Southeast Asia have clearly established the value of using aerial vehicles in place of conven-

tional ground vehicles to accomplish certain cavalry missions. The unique accomplishments of the air cavalry troop, a small but very potent combined arms team, have been most influential in setting the course for exploration of future trends in mounted combat. A measure of the esteem in which this unit is held is that one division commander in Vietnam requested to exchange one complete maneuver battalion for an additional air cavalry troop.

For some time prior to the employment of air cavalry in Vietnam, the equipment required for an air cavalry unit was available only to in-country aviation type units. Once the equipment became available to organize and employ units using cavalry concepts, the success that we know today was rapidly achieved.

Armor officers have traditionally been identified with such terms as "firepower," "mobility," "shock effect," "Armor is a state of mind" and "The Combined Arms Team." In that connection, CDC Armor Agency personnel believe that "armor" primarily represents a state of mental mobility and is not tied to any particular piece of equipment.

In recognition of the potential capabilities of aerial vehicles employed in cavalry and anti-armor roles in a postulated mid-intensity European environment, together with the increased risks involved, a proposal has been made for the Armor Agency to conduct a study entitled, "Integration of Aviation into the Combined Arms Team." Although other facets of Armor's use of aviation will be examined, primary emphasis will be placed on determining the optimum use of attack helicopters in conjunction with tank and mechanized infantry task forces. The primary mission of aircraft so employed would be to destroy enemy tanks.

In determining the feasibility of supplementing or replacing proven ground systems with the attack helicopter, three very difficult questions must be addressed. These are:

► Is the attack helicopter, when equipped with an appropriate weapon system, capable of destroying enemy armor?

► Can the attack helicopter survive while engaging enemy armor?

► Provided the answers to the above questions are yes, can the attack helicopter perform the anti-armor/mech mission in a more combat effective, and more cost effective, way than ground systems? If so, then which systems and by what margin?

Army people generally agree that the answer to the first question is "yes." However, the tactics, tech-

niques, and organizations required to achieve this have yet to be adequately examined.

The proposed study will not, in itself, provide absolute answers to the foregoing questions. However, it should provide useful insights concerning the feasibility of employing attack helicopters with combined arms formations in a sophisticated environment. New doctrinal and organizational ideas are anticipated to result as well.

This study will be computer-supported and will incorporate a careful blending of military judgement and quantitative analysis. It is expected that the study will begin during the 1st quarter, Fiscal Year 1971 and be completed approximately one year later.



NEW TURRET TEST SET

The Armor School Weapons Department recently began evaluating a revolutionary approach to organization maintenance fault isolation and troubleshooting. A turret fault isolation test set for the *Sheridan M551* Armored Reconnaissance/Airborne Assault Vehicle, designed and built by the Allison Division of General Motors Corporation, represents a significant step toward achieving a positive method of troubleshooting the turret electrical system as well as the gun/launcher. Heretofore, turret repairmen, in the absence of adequate test equipment, have had to rely on "homemade rigs" such as two wires and a light bulb, to isolate electrical faults.

If proven suitable, the new test set will replace the electrical drive control test set now used on the *Sheridan* system. Repairmen have found the electrical drive set difficult to operate and have noted that it is not designed to troubleshoot the entire *Sheridan* turret system.

The new test set features "Go/No Go" displays using a series of calibrated meters and panel lights. Turret components can be checked by simply insert-

ing a printed circuit card into the face of the test set and then monitoring the lights and meters.

Other organizations participating in the evaluations include the Armor and Engineer Board, the Ordnance Center and School, the Missile and Munitions Center and the 6th Armored Cavalry Regiment.

PICTORIAL GUIDES FOR ARVN

The announced withdrawal of American Forces from Vietnam is dependent on the readiness condition and combat ability of ARVN forces to assume the combat role of American troops. In turn, the state of combat readiness of ARVN is directly dependent upon its ability to operate and maintain its combat equipment.

The many existing Vietnamese dialects, a low literacy rate among many of the ARVN soldiers and the absence of a direct translation of many technical terms from English to Vietnamese creates a major problem in translating training literature, and operators and maintenance manuals, into understandable Vietnamese. American advisors have found that the Vietnamese soldier will take the American manuals and study the pictures to learn about a piece of equipment. And he does this without reading the narrative.

The Human Research Unit and HumRRO Division 2 at Fort Knox have developed pictorial guides for both simple and complex equipment which train an operator or user through using a series of pictures and a minimum of words. Pictorial guides can be developed for all equipment from aircraft, tanks and trucks to individual hand weapons. They can greatly assist the operator to become proficient with the equipment in a relatively short time.

Because pictorial guides could aid the Vietnamization Program and become a prime medium for ARVN education and training, at the request of MACV, a team from HumRRO visited Vietnam from 1 to 20 June to evaluate the applicability of the pictorial guides as well as other training methods to support the Vietnamization Program.

TAERS IS NOW TAMMS

Effective 1 April 1970, the well-known term TAERS was converted to TAMMS (The Army Maintenance Management System) by the publication of a new TM 38-750 and a new TM 38-750-1 both dated December 1969. July 1970 is the release date of a condensed synoptic version to be published as DA Pamphlet 750-38, TAMMS, dated May 1970.



HOW WOULD YOU DO IT?

US ARMY ARMOR SCHOOL PRESENTATION

SITUATION:

You are the platoon leader of an armored cavalry platoon in Vietnam. During a reconnaissance mission, your platoon is engaged by an enemy force employing automatic weapons and rocket propelled grenades from fortified positions located within the near edge of a dense jungle area, approximately 100 meters in front of your lead elements. Two M113A1 ACAV's are damaged by rocket propelled grenades (RPG's) in the initial exchange of fire and you notice several casualties lying near the damaged vehicles. As the intensity

of the enemy's fire increases, it is obvious that your remaining elements cannot develop fire superiority, and that additional fire support is required. In fact, your lead elements are unable to maneuver due to the restrictive terrain and the intensity of the enemy's fire, and you cannot reach the casualties, much less evacuate them. Air support is not immediately available. An artillery forward observer, however, is located with troop headquarters at the fire support base. Collocated with the troop headquarters is a 155-mm howitzer battery that is available to support your platoon.

AUTHOR: CPT ROBERT O. TIMBROOK

ILLUSTRATOR: PVT DAVE PEDLER

PROBLEM:

You are in a position to adjust artillery but the jungle terrain limits your field of observation to 10 meters beyond the enemy's positions. Additionally, the proximity of your forward elements to the enemy positions make the bracketing method of artillery adjustment undesirable.

SOLUTION:

Employ the creeping method of artillery adjustment by selecting an initial target grid beyond the enemy positions a suitable distance, 600 to 800 meters, to ensure troop safety on delivery of the initial rounds in adjustment. Transmit the request for fire, including the term DANGER CLOSE, to the artillery forward observer (utilizing the command communication net). After coordination with the troop commander, if practical, the artillery forward observer at troop headquarters relays the initial request for fire and subsequent adjustment corrections directly to the supporting artillery fire direction center. Estimate by sound the distance of impact beyond the target of initial and subsequent adjustment rounds and make range corrections in 100- or 50-meter increments, as appropriate, to ensure troop safety and effectively engage the target as rapidly as possible. As rounds are walked back in close proximity to the target, make a series

of 25 meter range corrections until a range correct or short spotting is obtained. With the adjustment phases completed within 25 meters of the target, enter fire for effect to neutralize or destroy the target.

Note. The adjustment phase may be conducted by the observer utilizing the entire battery rather than a platoon, as normally employed in the bracketing method.

DISCUSSION:

In a situation such as this, with limited observation beyond the target and the proximity of friendly troops, the bracketing method of artillery adjustment is not recommended for the following reasons:

1. Delivery of the initial rounds in adjustment to an accuracy required for troop safety cannot be assured due to observer target location errors, map inaccuracies, and probable errors inherent in the weapons system employed.

2. Delivery of subsequent rounds in adjustment, as required to establish a 100-meter bracket of the target, to an accuracy required for troop safety, cannot be assured due to observer adjustment errors, compounded by limited observation, proximity of friendly forward elements, and probable errors in the weapons system being employed.

ESSEX TROOP 80TH REUNION

The 102d Cavalry, now the 102d Armor Group, NJARNG, will hold its 80th Reunion on Saturday, 31 October 1970 at the Westmont Country Club on Rifle Camp Road in West Paterson, NJ. Further details are available from CPT R. Koba, Armory, 1315 Pleasant Valley Way, West Orange, NJ 07052 (Tel: (201) 731-0102).



Historical Publications

The latest Gilcrease Institute of American History and Art quarterly *American Scene* is entitled "The Buffalo Soldier." Superbly illustrated in color by institute director and editor Paul A. Rossi with text by associate editor Donnie D. Good, the 8½ by 11 magazine format booklet is a fitting and historically accurate tribute to the frontier soldiers of the 9th and 10th Cavalry Regiments. Also included are several attractive Remington sketches. Copies of this excellent booklet may be obtained for \$1.25 each from the institute at Rural Route #6, Tulsa, Oklahoma 74106. Also available is information on other publications and prints covering activities of the US Army in the West.



**ARMOR SCHOOL INSTRUCTOR
RECEIVES DISTINGUISHED SERVICE CROSS**



Captain Mark L. Holbrook, an instructor in the Weapons Department of the Armor School at Fort Knox recently was presented the Nation's second highest award for valor, the Distinguished Service Cross by Major General Richard L. Irby, post commander and Commandant of the Armor School.

Captain Holbrook distinguished himself by exceptional valorous actions on 2 March 1969 while flying in support of Fire Support Base Swinger in Vietnam. Despite heavy enemy fire directed at his aircraft, Captain Holbrook began close-range firing passes over the enemy positions, destroying their anti-aircraft weapon emplacement. He then reported the location of each wounded American soldier to expedite their medical evacuation.

After leaving the contact area to replace his badly damaged airplane, Holbrook returned to the battlefield to aid a second unit under hostile attack. Flying into the middle of the enemy fire, he began to mark positions for airstrikes.

When he discovered a large enemy element maneuvering to surround friendly ground troops, he initiated low passes and halted their forward movement. With the hostile element pinned down, he flew to another area of contact, where he spotted two enemy vehicles, which he marked, as well as surrounding enemy positions. Despite sustaining numerous hits to his aircraft, he ran marking passes which resulted in the destruction of the vehicles, an ammunition depot and much of the enemy force.

**DISTINGUISHED SERVICE CROSS FOR
ARMOR CAPTAIN**



Captain Claude K. Hudson, Armor, an Infantry School Advanced Course Student, recently was presented the Distinguished Service Cross by Brigadier General Sidney B. Berry, Assistant Commandant.

Captain Hudson distinguished himself during a search and destroy mission with the 11th Armored Cavalry Regiment in the Republic of Vietnam. While serving as a troop commander with G Troop, 2d Squadron, Captain Hudson and his men moved southwest out of An Loc and neared the hamlet which they were instructed to secure. Communist forces initiated an uninterrupted barrage of automatic weapons and antitank grenade fire. Without a moment's hesitation, Captain Hudson brought his troop on line and commenced to attack the enemy emplacements. Standing on the rear deck of his track, he maneuvered about the bullet-swept field and directed the deployment of his men. As the armored force advanced, one of the platoons encountered fierce resistance and became stalled. Captain Hudson immediately directed his vehicle to the area and rallied his men to continue on line. For over four grueling hours, the troop thundered on, destroying hostile fortifications and drove the enemy away. Throughout the battle, Hudson remained exposed to vicious fire to control his troop, as well as to guide a mechanized infantry unit that had been airlifted in to assist the sweep.

Cheyenne is demonstrated as armor weapon. Shown above is first firing of a live TOW missile from an aerial weapons platform. (1) TOW is launched. (2) In flight. (3) Nearing M4 target tank. (4) Impact. Photographs were made during Cheyenne weapons tests at Yuma Proving Ground in Arizona. More than 700 flying hours have been logged in over 1300 flights during the tests.



**ARMOR SELECTIONS
US ARMY WAR COLLEGE NON-RESIDENT
COURSE FY71**

- LTC Cromwell, Raymond B., Jr.
- COL Edwards, Stephen O.
- LTC Esper, Donald
- LTC Jacobs, Ernest F., Jr.
- LTC Keith, Norman A.
- LTC Krogh, Richard V.
- LTC Peterson, James M.
- LTC Phillips, John H.
- LTC Rife, William T., Jr.
- LTC Rigg, Theodore S., Jr.
- LTC Smith, Tommie G.
- LTC Tanner, William T., Jr.
- LTC Weaver, Gene A.
- COL Weaver, Harold A.
- LTC Williams, Bruce F.

ISRAEL REBUILDS M48A1 TANKS

According to the Chicago Tribune, Israeli workshops are rebuilding American Patton Tanks. It is reported that Israeli officers believe the rebuilt Patton tanks to be superior to the Russian T55s

supplied to the Arab armies. Israel has replaced the American 90mm tank cannon with the British 105mm tank gun. In addition, the gasoline engine has been replaced by a 750hp diesel which can run for 10 hours without refueling. Israel has not replaced the optical rangefinder, the fire control system or the cross-drive transmission. Israeli officers concede that the T55 has one advantage, a stabilizer which keeps the gun on target while the tank is moving. However, they rate this characteristic of negligible importance.

**COMMANDERS
INFORMATION OFFICERS**

- ARMOR** needs and wants . . .
- A copy of your unit newspaper
 - Releases with photos on awards of DSCs to Armor people
 - Notice of Assignments of field officers and sergeants major to key positions at battalion level and up
 - Results of military competitions
 - Articles, releases and photos of unusual unit activities worldwide
 - All combat photos of Armor, armored cavalry and air cavalry units. We are building archives which will be very valuable in the future



An M60 tank (105,500 pounds) and a 175mm self-propelled gun (61,200 pounds) were loaded on a US Air Force C5A Galaxy during recent tests at Pope AFB/Ft. Bragg, N.C. The open visor nose exposes the fully 19 x 13½ foot cargo compartment cross section. Kneeling landing gear lowers cargo floor 39 inches so forward ramp can unfold and extend to ground. Prior to take-off the joint USAF/Army/Lockheed team added a 21,590-pound tracked command vehicle to make a total payload of more than 188,000 pounds for the test flight.

IN HONORED GLORY

The Tomb of the Unknowns at Arlington National Cemetery is one of the great shrines of America. It is visited by thousands from this country and abroad each year. Between the tomb and the Amphitheater there is a trophy room through which most of the visitors, to include prominent persons at official functions, pass. In this room are hundreds of tributes to the unknowns. There are medals from foreign governments and national patriotic societies. In addition, many nationally recognized veteran's organizations have presented plaques to honor the unknowns.

At this time, 10 of the 16 World War II American Armored Divisions are represented by plaques. Those not now represented are the 8th, 9th, 13th, 14th, 16th and 20th Armored Divisions. Two of these divisions, the 9th and 13th, do not now have division associations. However, former members of all the divisions are now considering ways to see that they are represented by a plaque.

Veterans of the divisions who wish to help with these projects may contact the representatives below. In no case are large contributions being sought, only a respectable number of supporters.

- 8th Armored Division — Mr. H. B. Rothenburg, 8th Armored Division Association, Room 400, 134 North La Salle, Chicago, Ill 60602

- 9th Armored Division — Major General George Ruhlen, 510 Cave Ln, San Antonio, Tx 78209

- 13th Armored Division — Colonel O. W. Martin, Jr., US Armor Association, 1145 19th St NW, Washington, D.C. 20036

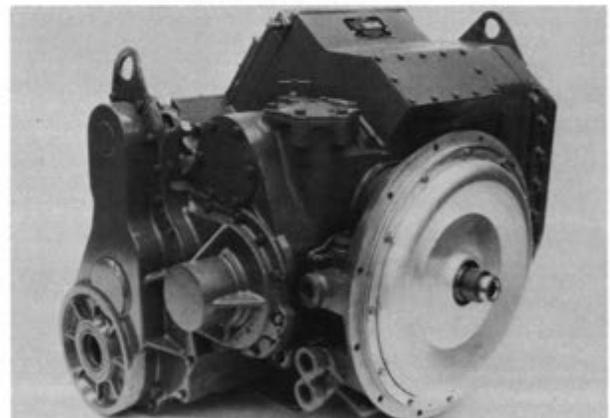
- 14th Armored Division — Mr. Archie Jeardoe,

14th Armored Division Association, 423 East 9th, Concordia, Kansas 66901

- 16th Armored Division — Mr. Lester Bennett, 16th Armored Division Association, 5820 Recamper, Toledo, Ohio 43613

- 20th Armored Division — Mr. Kris K. Gilbertson, 20th Armored Division Association, 513 Pelican, Rhinelander, Wis 54501

A NEW POWER TRAIN



The General Electric Company and the US Army have jointly developed a new hydromechanical power train. Through the use of split-power path transmissions that allow vehicle tracks to counter-rotate and turn a variable speeds, a military vehicle can now negotiate radical turns at high speeds, accomplish complete and continuous pivots, and effect sharp changes of direction with ease and without undue operator effort.

It is claimed that, with the new power train, a vehicle can glide over uneven terrain and an oper-

ator can maneuver with near-nonchalance since he uses neither steering brakes and clutches nor shifting devices. New drivers have quickly learned to operate a tracked vehicle like seasoned veterans.

The testing program, under the sponsorship of the US Army Tank-Automotive Command, includes three vehicle test rigs. Each has a 250 hp version of the transmission installed. Included are a modified 10-ton *M113A1* personnel carrier, a 7.4-ton *XM729* prototype assault vehicle, and a 6-ton *XM759E1* marginal terrain vehicle.

The hydromechanical power train offers top speeds in excess of 50 mph and can be adapted to vehicles with gross weights from five to 50 tons and input horsepower from 100 to 1500. Ease of maintenance and reliability of the hydromechanical system should be more favorable than with existing hydro-ginetic systems since components are easily removable and some 25 percent fewer parts are required.

TRY ONE IN THE GUARD

The Army National Guard has recently launched an ambitious recruiting program under the motto "Try One in the Guard." To keep its high quality units strong in numbers and skills, the Guard has aimed its sights at attracting more prior service personnel to its ranks, both officer and enlisted.

The benefits gained from recruiting those with previous active Army service are three-fold. These men, most with combat duty in Vietnam, provide "instant experience," an ingredient highly valued in high priority units. This experience contributes toward the second benefit — increased unit readiness. By enlisting prior service personnel the Guard also reduces training costs considerably. It is estimated that one prior service enlistee costs the government approximately \$890.00 the first year, whereas the enlistment and training expense for a non-prior service enlistee runs almost three times that figure.

What's in it for the officer or enlisted man now on duty in an Armor unit? Any man fulfilling his active duty obligation faces the balance of a total commitment of six years total service active and inactive. The Army National Guard can assist recently discharged veterans to fulfill this obligation. Because the Guard is combat oriented it has either Armor or Cavalry units in practically every state in the Union. There are 38 Armor battalions and 14 Cavalry squadrons in the Army National Guard. These have elements in nearly 300 communities. So, the recently discharged veteran can apply his military skills and knowledge in the Armor, or other combat field while serving in a unit in his hometown or close by.

This is where "Try One in the Guard" comes in; the ARNG is now offering prior service personnel

the option of enlisting for one year as a get acquainted trial offer. During that year the Guard hopes to sell the volunteer on the benefits of continuing his association with a Guard unit. Pride, esprit, personal satisfaction and a recognition of tangible benefits are expected to germinate during the "Try One" year and to bear further fruit.

The extra income while performing duty as a citizen soldier, retirement, education, opportunity for commission and so on are among the many benefits a young man earns by continuing to serve with the Guard. All this is achieved while serving part time as a Guardsman — most likely in his home community.

The first phase of "Try One" has just been concluded. It covered the period 1 March through 30 June 1970 with each state conducting its own individual campaign. The results have been so gratifying that the ARNG has launched a second campaign which will cover the period of 1 July through 31 December 1970. Promotional material publicizing the program has been distributed to active Army transfer points, to National Guard liaison officers at active Army installations and to local armories throughout the country.

Officers and enlisted men being discharged from active service are beginning to realize that the talents which they have can mean extra income as well as the personal satisfaction of teaching others what they know from first hand experience. Thus the Guard and the prior active serviceman and, most importantly, the Nation reap tangible and long lasting benefits from this unique program. "Try One" is based on the real strength of the Army National Guard — experienced men who want to serve their states and their country as their forbears have done in America for three centuries.

INFANTRY MUSEUM

A nationwide campaign to raise \$6 million to erect a National Infantry Museum is now underway. According to Colonel William M. Zimmerman, Executive Secretary of the Infantry Museum Association and Fort Benning Deputy Post Commander, the proposed new museum to be erected at the "Home of Infantry" is to be, "a memorial to the American Infantryman" who has served throughout the Nation's history.

Chairman of the association is General of the Army Omar N. Bradley. Its membership includes Howard H. Callaway, chairman of Freedoms Foundation at Valley Forge; the Honorable John S. D. Eisenhower, Ambassador to Belgium; General Hugh P. Harris (USA-Ret) President of the Citadel; actor John Wayne; Robert C. Cosgrove, President of the Green Giant Company; and Joseph B. Woodlief, President of Anaconda Aluminum.

Co-chairmen of the present fund drive are Arkansas Governor Winthrop P. Rockefeller and Mr. J. W. Woodruff, Jr., of Columbia, Georgia.



Major General William R. Sharp has been appointed Chief of Staff, New Jersey Department of Defense (Adjutant General of New Jersey). From enlisted status in the 102d Cavalry Regiment (Essex Troop), New Jersey National Guard, General Sharp was commissioned from the Cavalry OCS in 1942. During World War II combat in Europe with the 102d Cavalry he rose from lieutenant platoon leader through captain troop commander to major. Following World War II he served in the 50th Armored Division, NJARNG in many capacities including chief of staff and later on the state military staff.

TRUE HANDBOOKS

Combat Developments Command (CDC) is now developing instant field manuals to accompany developmental STANO items of equipment deployed to Vietnam for evaluation under combat conditions. STANO, standing for Surveillance, Target Acquisition, and Night Observation, is a top priority Army effort to find the enemy through technology. STANO devices ranging from new radars and sensors to night observation devices are undergoing accelerated development and testing prior to deployment to Vietnam. To insure that the user properly employs and maintains the new experimental items, CDC is producing a guidance handbook for each one. The handbooks are reduced in size to fit in a fatigue pocket and are printed on waterproof paper if destined for front line troops. Thus, in part, the Army has returned to field manuals that can be conveniently used in the field. CDC has already produced the first two user guidance handbooks, one for the Handheld Thermal viewer and one for the PPS-9 Ground Surveillance Radar. Both items are now in use in Vietnam by combat troops, assisted by the handbooks which were written, edited, printed, and shipped in only 19 days.

The Tarpaulin

TAKE COMMAND

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VICTORIOUS

LTC Dana G. Mead has been selected to be a White House Fellow for 1970-71. He is the second Armor officer to be so honored. LTC (then MAJ) John W. Woodmansee, Jr., was selected to serve in such a prestigious position for 1968-69 . . . Two of the four 1970 CGSC Honor Graduates were Armor officers-Majors George J. Dramis, Jr., and Donald V. Lockey . . . The 1970 Armor School Joseph M. Hibbs Awards for excellence in instruction were presented to MAJ David A. Neck (Command and Staff) MAJ David E. Richardson (Army Maintenance Management), SFC Raymond E. Perkins (also AMMD), SSG George W. Lee (Weapons), SSG James L. Matthews (Communications), and Mr. John B. Werkman, Jr., (Communications) . . . Distinguished Armor Officer Basic Course Graduates: 17-70 2LT

Jeffrey B. Thompson, USMC; 18-70 2LT Charles D. Demos; 19-70 2LT Walter C. Vannett, Jr.; 20-70 2LT Gary L. Stevens . . . SSG Henry A. Hopkins, Hq Trp, 8th Sqdn, 1st Cav, 194th Armd Bde is first graduate of the new Armor Senior (Advanced) NCO Course.

AND SO FORTH

Four Danish Army helicopter pilots recently received a week of air cavalry tactical training with Troop D, 2d Sqdn, 4th Cav, 4th Armd Div. According to ARMOR subscriber (and informal correspondent) Danish 1LT Mogens Warrer, the pilots found firsthand accounts of Vietnam air cavalry experience very valuable . . . A reader points out that the 3d Bn, 35th Armor did not win the 4th Armd Div Tank Gunnery Trophy five times in the past six years. In fact, the 4th Bn, 35th Armor won the trophy in 1967 and 1968 (4th Armd Div PIO please copy) . . . J. J. Gately, 1737 Browning Road, Pennsauken, N.J. 08110 is seeking contacts with those who served in WWII tank destroyer units. He is now researching a TD history . . . The Bundeswehr has adopted a black beret for its Panzer Troops which is more like that of the British "tankies" than those worn by the WWII Wehrmacht. Red berets have been authorized for German paratroopers and green berets for light infantry (jaeger) troops.

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FROM THE BOOKSHELF

DECISIVE WARFARE

by Reginald Bretnor. Stackpole. 188 pp. 1969. \$7.95.

Reginald Bretnor implies or raises the hope in his preface that he is of the same school and caliber as J. F. C. Fuller and the late B. H. Liddell Hart. Neither assertion is true.

Mr. Bretnor (a pseudonym) is a free lance writer who curiously enough, until now, has concentrated almost exclusively on science fiction, publishing articles in *Harper's*, *Today's Woman*, *Esquire* and the like. His only previous published book is one he edited entitled *Modern Science Fiction*. His sole qualification for writing a book on military theory apparently lies in his having worked for OWI and the Department of State during World War II and sometime thereafter.

Decisive Warfare is divided into five chapters. Mr. Bretnor establishes his principal task as being that of attempting to arrive at a general "equation of war" which is good for all ages and all situations. Early in the book, he attacks the "principles of war" as being deficient as a means of predicting or controlling war because they do not include two essentials: consideration of vulnerability and enemy forces. He further postulates that the traditional concepts of "strategy" and "tactics" are no longer separate entities as in the past, because of the vast increase in the intensity and complexity of modern warfare. He would replace these traditional concepts with a simple equation which has universal application to warfare of all types and ages: friendly destructive force (M) plus friendly vulnerability (V) equals enemy destructive force (M') plus enemy vulnerability (V'). The bulk of the first three chapters is spent explaining the complexities and interrelationships of these four variables and factors such as morale, training, and time which can act as multipliers or divisors of the variables. In chapter four, Mr. Bretnor points out, using historical examples, that the way to achieve *decisive warfare* (the reason for the title of the book) is to achieve maximum imbalance of the "equation of war" in favor of the friendly side. The final chapter delves into political-military relationships and how the United States, using the "equation of war" can achieve an optimum response.

Some of the concepts discussed by Mr. Bretnor are indeed refreshing and worthy of reflection by military theorists. For example, Mr. Bretnor makes

the novel contention that morale and training, even if maximized, can never increase the value of destructive force (M) beyond its absolute value as determined by other physical and situational factors. Similarly, he makes some interesting distinctions between structural, situational and psychological vulnerability. He warns that the helicopter has widespread application only in limited wars versus technologically inferior opponents, but has the same relative vulnerability as the horse on a conventional battlefield. He asserts that "the error of forming a separate Air Force was a fortunate one" because it will eventually evolve into a Space Force when the vulnerability of tactical aircraft becomes too great. He provides a good discussion of the nuclear war significance of the communications problem in an already overly-congested nation and argues strongly and convincingly for decentralization of the means of production even to the extent of "defense-oriented allocation of moneys for relief."

In spite of these kernels of good, most of the book is chaff. The entire book seems to portray the current military establishment as unbelievably naive and simple-minded in methods of analysis of present and future warfare. Mr. Bretnor's criticism of the "principles of war" is invalid on at least two counts: consideration of enemy forces is implicit in the principle of war *security* ("Never permit the enemy to acquire an unexpected advantage."); further, his implication that we currently use the principles of war to try to predict and control war is ridiculous. FM 100-5 says their "proper application is essential to the exercise of command and to the successful conduct of military operations." Nowhere does it claim that they should be used to "predict and control war."

Another serious weakness of the book is the author's apparent inability to decide whether his "equation" is to be used qualitatively or quantitatively. He reproduces mathematical tables found in other published works and says they must be considered, yet never discusses how they can be utilized in the "equation." Similarly, he refers to Lanchester's famous N^2 Law — a distinctly quantitative approach — but never offers a practical means of incorporating it in the overall concept. If Mr. Bretnor was in fact trying to describe a quantitative system, his "equation" is overly simplistic: DA Pamphlet 70-5, *Mathematics of Military Action, Operations, and Systems*, cer-

tainly gives a much more sophisticated and accurate description of the mathematical relationships of war, to cite only one *official* publication.

His abandonment of the traditional concepts of "strategy" and "tactics" leads him to confuse loosely action throughout the book on widely varying levels, speaking in the same breath, for example, of "the nation . . . as a military organism . . . involved no differently than a missile submarine, an infantry division, a hardened ICBM site."

Many of Mr. Bretnor's historical examples are less than accurate. An example is his contention that application of Lanchester's N^2 Law to Nelson's victory at Aboukir Bay would have shown a striking mathematical imbalance. His account of the battle is grossly oversimplified and overlooks such key elements as the fact that it was a night battle (Nelson's men were prepared to fight at night and the French were not) and that *surprise*, not *mass*, was the key to Nelson's victory. Similarly, he points out that Custer's annihilation at the Little Big Horn "had no effect whatever on the inescapable destiny of the Plains Indians." By any standard, it had a major impact on their destiny in that it raised public indignation to a fever pitch in the Nation, which resulted in a drastic increase in the size of the Army which sealed the ultimate demise of the Plains Indians after years of indecisive warfare.

In the area of political-military relationships, Mr. Bretnor exudes such astonishing items as condemning the U.S. after World War II for not using its "nuclear monopoly together with its vast armies . . . to establish a viable and vigorous world organization to dictate a stable peace for the world;" for not intervening in the Russian Civil War and thereby stopping the world Communist movement before it could get started; and for not having "kill[ed] off a few regiments of the Reichswehr in 1933 [rather than] three hundred thousand German civilians by air bombardment a decade or so later." Hindsight is always 20/20, but rarely shows such an astonishing lack of an awareness of the political realities of an era as this. His later discussion of the problem of control "when super weapons of city-busting capacity become available to determined and resourceful small groups, or even individuals" sounds more like science fiction than military theory.

In summary, it is extremely doubtful that Mr. Bretnor has developed any truly new military theory. His principal thesis that warfare is decisive when one side enjoys a decided advantage over the other has been known for centuries and has indeed been the basis for the evolution of new forms of warfare throughout

history. Perhaps his equation is a refreshing conceptual means of viewing warfare. However, modern operations engineering and systems analysis techniques currently used by the military establishment certainly offer a much more sophisticated means of accomplishing the same thing. The real question here seems to be not whether Mr. Bretnor's concept is valid (it is, in spite of its shortcomings), but rather whether this trip was really necessary. It is difficult to conclude that it really was.

MAJ JOHN H. MOELLERING, USMA

WARFARE

by Robert Leckie. Harper and Row. 197 pp. 1970. \$5.95.

Robert Leckie has authored a bevy of books on military subjects, including a number for children. According to the dust cover, his latest offering is a "concise and entertaining survey of the history and principles of armed conflict" which is "for military buffs who need a quick reference source, but especially for the general reader to whom military science is a fascinating mystery."

On balance, Mr. Leckie's analysis of the political and sociological aspects of war is much stronger and more valid than his attempted description of the purely military side of warfare (with the exception of his excellent survey of the development of *naval* warfare). It is from that vantage point, not the historical, that *Warfare* offers its greatest value to the professional army officer. The author attacks pacifism on logical as well as moral grounds, reaffirming the inevitability of war. He argues convincingly that unconditional surrender as an objective of national policy is wrong. He has included a good, well-written chapter on the role of dissent in the wars of America and its relevance today. He lucidly points out how war is less useful today as an instrument of foreign policy than formerly because its destructiveness has multiplied.

Unfortunately, his treatment of the military aspects of warfare is often confusing and sometimes misleading. For example, the French knights at Agincourt did not "tumble from their saddles," they attacked dismounted. Linear tactics arose out of the Thirty Years' War—a total war—not from the era of limited war as stated. Mr. Leckie's contention that the *M16* rifle is too heavy for the average Vietnamese soldier is simply not true. And his chapter on contemporary military organization unbelievably states that today a United States Army corps is commanded

by a major general, and that a division consists of three regiments of three battalions each!

In summary, as a primer of the military side of warfare, even discounting the inaccuracies, *Warfare* is too elementary and over-simplified to be of much value to a professional military man. However, it does offer thoughtful and valuable insights into subjects peripheral to warfare — the social, political, and moral ones — which must demand our attention.
MAJ JOHN H. MOELLER, USMA

THE UNITED STATES AND CHINA: The Next Decade

Edited by A. Doak Barnett and Edwin O. Reischauer. Praeger. 1970. \$7.50 (cloth), \$2.95 (paper).

This is a condensation of presentations and discussions at the national convocation held in New York, on 20 and 21 March 1969, under the auspices of the National Committee on United States-China Relations. Much of what is contained in the papers themselves, and in the discussions, is a repetition of ideas that have been around for a long time. Collectively, what emerges clearly is a sense of frustration — frustration that the United States cannot find a unilateral solution to the bilateral problem of American-Chinese relations or to the multilateral problem of relations between the larger world community and China.

Obviously, some things have been done, and more might be done, to normalize relations between the US and China. Economic relations could be broadened even further. Scholars, journalists, and even tourists might be permitted to visit each others' homelands although this would be largely a one-sided "exchange" with Americans going to China and few Chinese coming here. Nevertheless, it is clear that Peking does not see sufficient advantage to China in normalization of political relations with the United States to pay the relatively modest price at this time. In addition, it would appear that we do not have any fresh ideas about how to reduce the price or to increase the advantage for Peking.

It must be said, however, that we have taken the first steps in a 10,000 *li* march. No longer do Assistant Secretaries of State go before the Senate Foreign Relations Committee to describe China as a Russian satellite, as they did 20 years ago. So too, the China lobby appears to have lost much of its power and influence.

This book is a valuable addition to the popular literature and may assist in the process of developing a better-informed public opinion. Further public discussion of the issues should be encouraged. One might hope that future discussions will define the issues more narrowly and expound on them more clearly. LTC GEORGE K. OSBORN, III, USAWC

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ARMOR

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THE CHIEF OF STAFF

TO THE OFFICERS AND MEN OF ARMOR

It gives me distinct pleasure to extend to the members of Armor the Army's heartiest congratulations on the 194th anniversary of your branch.

With the establishment of Cavalry in 1776, the Continental Army was provided both mobility and shock effect. The Cavalry's proud traditions of yesterday are now preserved by Armor today. While the basic principles of war remain unchanged, Armor's firepower and mobility have evolved from saber and horse to missile and tank. Continued imagination on the part of the men of Armor will guarantee the right of the branch to be called the Combat Arm of Decision.

The men and women of the Army join me in saluting your past performance in battle and readiness to meet all contingencies, and in voicing our confidence in your continued success.



W. C. WESTMORELAND
General, United States Army
Chief of Staff

ARMOR

The Magazine of Mobile Warfare

Volume LXXIX

November-December 1970

No. 6

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COVER

"A MODERN OLD BILL." AIR CAVALRY PILOT AND ARTIST CW2 CHESTER JEZIEWSKI PORTRAYS THE MOBILITY AND POWER OF MAN AND MOUNT TEAMED TOGETHER IN THE 85TH YEAR OF THE PROFESSIONAL ASSOCIATION OF THE MOUNTED ARM.

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LETTERS TO THE EDITOR



On Professionalism

Dear Sir:

This is to thank you and the Armor Association for keeping *ARMOR* informative and oriented toward the future.

Several of us Armor officers here in the Infantry Advanced Course recognize more strongly than ever the value of our professional magazine.

Captain Kirk's article, "Are We Professionals?" (*ARMOR*, May-June 1970) was well written and on a subject that needs to be aired. The lack of professionalism displayed by some of our contemporaries is disturbing.

If they will only do so, active membership in professional associations and attentive reading of professional journals such as ours will go a long way toward bringing them to the required high standard.

JOHN C. SAWYER
Captain, Armor

Fort Benning, Georgia

Aerial Fighting Vehicles

Dear Sir:

Lieutenant Colonel Carl M. Putnam's article in the May-June 1970 *ARMOR*, entitled, "Proponency of Aerial Fighting Vehicles," was not completely fair to the Field Artillery.

This letter is not to suggest the branch of the Army to which gunships should be assigned, but rather to point out that Lieutenant Colonel Putnam's article was burdened with some inaccuracies and misconceptions which detracted greatly.

As an example, he stated that a field artillery battalion provides a base of fire for a maneuver battalion. This is simply untrue. In a combat situation a field artillery battalion provides direct

support to a maneuver brigade. The direct support artillery battalion commander may establish priorities of fire for each of his firing batteries, but this is not to be understood as a battery providing direct support to a maneuver battalion. Granted there have been cases where a battery, separated completely from a controlling artillery battalion headquarters, might perform the direct support function for a maneuver battalion. This is rare, and used only when there is no other feasible alternative to support the tactical situation.

Secondly, Lieutenant Colonel Putnam stated, "The artillery fire support coordination center could veto the ground commander's request for gunships in favor of another weapon." The artillery fire support coordination center does not have the authority to veto the ground commander's request for gunships, merely to use another weapon system. The artillery fire support coordination center recommends the best fire support assets available to attack a target, but the decision of which fire support means used to attack the target rests with the maneuver commander.

Further, Lieutenant Colonel Putnam stated, "It is inconceivable that a commander who already has a microphone in his hand would prefer to turn to the artillery forward observer to request aerial fires from aircraft that he can actually see flying overhead." This would depend on the tactical situation. There are times during contact with the enemy that the maneuver unit commander would be so involved in maneuvering his unit, that it would be best for the artillery forward observer or the artillery liaison officer with the maneuver battalion to coordinate and control all fire support. It is important to understand that the forward observers or the artillery liaison officers are not furnished to the companies and battalions to take away any of the commander's authority, but to assist him in controlling fire support on surface targets in his zone of responsibility.

In conclusion, I do not challenge Lieutenant Colonel Putnam's viewpoint in wanting to assign gunship proponency to the ground gaining arms. But I do feel that this important decision must be weighed in the most objective and accurate manner possible.

CHARLES B. TIGGLE
Captain, Field Artillery

USA Infantry School
Fort Benning, Georgia

For A Better ARMOR

Dear Sir:

ARMOR would be even more useful to the junior officer and the NCO serving with troops if it had more articles on everyday problems, and their solution, of units not in combat. Some subjects which spring to mind are "How To Use Systems Analysis To Solve Unit Maintenance Problems," "Shadow and Substance in Property Accountability," "Some Fortright Observations on Maintenance of the M60 Tank (M551) (M114) (M113 Family)."

What is needed is more for the unit commander, the career NCO and the junior staff officer who has not yet had the formal school training for his assignment.

PETER T. BEPLER
1LT, Armor

New York, N.Y.

We certainly agree and look forward to having more articles on unit problems from junior officers and from NCOs who have solved, or are solving, them successfully. You owe it to your fellow leaders and to the profession to share your knowledge. Such shared knowledge is a key to real progress.
THE EDITOR.

A Reply To Diades

Dear Sir:

In the September-October issue of *ARMOR* a thoughtful writer answering only to the nom de plume, "Diades," commented at some length on my article, "The Eighth Road to Moscow" (*ARMOR*, November-December 1969).

Although the general tenor of his remarks was less than favorable, I was delighted to read them because the real reason behind my article was to spark just such thought. "Diades" gallantly arose to the bait. I wish to commend him, even in his pseudonymic security, for providing us more grist for our professional ruminations. His piece definitely deserves close reading and careful consideration.

Nonetheless, the reader should be warned that "Diades," in his eagerness to debate, might be misleading on a few points, three of which I feel compelled to mention.

First, he adjusts the seven invasions of Russia upward to 10 by throwing in three "major confrontations." Now, the actual number is wholly irrelevant. What is important is the scope of the conflicts. And no one

(continued on page 56)



The United States ARMOR ASSOCIATION

The U.S. Army's oldest professional association has faced more drastic changes than any other, but at 85 it is alive and well, prepared to meet unforeseen challenges in the future as it has in the past.

by Lieutenant Colonel William Gardner Bell

The Armor Association

The period from 1881 up to the Spanish American War has been called the United States Army's Renaissance. In that span of years the foundations of American military professionalism were laid down. This was no precise and planned development, but a groping evolution that materialized from and overcame what has been called the Army's Dark Ages — the period from the Civil War up to 1880, when declining strength, inadequate appropriations and pay, inefficient organization, wide dispersion, a provincial existence, and a hostile society, all combined to reduce the Army to such a low estate that a rising sentiment for reform and position was inevitable. It was a sign of the times when, on 9 November 1885, a group of Cavalry officers at Fort Leavenworth met to form the U.S. Cavalry Association, for the "professional unity and improvement, and the advancement of the cavalry service generally."

The measure of the mounted officers' thirst for status and professional development is evident in their decision to organize an association in the face of many obstacles. Cavalrymen were scattered about the country from the Division of the Atlantic to the Division of the Pacific. In an Army numbering less than 27,000 officers and men, there were but 10 regiments of cavalry, containing as potential members of the Association only 424 officers. The regiments were split into small detachments and parcelled out over a remote frontier, charged with such assorted duties as fighting Indians, controlling them on reservations, guarding and operating stage lines, safeguarding settlers, protecting railroads, restricting the depredations of desperadoes, and keeping watch over labor disputes — in sum, a police force rather than an army.

Under these circumstances an officer had little hope of finding an opportunity to acquire leadership experience through the command of sizable units (although Cavalry officers in particular gained self-reliance in the very fractionalization of their units, which placed a full load of responsibility on officers serving in small isolated commands and far removed from their superiors). And campaigns of a size comparable to that of 1876, when George Armstrong Custer was overwhelmed at Little Bighorn, by 1885 were highly unlikely. For even though General George Crook was actively campaigning in Arizona Territory against Geronimo and his Chiricahua Apaches, and Wounded Knee was yet five years in the future, this was the twilight of Indian uprising. Field service aside, the officer corps had little more



Officers Quarters and Dragoon

than the peacetime alternative — the exercise of theory to promote professional qualification.

The creators of the Cavalry Association took their problems into account in organizing their society. To contend with the matter of dispersion they established not only the headquarters at Fort Leavenworth, but branches at West Point and in Indian Territory at Fort Reno. They demonstrated a fine touch for the cultivation of higher authority and an alertness to extra-military considerations by conferring honorary membership on the Commanding General of the Army, General William T. Sherman; on Lew Wallace, soldier, lawyer, governor, diplomat, and author of *Ben Hur*; on Philip St. George Cooke and William S. Harney, distinguished retired general officers; and on two ex-generals of the Confederacy, Fitzhugh Lee, who became governor of Virginia as the Association was being launched, and "Fightin' Joe" Wheeler, then a member of Congress from the State of Alabama. To these were added John Codman Ropes, distinguished military historian of the day, and Professor Jean Roemer, vice president of City College of New York and author of *Cavalry, Its History, Management and Uses in War*.

In the matter of active officership of the Association, the founders elected a Medal of Honor winner, Major Abraham K. Arnold, then of the 6th Cavalry, as president, and Captain Theodore J. Wint of the 4th Cavalry as secretary. The membership would turn to the general officer ranks for Arnold's successor, setting a precedent that holds to this day. But more on the presidents later.

Fort Leavenworth offered auspicious surroundings for the development of professional activity. Here in



barracks at Fort Leavenworth in the 1880's.

1881 Sherman had established the School of Application for Infantry and Cavalry, a great stride forward in the building of a military educational system for the Army. It had been Sherman who sent Emory Upton to Europe and Asia to study the workings of foreign armies, and Upton had confirmed the place of the service school in the development of a professional officer corps. With their mature professionalism, European armies were the object of careful scrutiny in America, where military professionalism was yet in the formative stages. It is not surprising, therefore, that many of the papers presented and discussed in early Cavalry Association meetings turned on the European scene.

The early months of Association activity are somewhat vague due to a paucity of records. A general lack of a sense of history on the part of successive administrations, not limited to the early years, has permitted the dissipation of much valuable archival material. The saving feature has been the society's publication, which today constitutes a priceless record.

The first issue of the *Journal of the U.S. Cavalry Association* came from the steam press of Kecheson and Reeves at Leavenworth, Kansas, in March of 1888. The preoccupation of the American military with European armies is evident in two articles: "Some German Ideas on Cavalry Gathered from 'Conversations on Cavalry'—Prince Kraft de Hohenlohe-Ingelfingen," and "The French Cavalry; Its Organization, Armament, Remount Service, Schools, Instruction, Drill and Tactics." A great debate of the period—whether the mounted soldier should be armed with saber or revolver, or both—

runs through several articles. Other items discuss remounts, a new type field artillery piece, and devices to assist the cavalryman in firing the pistol and carbine efficiently from the back of a horse.

Equally interesting with article content is a list of Association members appearing at the back of Volume I, Number 1. There is Captain Myles Moylan, who commanded A of the 7th Cavalry with the Reno battalion at Little Bighorn. Captain H. W. Lawton, who rendered conspicuous service in bringing Geronimo to heel, and who would die a lieutenant general while serving against Filipino insurgents, was a member. Soldier-author Charles King, progenitor of the Ernest Haycox school of literature, is there. There are Lieutenants W. C. Brown and J. V. S. Paddock, whose names are inscribed respectively in the history of the Sheepstealer War in Idaho and the Milk River engagement in Colorado, in 1879. Rufus Fairchild Zogbaum appears—artist and author, faithful delineator of military and naval subjects. And there is Major, Brevet Colonel, Guy V. Henry, holder of the Medal of Honor for action at Cold Harbor in '64, and severely wounded at the Battle of the Rosebud with Crook in '76: Guy V. Henry, who retired a major general, and whose son, the late and equally distinguished Major General Guy V. Henry, Jr., served the society of the mounted arm as member, councilman, president, and honorary president throughout a long and full life.

Publication of that first list in March 1888 apparently gave the organization a shot in the arm, for the membership jumped from 182 to 310 by June and was pushing 400 in November on the third anniversary of the Association. Joining up were Frederick W. Benteen, Winfield S. Edgerly and E. S. Godfrey, all of the Benteen battalion at Little Bighorn; Samuel B. M. Young, Adna R. Chaffee, J. Franklin Bell, and John J. Pershing, all destined to be Chiefs of Staff of the United States Army; James Parker, another Medal of Honor recipient and a future Association president (1915-1917); and Camillo C. Carr, Jacob A. Augur and Ezra B. Fuller, future editors of the *Cavalry Journal*.

In 82 years of publication, 29 officers have held the editorial chair of the Magazine of Mobile Warfare, as it is sometimes called today. Fifteen have been West Pointers, and eight went on to become general officers—Carr, William H. Carter, Charles D. Rhodes, Robert C. Richardson, Jr., Karl S. Bradford, Oliver L. Haines, Charles S. Kilburn and Fenton S. Jacobs. Of these, Carter, who won the Medal of Honor in Arizona in 1881, holds the dis-



MG WESLEY MERRITT

The second president, he used his prestige to help the Association through critical years after the Spanish-American War.

inction of having served the Association in both editorial and executive capacities: he was editor as a captain in the period 1892-1897, and president as general, from 1908 to 1914, and again from 1917 to 1921.

Six of the 24 presidents to date of the mounted society were Chiefs of Cavalry, encompassing the full period of existence of that office from 1920 to 1942 — Major Generals Willard Holbrook, Malin Craig, Herbert Crosby, Guy Henry, Leon Kromer and John Herr. One of these, Malin Craig, was Army Chief of Staff from 1935 to 1939, bridging the tours of Generals MacArthur and Marshall. The trend in presidential rank has been upward through the years, from major to four-star general, with some fluctuation in recent times within the levels of general officer rank. All of the top officers of the Association have made significant contributions to the professional society. But it is the second president, Brigadier General Wesley Merritt, who deserves a large share of credit for the success, indeed perpetuation, of the Cavalry Association.

A West Pointer, Class of 1860, Merritt graduated into the Civil War, rising to become a general before the age of 30. Assuming the presidency of the Association in 1887, Merritt was retained by the membership for a 20-year tenure, until his death in January 1908. His great contribution was to give prestige to the organization in the critical years of consolidation. He was largely instrumental in boosting the society over the hurdle caused by the Spanish American War, when all officers except the vice president were at the front, resulting in a single issue of the *Journal* in 1898, four difficult numbers in 1899, and a complete suspension of operations in 1900 and 1901. In an inspirational letter to the membership, Merritt in April 1902 threw his weight

behind continuation of the organization and its magazine. "I have been told," he wrote, "by more than one officer whose advancement in the cavalry service has been marked, that much of the success was due to the influence of the studies induced by the Cavalry Association."

The studies to which Merritt referred, those papers presented before various groups of members and as articles in the *Journal*, ranged over a field of subjects of logical interest to the military man, and particularly the mounted soldier: tactics, techniques, training, weapons, doctrine, equipment, organization, horsemanship and horsemastership, education, personalities, and history, to mention some major areas. Discussions were lively and detailed. In the *Journal* for July 1903, for example, 30 officers discoursed on the Johnson bridle bit. To stimulate such professional interest the Association in 1897 had launched an essay contest. Back of a requirement that essays be based on assigned subjects lay a plan to publish a history of the American Cavalry. Although this never materialized, the professional activity engendered by the annual contest inspired the preparation of much good material for the magazine. In the 1903 contest, for instance, a board composed of Generals J. H. Wilson and Fitzhugh Lee and Colonel Arthur L. Wagner (the latter the noted educator at the Leavenworth school), judging material on the basis of historical accuracy, professional excellence, and literary merit, awarded top honors to Captain James G. Harbord for his treatise on "The History of the Cavalry of Northern Virginia (Confederate) During the Civil War." As Harbord's advancement in the service would be marked (he was to rise to Deputy Chief of Staff of the Army), he serves as a case in point in confirmation of General Merritt's remark on the value of Association studies with relation to professional advancement.

With the close of the Spanish American War the United States Army embarked on what has been called the second phase of its Renaissance. In its sphere, the Cavalry Association moved forward. Its gathering professional strength is evidenced in many ways in this period, and not least by the October 1902 membership list which carries the names of Generals Arthur MacArthur, Leonard Wood, and Tasker Bliss. It was at this time, too, that the *Journal* got a face-lifting from an unexpected source.

Frederic Remington, whose pen and brush contributed so materially to the enduring historical record of our Western frontier, was a life member of

the Cavalry Association. In 1898 Remington visited the camp of the 3d Cavalry at Tampa, Florida, where the regiment was staging for the Santiago campaign. The artist, on his way to cover the war in Cuba for *Harper's Weekly*, was a close friend of Captain Francis H. Hardie, who commanded Troop G of the 3d. During the visit Remington's attention was drawn to one of G's noncommissioned officers, Sergeant John Lannen. A superb rider and an imposing figure, the soldier impressed Remington as the perfect example of a cavalryman. He made several rough sketches of Lannen.

From these roughs Remington later made two finished sketches, which he presented to the Cavalry Association in 1902, as the *Cavalry Journal* was resuming publication. His excellent drawing of a frontier cavalryman appeared on the front cover of the *Journal* in January 1903. It was to hold this position for almost 40 years, until July 1942, and through the years would acquire the label "Old Bill." The second sketch, of a cavalryman riding away from the viewer at a gallop, appeared on the back cover and as a tailpiece inside the magazine for many years. But it was the front cover sketch that had feel, character, authenticity. Always a branch of great *esprit* and highly conscious of history and tradition, the Cavalry took the Remington masterpiece to its heart. It appears to this day in the professional magazine of the mounted arm, a trademark of mobility in war.

As the impact of the Army's renaissance and the Cavalry Association's example became increasingly felt, other branch associations and magazines began to appear on the military scene. Many officers of Infantry, Artillery, and other services had joined the Cavalry Association, drawn by a community of professional interest. Inevitably a desire for greater concentration on branch affairs intruded, and the various specialists took steps to form their own organizations. The year 1892 saw the creation of the Coast Artillery Association and magazine. Infantrymen launched an organization in 1893 and a journal in 1904. Field Artillerymen put their society under way in 1910, and between 1920 and 1946 the services lined up — Engineers, Ordnance, Quartermaster, Transportation, Signal and Chemical. These organizations and their "trade journals of war" over the years have rendered a clear service to the Army and the nation.

With the 20th Century came mechanization. Its application to military purposes had broad implica-



BG W. H. CARTER
A Medal of Honor holder, he served the Association as editor from 1892-97, and twice as president, from 1908-14 and from 1917-21.

tions, especially for the Cavalry arm. As the tank moved onto the battlefields of World War I its element of protection was in the ascendant, for it was designed to break the trench stalemate by overcoming the machine gun and barbed wire. Yet it was an augury for the future when General Pershing placed the Tank Corps under the command of a cavalryman, Brigadier General Samuel D. Rockenbach, longtime member of the Cavalry Association and a contributor to the *Journal's* pages as far back as 1894. One of his younger officers was Captain George S. Patton, Jr., who a quarter-century later in another global conflict would do so much with this machine which he helped introduce to the battlefield. Incidentally, the careful researcher in the *Cavalry Journal* may trace the career of Association member Patton through articles under his byline ranging from lieutenant to general and spanning three decades.

World War I brought another crisis in Cavalry Association affairs. The secretary-treasurer-editor, retired Lieutenant Colonel Fuller, in poor health but carrying on, was awaiting replacement. But as Fuller noted in the July 1917 issue of the *Journal*, "everybody who can wants to go to war, and those who can't don't want the job." He suggested that it might be better to suspend operations as had been the case at the turn of the century. But he got out three more issues, and with the April 1918 number the *Cavalry Journal* went into suspense for two years, with 1919 a complete blank.

As it had on the occasion of the other interruption, the *Journal* came out of this one with a new face. Old Bill still graced the cover, but page size was expanded and layout revamped. Major Robert C. Richardson, Jr. moved into the chair as replacement for Fuller. And now the Association's base of

operations was moved to Washington, D.C. The organization had need to be on the scene in the Nation's Capital, for its future, inextricably interwoven with the future of the Cavalry, was by no means definitely assured. As Major LeRoy Eltinge put it in the April 1920 revival issue, "the Cavalry of the Army emerged from the World War in poorer condition than any arm of the service." Indeed, there was much to be done.

That issue opened fittingly enough with an inspirational message to the Cavalry from General John J. Pershing, designed to carry the arm through critical times. The theme running through the number was hopeful: *the future of cavalry lies in its mobility.*

It was in this period that the Army, recognizing the real contribution of the unofficial professional associations and journals to the profession of arms, authorized the assignment of active duty personnel to the editorial-secretarial posts; the task up to this time had been carried out in their spare time by a small number of highly dedicated officers. Under the new arrangement the organizations rightfully retained their freedom of operation, although in the '30s they lost the revenue of advertisers when Congress wrote into the appropriations bill a rider prohibiting publications run by active duty staffs from taking paid advertising — a far cry from those years in the '80s and '90s when the *Journal* carried a lively advertisers' section; when the ads were oozing with testimonials and even the Post Chaplain at Fort Leavenworth was delighted to give his endorsement to Woodley's *Sans Pareil*, the Great Army Remedy for the Preservation of the Hair!

At the close of World War I the thinking with respect to employment of the tank was still far from clear. There was indecision as to which of the ground arms should have cognizance over development. The Tank Corps was dissolved and tank development placed under the Chief of Infantry. The general theory of mechanization, however, was assigned to the Cavalry. Few professionals yet saw the possibilities inherent in armor — that Cavalry might logically inherit armor, and that armor possessed the classic cavalry characteristics of mobility, firepower, and shock action, and therefore the capability of carrying on the cavalry role. Daniel Van Voorhis, Adna R. Chaffee, Jr., and a few more spoke out. But the horse had an attraction to the heart as well as the head of the cavalryman, and even at the time in the '30s when the 7th Cavalry Brigade (Mechanized) was formed, it was generally

considered to be a professional hazard for an officer to identify himself with the new medium. Few cavalrymen were prepared to trade the horse for the tank and perhaps compromise their careers. Among those who stepped to the new field, however, were two future presidents of the mounted society, I. D. White and Willis D. Crittenberger.

Through these years of growing pains the Cavalry Association gave some attention to mechanization through the pages of the *Journal*, but more to horses. Gradually the article had taken the place of the paper of earlier times. The Association became essentially its magazine, and there through the '30s many of the big names of World War II put in an appearance, and not all were cavalrymen: Jonathan M. Wainwright, Lucien K. Truscott, Joseph W. Stilwell, Maurice Rose, Robert W. Grow; and in 1931, Major Dwight D. Eisenhower, authoring an article on "War Policies."

As war flared once again in Europe, the crisis developing in the Army over the Cavalry role deepened. Events came to a head with a rush. In 1940 the Army bypassed the traditional ground arms by organizing an Armored Force, while at the same time in the Cavalry famous horse regiments were partially and then completely mechanized. In 1942 the offices of the Chiefs of the Combat Arms (Cavalry, Infantry, Artillery) were abolished. As a crowning blow to the Cavalry, the famous First Cavalry Division was dismounted and sent to the Southwest Pacific as a foot unit.

A hint of the struggle attendant upon these events is apparent in the words of Major General John K. Herr, last Chief of Cavalry (1938-1942), and president of the Cavalry Association from 1939 to 1945. The quotation is from his book, *The Story of the U. S. Cavalry* (Little Brown & Co., Boston, 1953), written with Edward S. Wallace and published not long before his death:

What caused this sudden and extreme action?

It was probably a combination of factors. The great successes of the German panzers (which nobody denied) over the good roads in the flat country of northern Europe had their effect on the extremely motor-conscious American public and its tendency to rush *en masse* to extremes. The horse was dead! Long live the motor! Thus reasoned many people who had never tried to cut cross country, between the hard roads, in their shiny, chromium-plated, streamlined pride of the Detroit production line



General Jacob L. Devers, Chief of the Armored Force, 1941-43, delivers the main address at the 1953 64th Annual Meeting. When the meetings were moved to Fort Knox in 1952, attendance soared.

and knew nothing about the use of horses. That there was influence brought to bear by certain industries which would profit heavily by the production of the enormously expensive tank and other mechanized vehicles is almost certain. Then, there was the ever-eternal green-eyed monster of jealousy which had been aroused in the breasts of the other services, especially among soft and inactive officers behind desks, over the color and glamour attached to the cavalry, over the good times which officers of that branch enjoyed in their sports at all the cavalry posts, and over the certain indefinable social prestige which the man on horseback, the cavalier, the *hidalgo*, the gentleman, has always had over the man on foot. All these influences combined, and amidst the excitement at the outbreak of war, managed to eliminate what they called an archaic branch.

Whatever the reasons, the horse departed the Army, and the mounted arm was beset by internal divisions that threatened its professional base. The Cavalry Association suffered as well, and partly by its own hand.

With the U.S. Army at its wartime peak in strength, the *Infantry Journal* soared to well over 100,000 subscriptions exclusive of the Overseas Edition. Not so the *Cavalry Journal*. Against a potential represented by 16 armored divisions full of cavalymen, a cavalry division, many armored cavalry groups and squadrons, and many separate

tank and tank destroyer units, the *Cavalry Journal* reached a subscription peak of little more than 7000. This can be attributed to a failure to break with the past and step out resolutely to embrace the new medium — armor — which had absorbed the great percentage of branch members. As German *Panzer* forces lashed out across European battlefields, Russian horse cavalry galloped across *Cavalry Journal* pages. Armor and mechanization got some space, but a provisional platoon of horse-mounted soldiers in the Italian campaign was likely to receive equal attention with the exploits of an American armored division. And there was continuing attention to foreign horse cavalry, horse breeding, and equestrian sports. The Association lost many sincere professionals from its membership rolls.

In World War II the Cavalry Association and *Cavalry Journal* met a war which did not put operations at least temporarily on ice. But in clinging to the past the Association came close to sealing its own doom. The low point was late 1947, when subscriptions dropped to around 1800. One step of importance had recently been taken which might redeem a bad situation. In mid-1946 a small group of professionals had rallied round and put the organization in tune with realities. The name was changed to U. S. Armored Cavalry Association. The magazine became *Armored Cavalry Journal*. Content increasingly reflected the new order.

In all fairness it must be noted that all service journals suffered a share of the difficulties growing

out of the postwar ebb. The league-leading *Infantry Journal*, feeling the subscription pinch, in the late '40s put forward a merger proposal which in essence suggested the liquidation of the Associations and journals of Cavalry, Field Artillery and Coast (Antiaircraft) Artillery, with all assets to be turned over to a new organization and magazine of Army-wide implication and title, based on the Infantry Association's existing plant and staff, with some minor representation of the other three organizations on the essentially honorary governing body. By 1953 the two Artillery organizations had joined this Association of the US Army in the *Combat Forces Journal* (today *Army*). The members of the Armored Cavalry Association voted down the proposition, seeing it as a sub-merger and desiring to retain a strong voice in behalf of their branch. The Association position was admirably represented by Lieutenant General Geoffrey Keyes in high-level meetings with advocates of a merger of the several combat arms magazines and societies. From initial negotiations in 1948 through *ARMOR's* November-December 1952 editorial and later reaffirmation by Executive Council resolution, the mounted organization consistently supported the concept of an Army-wide Association while maintaining a firm stand in behalf of branch societies and journals. A sentiment for perpetuation, it may be noted parenthetically, was not unusual for an organization with a lineage such as that of the mounted society. Many military families may be traced through the history of the mounted organization and the pages of its publication, from distinguished father to distinguished son. The Cavalry family tree is liberally sprinkled with the accomplishments of several generations of Henrys and Howzes, Holbrooks, Reads and Pattons, to note a few examples.

Mid-century will go down in the history of the society of the mounted arm and its publication as a time of reaffirmation. For it was then that Congress passed the Army Organization Act of 1950. The legislation made of record an evolution which had been in process for several decades: "*The Armor shall be a continuation of the Cavalry.*"

The steps remaining to be taken were obvious, and the Association's Executive Council moved immediately to implement them. On the heels of the legislative action, the Armored Cavalry Association became the US Armor Association. The magazine became simply *ARMOR*. The July-August 1950 issue came out redesigned from cover to cover, set-

ting a style which won for the publication national certificates of award in the 1951 and 1952 Magazine Shows sponsored by the American Institute of Graphic Arts. New features and top authorship and first-class material greatly enhanced the magazine's reputation.

In 1952, breaking the precedent of 25-member annual meetings in one room of Washington's Army and Navy Club, the Association moved to Fort Knox, the Home of Armor, for its annual professional deliberations. The business session in Theater No. 1 was attended by as many officers as had been on duty in the 10 regiments of cavalry existing in the Army when the society was launched at Fort Leavenworth 66 years before.

The election of General White to the presidency in 1946 had been a sign of the times so far as the Association and its magazine were concerned. For he was the first of a sextet of presidents, including Generals Ernest N. Harmon, Hobart R. Gay, Willis D. Crittenger, John H. Collier, and George W. Read, Jr., who, while career members of the Cavalry arm and horsemen all, commanded armor on World War II battlefields or served on top staffs having direction over armored units. This development in the transition from horse to horsepower was carried a step further in 1955 when the Association elected General Williston B. Palmer as its head—the first



LIEUTENANT COLONEL WILLIAM GARDNER BELL, AUS-Retired, entered the US Cavalry as an enlisted man in 1941. Rising to sergeant in the then horse-mounted 4th Cavalry, he attended the Cavalry OCS and was commissioned in 1943. Detailed in Infantry, he served as a platoon leader, company commander and battalion staff officer in World War II combat in Italy. He was associate editor of *The Armored Cavalry Journal* from 1947-50 and became editor of its successor *ARMOR* in 1950. During his distinguished editorship, *ARMOR* won several national awards as well as greatly expanded readership. After retirement from the Army in 1962, Colonel Bell entered his present position as an historian in the Office of the Chief of Military History.

officer with armor background whose basic branch before World War II was other than Cavalry. This was repeated in 1962 when General Bruce C. Clarke, a distinguished World War II combat commander of armor, was elected president of the Association. In 1964 Major General Donald W. McGowan, an Army National Guard officer, succeeded General Clarke, and the four most recent presidents—Lieutenant General Frederic J. Brown, General John K. Waters, Lieutenant General W. H. S. Wright, and Brigadier General Hal C. Pattison, have assumed the post as retired military officers.

Although "Old Bill" served the Association long and well as an informal emblem, the time arrived, inevitably, when a distinguished lineage and a sense of history combined to prompt more formal symbolism. Thus on 24 January 1969, some 84 years after its founding, the Association adopted a Coat of Arms. "Old Bill" is still there, atop a design that incorporates features representing organizations, equipment, weapons, elements, roles, and colors that glorify the mounted arm's past, inspire its present, and challenge its future.

As the Association marks its 85th year of operation, there is a unity of spirit and of operation within the Organization of Mobile Warfare. The mobile arm's role is the unifying force which has successfully overcome and buried differences over the type of mount. Today the Armor Association, continuation of the Cavalry Association, is a strong and vital professional organization devoted to the affairs of a strong and vital combat arm of the Army.

However, far too low a percentage of branch officers are members of their professional society, and the same is true of the senior non-commissioned officers to whom membership was opened in 1965. But the situation is far from dark. Active efforts by the Executive Council, which includes all ranks eligible for active membership; the able and imaginative Association secretary-treasurer-editor and his staff; armor commanders; and individual members have borne fruit in recent times. For membership rolls have expanded, and today's paid circulation of more than 9,000 marks an all-time high for the magazine. Relatively small net losses in Association finances in 1967 were cancelled out by a swing well into the black in 1969.

Thus the Association celebrates its 85th Anniversary with a bright and promising future; bright and promising because this is the society of the mounted soldier, the *arme blanche*, CAVALRYMEN!

The sense of all this has perhaps never been put more effectively than by a non-cavalryman. Writing from Tokyo more than two decades ago in observance of the *Cavalry Journal's* sixtieth anniversary of service, General of the Army Douglas MacArthur said: "During these decades no other branch has experienced greater change in weapons, in technique, and in tactical requirement. Discarding the horse and the saber to keep pace with the increasing tempo and violence of modern war, the cavalryman speedily adjusted himself to armored mechanization and commensurate firepower, firmly to hold his historic role of the far-flung and rapid movement echelon. In this he demonstrated with striking clarity that the invincible *esprit* which has characterized his past yet carries him to the vanguard of every advance, an irresistible force toward victory."

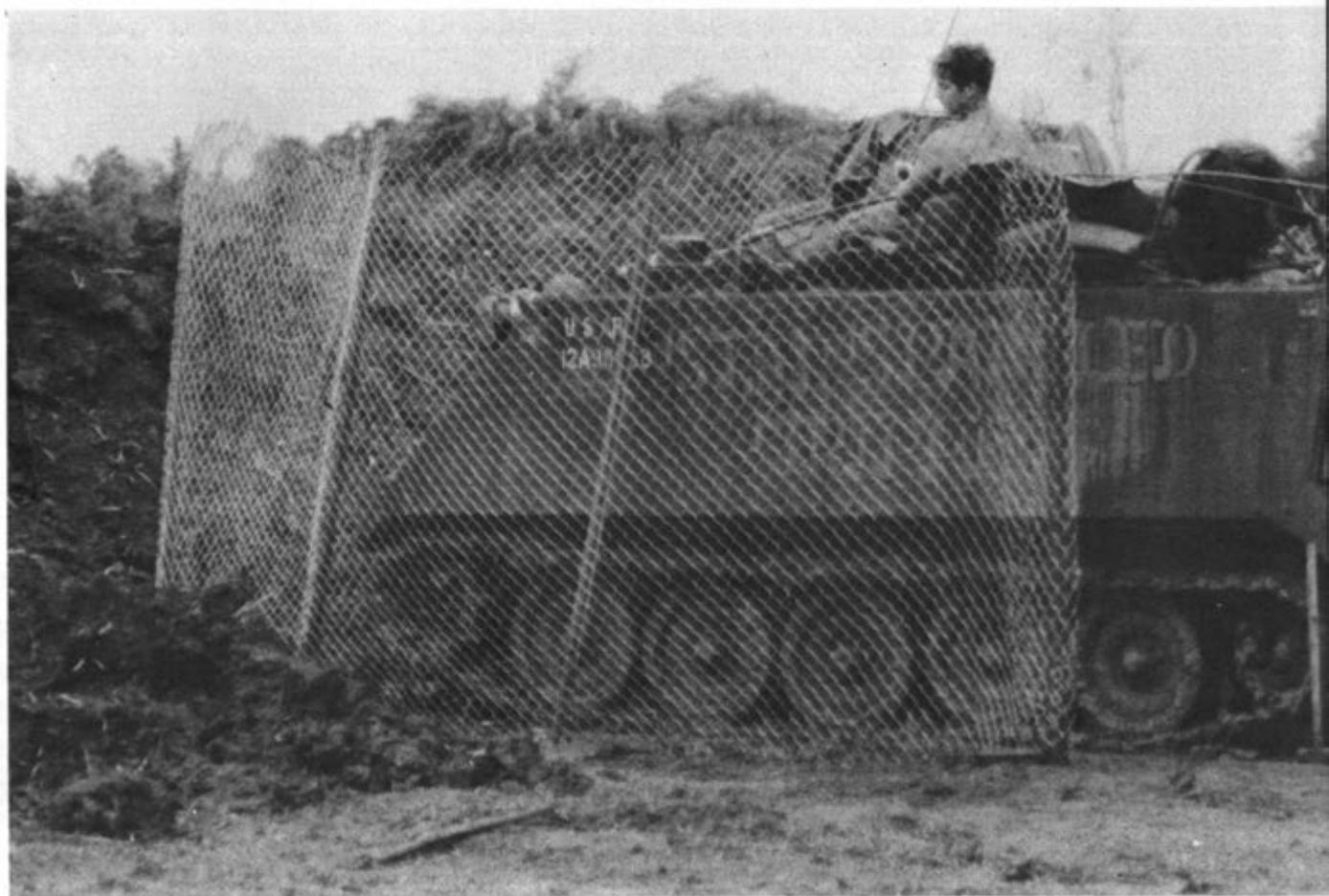
And today, once again the mobile arm has added a new mount to its means of mobility—the helicopter. We are just beginning to discover what this means in terms of increased power at the point of decision.

It is not given to any of us to foresee either the technology or events of 2055, another 85 years hence. But there seems to be every reason to believe that the mobile arm will still be out front, led by its dedicated members who have nurtured and strengthened its Association and journal as means to attain even greater professional achievement and deserved pride in true accomplishment.



Fence In A Poppa Charlie?

You Must Be Kidding!



by Lieutenant Colonel Andrew H. Anderson

“ . . . for the mech battalion of the Tropic Lightning Division, chain link fence and a few stakes helped foil the enemy . . . ”



When the North Vietnamese tried to overrun a night laager position of the 1st Battalion (Mechanized), 5th Infantry (Bobcats), 25th Infantry Division located west of the Ben Cui Rubber Plantation, Dau Tieng in September 1968, they found they were up against more than conventional American defenses. Four times in nine days they launched assaults following a similar pattern: simultaneous, intensive mortar, *RPG* and automatic weapons fire were followed by fierce ground attacks. They attempted to breach the concertina wire defenses with Bangalore torpedoes and makeshift ladders, hoping to overrun the friendly position. But they were unsuccessful.

Why? Part of the credit goes to a well known home and garden store item—chain link fence. The first time use of this material to protect armored vehicles proved an effective barrier against enemy attacks.

Clearly the enemy was highly motivated and persistent. The repeated attacks followed similar pattern and came at essentially the same early morning hour each day. The enemy was well equipped. For firepower he could call upon the Soviet designed weapons, including the *AK47*, the 7.62mm *RPD* machinegun, the 7.62mm *SGM* heavy machinegun, the 12.7mm *DSHK38/46* heavy machinegun, the *RPG2* and *RPG7* antitank grenade launchers and the *M1937* 82mm mortar.

For protection against all but the *RPGs*, a mechanized unit, in a static defense, had several things going for it, even in the face of the enemy's tenacity. The armored personnel carriers protected against automatic weapons and mortars. Bunkers properly constructed and positioned also minimized losses. Only the threat of the burning, searing *RPG-*



"An APC was not considered ready unless it had an RPG screen aboard."

"After attacks, RPG rockets were found hanging on the screens. Gaping holes had been blown in the screens."

launched rocket—which, if well aimed, could eliminate an entire rifle squad—remained a problem.

But for the mech battalion of the Tropic Lightning Division, chain link fence and a few stakes helped foil the enemy in his attempts. The material became known affectionately as RPG screens by the Bobcats. And these were soon considered as essential as a basic load of ammo or having a vehicle topped off. And most importantly, these helped the mech battalion avoid serious losses in men and equipment.

An APC was not considered ready unless it had an RPG screen kit aboard. The kit consisted of a 50-foot length of 8-foot fence and eight engineer stakes. The screen is erected about eight feet out from the front and sides of the APC in a U-shaped pattern. Because it is lightweight, it can be emplaced in minutes.

Its advantage is in standoff protection. It causes premature detonation of the HEAT round, thereby dissipating the lethal effects. After enemy attacks, RPG rockets were found hanging on the screens. Gaping holes had been blown in the screens, but no serious damage had been done to the vehicles. After heavy enemy contact, some of the screen had to be replaced, but that seemed a small price to pay for the protection it gave.

RPG screens became an index of the type and amount of combat a unit had seen. One needed



only to observe a track unit pulling into a night laager position to see how fast the screens went up. If it was a slow process or did not take place at all, the unit likely had not been on the receiving end of an RPG attack. Those who had, erected their screens in minutes. They were firm believers in their value.



LIEUTENANT COLONEL ANDREW H. ANDERSON, Armor, a graduate of Park College, has had a number of troop assignments with tank and cavalry units in infantry divisions. In addition, he taught Armor tactics at the Infantry School. Following graduation from the CGSC and AFSC, he served on the Army Staff, which he left in 1968 to command the 1st Battalion, 5th Infantry, 25th Infantry Division in Vietnam. A 1970 graduate of the Army War College, he is now commanding the 4th Battalion, 35th Armor, 4th Armored Division in Germany.

Ever since the Cavalry adopted the pistol, there has been a continuous struggle to achieve satisfactory proficiency with it. Even today, most soldiers who are armed with a pistol as their personal weapon can be overheard to say, "I can do as much damage throwing this thing as I can by shooting it." This impression has been nurtured by the average soldier's inability to use proper aimed fire marksmanship techniques and to achieve a decent score on the present qualification course.

The present pistol preliminary marksmanship instruction is oriented toward competition shooting instead of typical combat conditions. It seems that the aimed fire method of instruction overlooks the primary purpose of the pistol in its role as a side arm—to deliver *quick* and *effective* fire on a man-size target at *close* ranges.

It has been established that the aimed fire techniques currently being taught are contrary to the instinctive, natural reactions of the body. Any ex-

Pistol Proficiency

Drawing a bead
on a better method
at the Armor
School

by Major George P. Miller

perienced marksman knows that it takes a great deal of practice and personal discipline to achieve proficiency using the principles of aimed fire. The average soldier does not have the time to master these techniques.

The present record fire pistol course is often an exercise in futility rather than in motivation, as intended. The number of men qualifying with the pistol on the course is far lower than desirable. A recent study at the Armor School indicated that only about 30 percent of AIT trainees qualify. Armor Officer Basic classes average 53 percent qualification and Advanced classes 68 percent. In view of such low qualification percentages, it is not difficult to understand the prevailing negative attitudes about the pistol.

The present record fire course contains three tables: the slow-fire table, which consists of firing at an American Standard bullseye target; a rapid-fire table; and quick-fire tables involving firing at E-type silhouettes. The rapid and quick-fire tables are reasonably similiar to combat type target engagement. The scoring is simple, allowing 10 points for every hit. The skill level involved is realistic, since the firer's primary concern is to place bullets quickly and unwaveringly into a man-size target at a reasonable distance.



"The quick-fire principle is based on natural instincts and motions that begin development at birth."

However, this is not true of the slow-fire table. Here the firer is concerned with placing bullets in a "10-ring" on a bullseye target, rather than quickly and accurately hitting a man-size target. For the average shooter, the score on a bullseye target is normally not impressive. It may include nothing but total-wrecking fives and sixes. While the firer may not qualify with scores of this sort, the shots making up the low point total would have been sufficiently accurate to kill an enemy.

The problems of trying to establish a new method of firing and a more realistic firing course were first examined by the US Army Infantry School in 1965. The successful quick-fire techniques that previously had been employed with the *M16* rifle were adapted for use with the pistol. Preliminary results revealed that this type of pistol firing was feasible and that it had certain desirable features. Recently the Armor School completed a study involving not only quick-fire pistol training but also a new firing range for pistol qualification.

The new firing techniques eliminate virtually all the old physical factors stressed under the aimed fire method of instruction. The quick-fire principle is based on natural instincts and motions that begin development at birth. Every soldier has a natural ability to point a finger directly at an object at which he is looking. The precise moment the fluid motion of his arm stops, his finger will be pointing at the center of mass of the object. This principle has been incorporated into firing through making the pistol an extension of the pointed finger. The soldier pulls the trigger the precise instant that the fluid motion of the body stops. If this is done correctly the bullet will strike the object at which the eye is focused. The basic principle in pistol quick-fire is hand-eye coordination.

The training of students in the principles of quick-fire begins after they have received the standard mechanical training for the caliber .45 pistol. Quick-fire preliminary marksmanship instruction incorporates the use of BB pistols and scaled miniature E-type silhouettes mounted on a quick fire target training device (QTTD).

The students receive training in the theory and techniques of quick-fire and then practice hand-eye coordination by using BB pistols and the QTTD. The transition from firing the BB pistols to firing the caliber .45 pistol requires only two or three rounds before the skills are adequately transferred. The two obvious advantages of this type of training over the present system are a reduction in the cost of practice firing (BBs versus caliber .45 bullets); and the ability to retain proficiency using the BB gun instead of actual range firing. This is particularly useful when inclement weather prevails since the firing can be conducted indoors.

The newly-developed qualification range has been tested and represents a tremendous improvement over the present record fire course. The new range is called the Combat Pistol Qualification Course (CPQC). The CPQC eliminates all bullseye targets and substitutes realistic combat target engagements. All the targets are knockdown E-type silhouettes. The firer is required to engage these targets using the principles of quick-fire that he has learned and practiced before coming to the range.

The CPQC has seven pop up targets per firing lane. The firer is required to engage single and multiple targets at ranges out to 31 meters. All targets are surprise engagements. They are controlled electrically from the tower. The tower operator selects at random the targets to expose. Target exposure time varies from two to five seconds. There

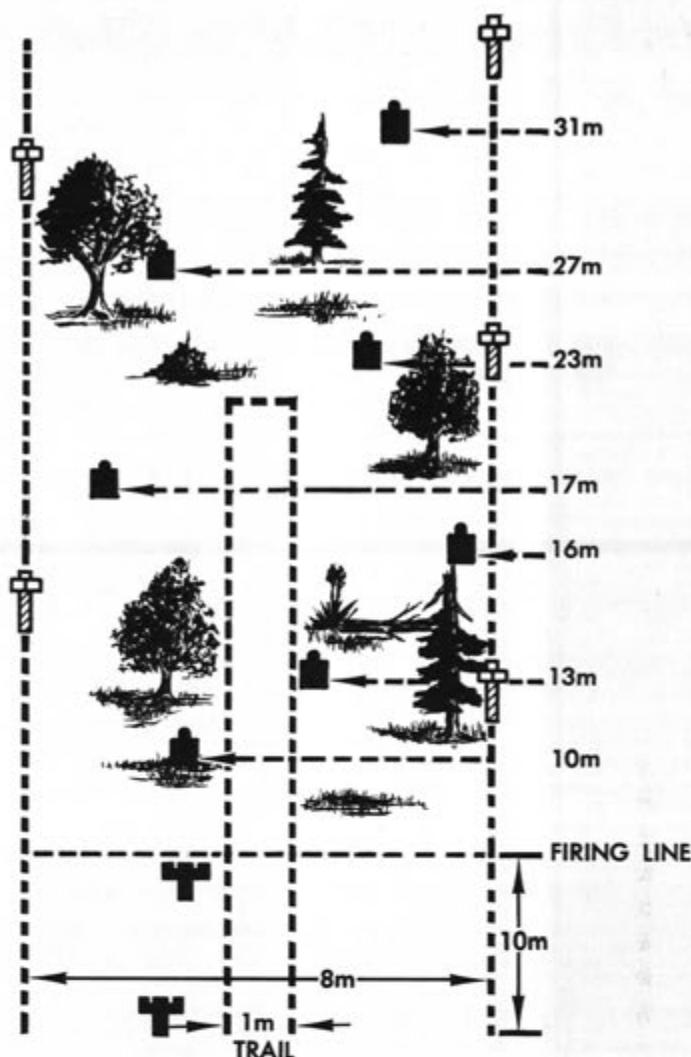
are five tables in the CPQC, during which a total of 30 targets are exposed. The firer receives 40 rounds for the 30 target exposures. He is not penalized for use of the extra rounds.

There are several innovations in this course which have not been incorporated into any previous service pistol qualification course. Allowing an individual to fire more than one round at a single target without a penalty for a first round miss is in keeping with the philosophy that it may not be necessary to hit an enemy with the first round, providing the second shot can be rapidly and accurately placed. It is a fact that in many instances the faster of two men firing at each other achieves a tremendous psychological advantage. Although the slower man may be more accurate, he becomes so unnerved by the faster man's fire he is unable to apply his skill before he is wounded.

Another innovation on this course is a timed magazine exchange. During this drill the firer is required to exchange magazines between timed target exposures. He fires until his weapon is empty and then has a period of eight seconds during which he must reload and prepare for another target engagement. The course also incorporates a "combat walk" phase during which targets are exposed as the firer walks down his firing lane.

The five tables of the CPQC are:

- TABLE I—The firer has seven rounds in one magazine. He is to engage five single targets at varying ranges. Each target is exposed for three seconds.
- TABLE II—The firer has one magazine which contains one round and one magazine which contains seven rounds. In this exercise there are six targets exposed to the individual: four single targets and one set of multiple targets. Initially the magazine with one round is loaded into the weapon and one target is exposed for three seconds. The firer fires the one round and then has an eight-second delay during which he must load the seven-round magazine and prepare for the remainder of the target exposures. The multiple targets are exposed for five seconds.
- TABLE III—The firer loads one magazine containing seven rounds. He will see three single targets and one set of multiple targets. Again, single targets



Combat Pistol Qualification Course (one lane).

are exposed for three seconds and multiple targets for five seconds.

- TABLE IV—This table is fired with one magazine containing five rounds. The firer will engage two single targets and one multiple set for four engagements. The target exposure time is reduced to two seconds on single targets and four seconds on multiple targets.
- TABLE V—The combat walk is incorporated in this table. The firer starts the table with one magazine containing one round, one magazine with seven rounds and one magazine with five rounds. He will have 10 target exposures consisting of two single targets and four multiple sets. The firer begins 10 meters behind the firing line in the middle of his lane with the one-round

magazine loaded. When he reaches the firing line, a single target is exposed for two seconds. Thereafter, there is an eight-second delay to allow him to load the seven-round magazine. He continues to walk down the lane until the ammunition in the seven-round magazine has been expended. At this point there is a controlled magazine exchange, during which he will be given the five-round magazine. He must then reload, move out and engage two more sets of multiple targets.

Scoring on the CPQC is easy. There is no need to stop the range for scoring and pasting targets as on the present record-fire course. All CPQC targets will fall when hit. Scoring procedure consists of merely recording 10 points for every hit.

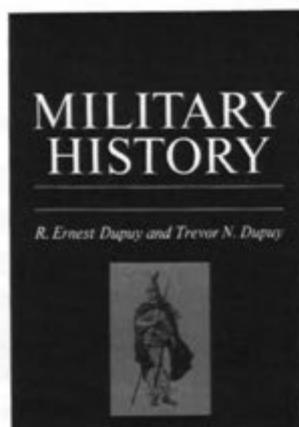
There is another noteworthy advantage in this particular range. One order can complete a practice and a record fire session on the CPQC in about 12 minutes as compared to a minimum of one hour for practice and record fire on the present conventional record-fire course. CPQC qualification scores made by test personnel are extremely impressive. In comparison to the low qualification scores previously related, four AIT companies averaged 92 percent qualification on the Combat Pistol Qualification Course.

One of the most important factors derived from both the quick-fire training and the Combat Pistol Qualification Course is its high motivational force stemming from the apparent enjoyment people get for it. This is a key factor in defeating the "not-worth-a-damn pistol" syndrome. The students' en-

thusiasm for the new approach has been overwhelming. They like the additional time actually spent in firing, even though part of it is done with a BB gun. The students also appreciate the fact that the training is more conducive to natural body reaction and lends itself to inborn body motions. They find the principles are easy to master and hence they do not develop a negative reaction. The Combat Pistol Qualification Course represents a challenge to the students and more closely simulates combat type target engagements. They are always anxious to fire and highly motivated after they complete the course.

The quick-fire method of shooting is not a new concept. History gives us numerous examples of men who were adept at shooting without the benefit of sights. Many police academies have been teaching the fundamentals of quick-fire for years. Those of us who have a pistol for our last line of defense had better get on the bandwagon. Persons who carry a pistol should have the utmost confidence in their ability to use it. The adoption of the quick-fire principle of firing is the proper way to instill this positive attitude in today's soldier.

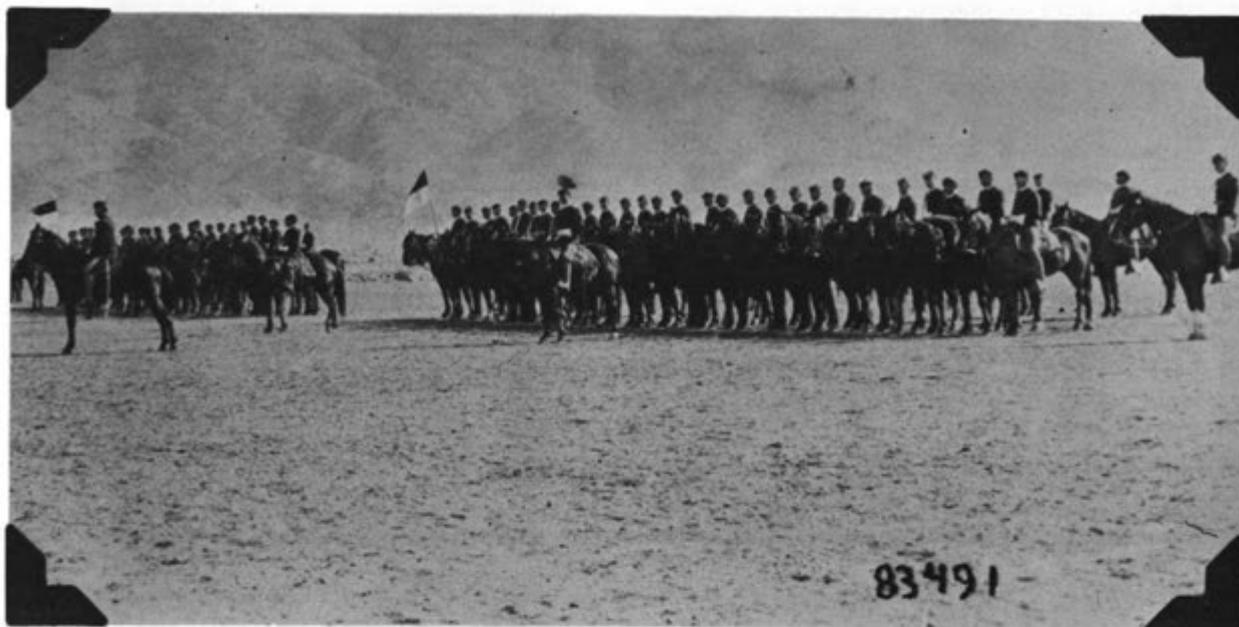
MAJOR GEORGE P. MILLER, Armor, was commissioned in 1960 from the Virginia Military Institute. Graduating from airborne training, he was assigned to the 1st Squadron, 3d Armored Cavalry Regiment, where he served as platoon leader, troop executive officer and troop commander. After graduation from the Infantry Officer Career Course in 1965, he was assigned as assistant PMS at the University of Wisconsin-Milwaukee. In 1966 he served as an engineer company commander at Fort Lewis, Washington. In March 1967 he was assigned to Vietnam, where he served as S3 and later executive officer of the 84th Engineer Battalion, and S3 of the 1st Battalion 69th Armor. He is currently a member of the Staff and Faculty of the Armor School.



THE ENCYCLOPEDIA OF MILITARY HISTORY

The Colonels Deputy have now made available to military historians the same sort of comprehensive, careful reference that has long been available to general historians in Langer's well-known work. Twenty-seven chapters range from "The Dawn of Military History: To 600 B.C." to "The Cold War: 1945-1965." In addition to chronological treatment of events in each arena, there are excellent pithy narratives on tactics, organization, logistics and other key facets essential to understanding. The maps, sketches and other illustrations are helpful.

\$20.00



DESERT AMBUSH

Being An Account Of One Engagement
With The Indians Of The Far South-west,
As Recounted By An Officer Of Cavalry

By Lieutenant Max S. Dack

Early summer in southern Arizona. The morning is still young, but already heat waves shimmer from the barren, rocky landscape. Before the day is over, the temperature will reach 106 degrees.

Preceded by a sound of clattering hooves, a group of soldiers makes its way into the hills, moving around the base of a rocky knoll. Well mounted on matched bays, they are formed into a column of twos; 26 riders clad in blue wool uniforms and black hats, led by a first lieutenant.

Sharp explosions, deafening by comparison to the former quiet, erupt from the top of the knoll. Seven puffs of white smoke mark the position of the ambush. The lieutenant turns in the saddle and bellows a command:

"Gallop, HO!"

All of his troopers are still within earshot, but the column has disintegrated. Eight men, the most experienced in the unit, are still in control of their horses and are returning pistol fire as they gallop up the trail. The rest of the horses are scattered down the slope of the knoll rearing and bucking, frightened by the sudden ambush. Two are riderless.

The lieutenant knows his attackers, at least two of them by name — renegade Apaches from the Warm Springs tribe at San Carlos. He notices that his pistol is in his hand; he doesn't remember unbuttoning the holster flap. He issues his order:

"First and second squads, dismount, horse holders to the rear. Corporal Bunting, put the second squad in position here to give covering fire. Sergeant Smith, as soon as everyone is dismounted you will move the first squad up the hill in line of skirmishers. Corporal Wertman, the third squad will remain mounted and come with me. Have them ready for a pistol attack when I give the word. Move out!"

"Yes, sir!" shouts a trio of voices.

Dismounting to fight on foot is a tricky operation at best. Under fire, it is pandemonium incarnate. Shots are being exchanged from both sides now, and the horses are more frenzied than ever. Each horse handler is supposed to have four horses to lead, but in the melee one usually gets six and another gets two. The man with six has two factions: one threesome is trying to go one way while the others bolt in a completely different direction.

But, the men dismount without serious mishap, and the rate of firing increases as more troopers get their breechloader carbines into action. As the lieutenant leads the mounted squad around the base of the knoll at a quick trot, the skirmish line begins

to move up the hill, aided by a barrage of colorful military terminology from Sergeant Smith. Within a few minutes, the mounted squad has moved far enough around the knoll to attack the right flank of the ambush.

"Twos right, at a gallop, HO!"

The squad drives for the top, on line now and set for a classic pistol charge. But the enemy knows better than to let himself be caught in that deadly maneuver. He has already abandoned his ambush and is scrambling down the far slope of the knoll. The lieutenant crests the hill just in time to see the Indians on the trail below, escaping — in two jeeps.



The 5th Cavalry Memorial

But the lieutenant is used to that, for the battle occurred not in the 1870s, but in the 1970s, and the cavalymen were members of Troop A, 5th Cavalry Memorial Regiment, actively preserving a part of the frontier heritage 10 miles west of Tucson, Arizona. The unit is composed of civilians and ex-servicemen from the Tucson area; the Apaches were members of a semi-organized special aggressor force which has developed as an auxiliary of the cavalry troop.

From late 1965 to June of 1969, the memorial unit grew from a motley collection of five or six history-cavalry-horse buffs into an established organization with a constitution, a training program and about 30 active members. It is now an affiliate of the state historical society in Arizona. Along the way, the unit has acquired a regional reputation, a

trophy case full of special citations and parade awards, an outstanding collection of original cavalry gear and a tremendous store of first-hand experience concerning the Indian Wars and the Army on the frontier.

The original 5th US Cavalry Regiment came to Arizona in December 1871 as a part of the forces under General George Crook. Crook's assignment was to stop the Apache raids in Arizona; no trifling task. The Apaches were still a strong and numerous people in the years just after the Civil War, and, like many other tribes, they had been driven to violence by the influx of white settlers. They were ruthless enemies. When the 5th arrived, life on



Regiment passes in review.

the smaller settlements was nearly impossible, and even residents of the larger towns lived in fear of Apache raids.

In a year of hard campaigning, Crook broke the power of the renegade bands and returned all of the Apaches to newly established reservations. He also succeeded in having the Indian agencies placed under military control for a short time in 1873-74. During this period he won the respect of the Apaches by giving them the first fair treatment they had experienced since the coming of the white man. Crook was referred to by the Apaches as "Grey Wolf." So strong was his influence that, after he left in 1875, the Apaches endured nearly three years of mistreatment by corrupt Indian agents before they again took to the paths of war.

The regimental headquarters of the 5th Cavalry

was at Camp Lowell in Tucson, hence the choice of the 5th as the namesake of today's memorial regiment. The individual troops were scattered all across the southern half of Arizona on small two- and three-company posts along with Infantry, Artillery and Scout units (the combined arms team is nothing new). Troop A was stationed at Camp Verde, about 80 miles north of Phoenix, Arizona.

In April 1875, the regiment, with Crook still in command, left Arizona and headed for the famed Yellowstone and Rosebud campaigns. In the four years since its arrival in 1871, the regiment had fought more than 90 engagements in Arizona. In these, its troopers had won 19 Medals of Honor.

Since the formal organization of the 5th Cavalry Memorial Regiment in late 1967, the goal of the unit has been strict authenticity. When the public sees the 5th Cavalry, it sees the real thing, not a Hollywood image. Drill, both mounted and dismounted, is taught from the cavalry manual of 1883. Parade entries, displays and all battles staged for the public are developed from research of actual events. All uniforms and gear are either original items or exact copies of original items, made with the aid of specifications and line drawings in the Ordnance Reports of 1872-75. In some cases, studies of the excellent photographic collections at the Arizona Pioneers Historical Society Museum point up differences between the regulations and the actual use of some items of equipment. In these instances, the unit goes by the photos.

The saber is an example. The book dictated that it be carried slung from the belt on leather straps. Actually, it was seldom carried into the field at all in Arizona; it just was not suited to the guerrilla war against the Apaches. In those areas where it was carried, mostly on the northern plains, it was tied to the pommel ring on the left front corner of the saddle, as shown in the labeled photograph, and allowed to hang straight down. Seldom, if ever, was it slung diagonally through the quarter straps of the saddle, as films are so fond of depicting. In such a position the end of the scabbard becomes entangled in the rigging of the next horse when the unit is riding in formation. The 5th Cavalry discovered this first hand; we bent four sabers which had been slung in that way.

Another example is the yellow hat cord with tassels (not acorns, which were introduced in 1896). Although it was an item of regular issue, we were unable to find it in a single photograph earlier than about 1895. Again, we discovered why through



first hand experience: it becomes caught in every bush within 50 yards. There are at least 15 of ours hanging in bushes around Tucson.

In my four years with the 5th, I found that the public asked us two questions with predictable regularity. The first, "Where do you get your uniforms?" has already been answered in part.

There are about six good sources across the country which deal in military antiques by mail order. Most of our original gear is bought from them. In addition, the individual troopers scrounge around in old warehouses, attics, ranches, local and regional gun shows, antique shops — anywhere a piece of original militaria might show up. Saddles, weapons, buttons, insignia, cartridge boxes — and bits are examples of items acquired in this way. Clothing, bridles, hats, dress coats, gauntlets, holsters and boots have to be made, either by the troopers themselves or by contractors who can do the job accurately enough to meet the high standards of authenticity demanded.

After two years of effort and frustration, one of the men finally located a bootmaker willing to under-

take the task of building cavalry boots. Using an original pair of 1885 boots from the Historical Society collection as a model, he made 24 pairs, each boot individually fitted to the trooper's foot. These were authentic right down to the type of leather and the placement of the seams.

Each trooper must buy his own uniform. It is a measure of the dedication of these men that many have made investments ranging into four figures. Most of the men really can't afford it, but they do it anyway. Cavalry gets in the blood.

The second frequently asked question is, "Aren't you awfully hot in that heavy suit?"

Obviously, anyone who chooses to venture outdoors in the middle of an Arizona summer is going to be hot, regardless of his clothing, or lack thereof. Beyond that, the Cavalry uniform does have certain advantages. After about two hours in the sun, the whole uniform becomes damp with perspiration. If there is any breeze at all, the uniform is a fairly effective evaporative cooling system. Although this makes large indoor gatherings rather trying, it is a boon on the trail.



Furthermore, the heavy blue wool uniform of the frontier Army serves to keep the sun off as much as it keeps heat in. Therefore, prevents sunstroke effectively. We have ridden up to 40 miles across the desert in 24 hours, with the temperature at 100 degrees. Many of the men were not in the best of condition, yet we never had a case of sunstroke or heat exhaustion, even after fighting four or five simulated skirmishes, like the one described at the beginning of this article, along the way.

Today, the men of the 5th Cavalry Memorial Regiment are veterans of performances all over Arizona, from as far south as Bisbee to as far north as Prescott. With a troop of 30 men, they are covering the same area as did their namesake in the Apache campaigns of 1872-73. In May 1970 the unit was invited by the Apache tribe to participate in the Centennial celebration at Fort Apache, Arizona. Both the performance and the Centennial itself were such tremendous successes that an effort is now under way at Fort Apache to establish, with the aid of the Arizona Historical Society and the

5th Cavalry Memorial Regiment, a company of Apache Indian Scouts. Many of the men at the reservation are direct descendants of the scouts who served under Crook in the 1870s.

And so we have come full circle. The enemies of a century ago are united by a common pride in their national heritage. They are coming to realize, as are many others in America today, that the past can give depth and unity to the present as well as insight into the future. History cannot fulfill that potential if it is relegated to the dusty archives of scholarly institutions. The men of Troop A, 5th Cavalry Memorial Regiment prefer the dusty hills as they make the past live again, so that the people of today may pause, and see, and perhaps understand the past more fully and accurately.

FIRST LIEUTENANT MAX S. DACK is a member of Troop A, 5th Cavalry Memorial Regiment and led the battle described in the opening. He was graduated from the University of Arizona in May 1969 and holds a Regular Army commission in Armor after being a Distinguished Military Graduate of the ROTC program there. He is assigned as Executive Officer, Company A, 1st Battalion, 81st Armor, 1st Armored Division at Fort Hood, Texas.

ARVN Armor in

Would the outcome of the battle for Ben Het, in May, June and July 1969, have been different had the enemy been able to employ armor? There were many indications that he planned to make a combined infantry-armor attack, hoping to overrun the CIDG outpost at Ben Het, and thereby influence the Paris Peace Talks.

In early spring of 1969, the enemy tried such an attack, as described by Captain Gerald R. Cossey in the September-October issue of *ARMOR*.

Crossing the frontier at the tri-country border—Vietnam, Laos, Cambodia—the North Vietnamese Army infantry was supported by five Russian-made *PT76* tanks. Their objective was the CIDG outpost at Ben Het. The slow speed of the tanks, influenced by the difficult terrain, hampered the NVA advance. The tanks were sighted at 1600 by a friendly patrol; at the same time radar confirmed the sighting.

Friendly forces occupying the camp at the time consisted of CIDG and Mike Force elements supported by United States artillery and one US platoon of *M48A3* tanks. The camp received word of the enemy activity at 1700. At 2100 radar reported the enemy nearing the camp. By 2300 the sound of the tank engines could be heard in the camp. The enemy opened fire and the ensuing battle

raged throughout the night. The attempt cost the enemy 30 infantry and two *PT76s*.

In their exuberance at having met and defeated enemy armor, everyone—air, artillery and armor—involved in the fight laid claim to destroying the enemy tanks. In actual fact the tanks tried to move across a minefield and were stopped. Once stopped they made a very good target for artillery, air strikes and the US armor in the camp. All elements connected with the camp should receive credit for the defeat of the enemy's armor operation.

In April, the enemy apparently continued to believe the capture of the Ben Het camp would influence the Paris Peace Talks.

In late April 1969, the ARVN 3d Armored Cavalry moved to the area of Dak To-Ben Het, replacing United States units. The 3d Cavalry was anxious and ready to take up this new mission and responsibility. Intelligence indicated the enemy was getting ready to attempt to overrun Ben Het again. The troops of the 3d Cavalry wanted to be in on the battle. They had been waiting a long time to meet the enemy's armor. An indication of the squadron's morale and esprit was voiced by a young cavalry officer, who said, "If the enemy uses tanks,

The commander of the 3rd ARVN
Armored Cavalry explains how quick
response to the enemy's armor threats
helped prevent the fall of Ben Het.

by Lieutenant Colonel Nguyen Duc Dung

the Battle for Ben Het

I promise to bring a *PT76* or *T34* back for a memento for our regiment."

It is gratifying to a commander to know that his troops have so much confidence and spirit, confidence in their leaders, equipment and in themselves. The 3d Cavalry troops knew that they could defeat a well-trained, well-equipped enemy armor force. I had told my officers:

"If the enemy employs armor, you won't have to complain that while on horseback, you knocked the enemy down when he didn't have a horse. Now they will be on horses too. You must do everything possible to defeat his horses."

(That exhortation refers to the old story of Quan Cong and Huynh Trung. It is a story of self-confidence and chivalry. It exemplifies the feeling of Vietnamese cavalry. Many years ago, Quan Cong and Huynh Trung were commanders of rival armies. In a great battle, Huynh Trung's army had the favorable terrain, and it looked as though his army might be victorious. He singled out Quan Cong and spurred his horse to pursue his enemy. Huynh Trung's horse stumbled during the chase and threw him to the ground. Instead of killing Huynh Trung, Quan Cong allowed his enemy to get to his feet, then said to him, "Return home and replace your

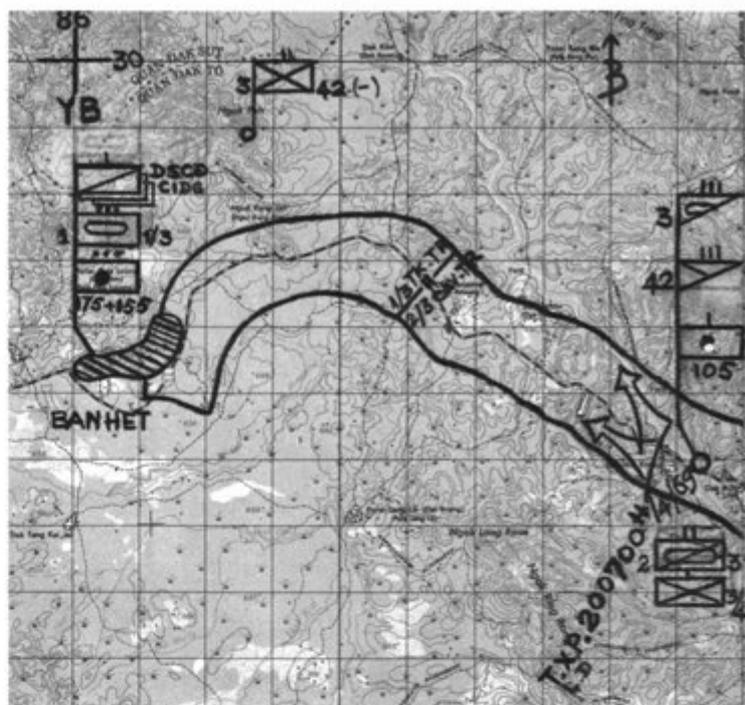
horse. Then come back, and we will continue this battle."

Huynh Trung returned home and replaced his horse, but he was struck with admiration for the chivalry and confidence of Quan Cong and his knights. He could not bring himself to renew the fighting with knights such as these. That spirit and confidence exists in the ARVN cavalry today.)

Intelligence reports persisted that the enemy was again going to try to influence the peace talks with the capture of Ben Het. Intelligence indicated further that the enemy had the capability of employing armor.

The 3d cavalry looked forward to the prospect of facing enemy armor. They relished the thought of a tank versus tank battle.

We knew the capabilities of the enemy armor. The *PT76*, an amphibious diesel tank, equipped with a 76mm gun and weighing about 14 tons, is capable of road speeds of about 40km/h (25mph) and about 10km/h (6mph) on water. The tank has a three-man crew and carries a basic load of 40 rounds of 76mm. It is a lightly armored vehicle with about 10-15mm of armor plate. Typically, it is employed as a reconnaissance vehicle in conjunction with the *BTR40* personnel carrier.



The Ben Het Area

The *T34* Soviet tank is manned by a crew of five, has an 85mm gun and weighs approximately 32 tons. Powered by a diesel engine, it can achieve approximately 50kmph (31mph) on roads. Its armor is 45-75mm thick.

The *BTR40* personnel carrier is a Soviet vehicle of World War II vintage. It has a 7.62mm machine-gun and is capable of carrying 10 infantrymen at road speeds of up to 80km/h (50mph).

We thought, however, that our armored capabilities were superior. We had trained many weeks in the most advanced tactics and fire techniques. Some of these techniques were:

- Rapid rate of fire with the main gun.
- First round hit capability, using armor piercing rounds.
- Fire and movement.
- Fire coordination with maneuver elements.

The enemy would have to face a preponderance of armor, with supporting artillery and air, on the Ben Het battlefield.

On the armor battlefield there are two factors which influence the outcome: (1) fire support and (2) an abundance of maneuver forces for counter-attack. We had the support and forces available at Ben Het.

As the battle was joined, the enemy quickly realized he would not be able to employ his armor while our armor was intact. This forced him to change his battle plan; he had to destroy the friendly armor before he could successfully capture the camp. The enemy employed special engineer mine-laying teams and rocket launcher antitank teams in an attempt to destroy our armor. It became a battle of attrition.

The enemy didn't take into account the violent reaction of the cavalymen in their attacks. This cost him dearly in men and equipment. Furthermore, he did not take into consideration the skill and determination of the maintenance personnel who worked day and night to repair and replace damaged vehicles. Because of the perseverance and skill of the cavalymen, the enemy lost the war of attrition.

At the end of May, the cavalymen were finally to stand down for a day of rest. The enemy took this to mean he had beaten the cavalry.



LIEUTENANT COLONEL NGUYEN DUC DUNG, 38, an Armor Officer for 16 years, has commanded the 3d Armored Cavalry Squadron (ARVN) for 3 years. He is a graduate of the Vietnamese Officers School at Tsu Duc and attended the Armor Officer's Advanced Course at Fort Knox in 1961.

During the night, friendly radar reported the enemy armor attempting to cross the frontier. The tanks of the cavalry reacted, and the enemy tanks retreated without firing a shot, again failing to accomplish their mission. The ARVN cavalrymen would have to live with the disappointment of knowing the enemy was not going to risk his armor in a fight with the 3d Cavalry.

The 3d Cavalry had issued the challenge, but the enemy would not accept. His armor has never again attempted to cross the frontier.

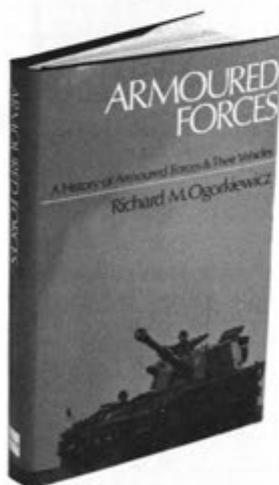
The battle of Ben Het lasted 76 days, but no enemy tank fired a round during that battle. The enemy infantry was also forced to withdraw. The attempt at making Ben Het another Dienbienphu had failed. Ben Het, with the 3d ARVN Cavalry present, was a nut too hard to crack.

A captured enemy tanker from the K16 Tank Battalion, said it had taken 20 months to move from Gia Khan, in North Vietnam, to the Ben Het area. A captured diary of a tank driver with the same unit stated they had travelled 1607km (1,000 miles), and his engine had 307 hours operating time during that same 20 months. The 3d ARVN



Cavalry had helped to make that a wasted 20 months.

If the enemy again attempts to employ armor, the 3d ARVN Cavalry stands ready and willing to battle horse against horse. We look forward to the day.



ARMOURED FORCES

A History of Armoured Forces

&

Their Vehicles

475 pp

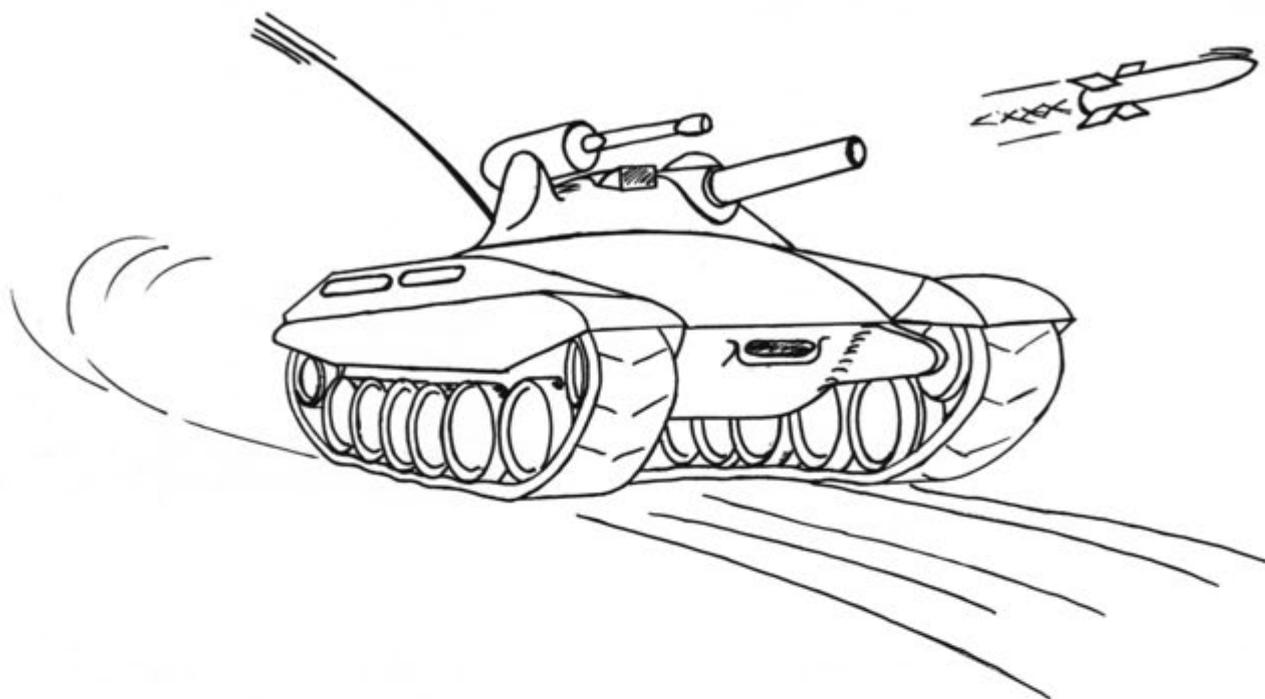
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A New Lightweight MBT

By Nathan N. Shiovitz

Sketches by the Author

TM 9-2800 states that the function of the tank is, "to provide mobile, protected firepower." Almost by definition then, the Main Battle Tank (MBT) is an assault weapon and it must provide direct fire against point targets while closing with the enemy.

The heavy emphasis on armor in all formations of the armed forces of our potential adversaries leaves little doubt that point targets will also be hard and probably will be moving. The degree of hardness will vary from the fast, lightly armored personnel carriers, through the thicker-skinned, and slower, SP artillery and assault guns, to the heavily protected and least mobile tanks and field fortifications.

There are always, of course, soft targets present in the combat zone. Dismounted troops, weapon emplacements, logistic trains and so forth are, how-

ever, of secondary interest to armor in the assault and are readily handled by other elements of the combined-arms assault force.

Our current MBTs, the *M48* and *M60* variants, are armed and armored to deal with all these target types. Largely as a consequence of this multi-capability, the *M60A1* has a combat weight in excess of 50 tons. And, again largely due to its built-in capabilities, the *M60A1* is perhaps the best tank of its type in use anywhere in the world today. It will certainly give an admirable account of itself, if unfortunately, the fighting starts—provided it happens to be near the place where the fighting starts.

This hardly seems likely—the option as to where and when to turn the Cold War hot has been left to others. It is highly unlikely that a potential enemy would be so foolish to attack at a time and

place where we have a military advantage. Since it is patently impossible for us to maintain superior forces in readiness at the site of every possible attack, we must equip our forces with MBTs capable of quick, long-range deployment from base camps to the theater of combat. This strategic mobility is, however, not enough. Once on the scene, our forces must have the tactical mobility to engage and defeat the enemy no matter how skillfully he has taken advantage of local conditions on the ground, and to permit rapid, unhampered redeployment in pressing our counterattacks.

Fifty-ton tanks, no matter how well armed and armored, do not and can not achieve the tactical and strategic mobility required to meet the challenge posed by the sudden switchover from cold to hot war. Providing air transport to carry the *M60* across the ocean will improve its strategic mobility but will have no effect on its tactical immobility. On the other hand, a significant reduction in its size and weight, without a loss of weapon effect in its *primary* role, will pay dividends in both aspects of total mobility. The word *primary* is stressed since the inclusion of secondary capabilities, as exemplified by the multi-purpose armament and related fire control systems of the *M60*, are costly in relation to their effects and actually detract from the overall efficiency of the weapon by increasing its weight and mechanical complexity.

There are many factors which influence mobility. In the case of tactical, or local, mobility, a great deal has been done to improve suspension systems and tractive elements, power generation and distribution components and other basic vehicular systems. These improvements, however, are marginal, and the tracks which make the *M60* most mobile are still railroad tracks. Systems for measuring and comparing the mobility characteristics of various terrain conditions and for determining mobility indices for vehicle types have been developed. All these systems indicate that the major mobility-limiting characteristic of an off-road vehicle is its weight and its resultant high ground pressure.

The balance of this article will attempt to describe a suitably mobile MBT, indicating not only what it does but also how it does it and why it does it that way.

Aside from the suspension and power train, neither of which will be discussed here in detail, there are three facets which must be balanced to achieve the desired results. These are the offensive

PERFORMANCE (Estimated)

Gross Combat Weight	28 tons
Ground Pressure	6.0 PSI
Sprocket HP/Ton	14.3
Road Speed (Maximum)	45 MPH
Grade Ability	60% plus
Fording Depth (Without Kit)	Swimmer
Vehicle Cone Index (VCI)	41

ARMAMENT

Primary	HEAT Guided Missile
Number of Rounds	24
Secondary	20mm Automatic Cannon (Revolver Type)
Number of Rounds	500 (HE and API)

ARMOR PROTECTION

Turret	2.5 in @ 60° (uniform)
Hull	2.5 in @ 60° Upper glacis
	2.5 in @ 60° Lower glacis
	1.0 in Normal Sides
	0.5 in Normal Floor

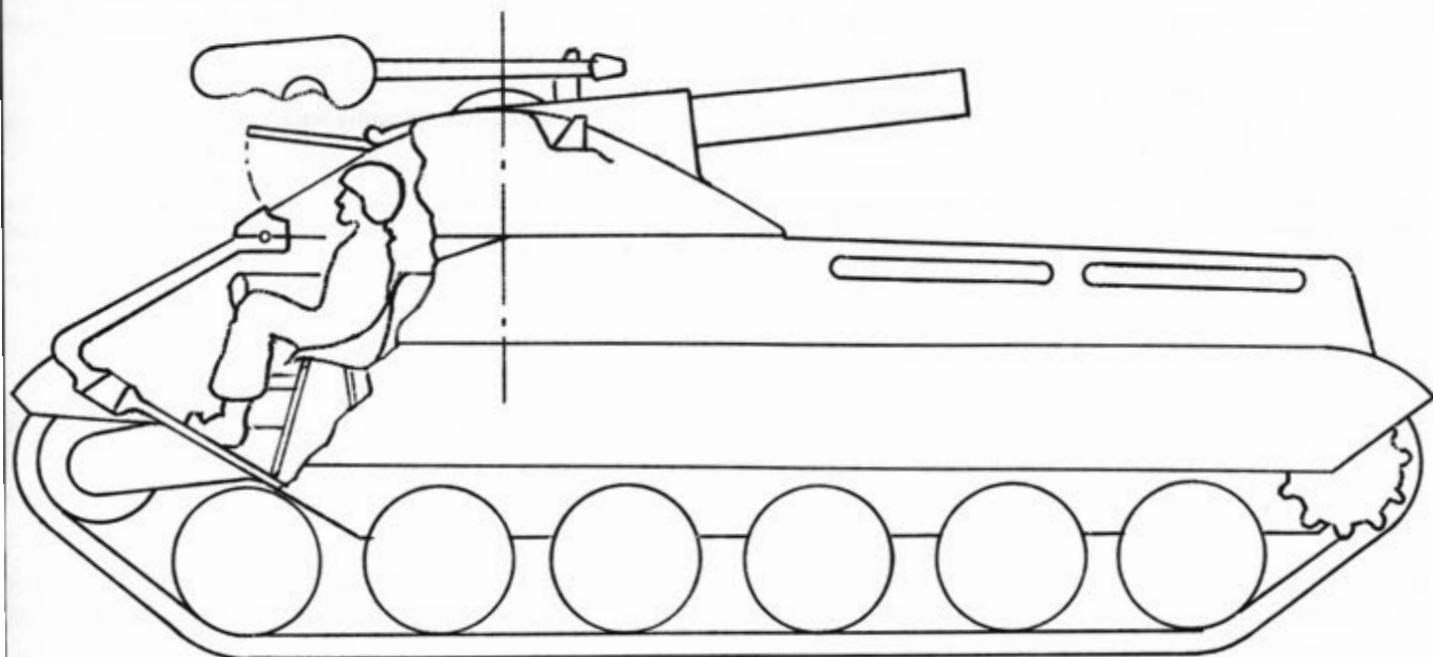
POWER PACKAGE

Engine	AVDS 1100
Engine Horsepower (Net)	475 @ 2800 RPM
Transmission	XTG 411-4

capability (weapon), defensive capability (armor), and their functional mechanization.

ARMAMENT

As suggested earlier, the primary mission of the MBT is to engage and defeat hard point targets. The shaped-charge warhead can defeat the thickest armor which a vehicle can carry. This warhead effect, unlike that of the kinetic energy projectile, is independent of velocity or range. It can be delivered by a guided missile, eliminating the requirement for heavy guns and heavier recoil mechanisms. These new missiles, *Shillelagh* for example, can be launched from lightweight, closed-breech tubes, with low trunnion reaction and little intrusion into the turret volume. Furthermore, the extremely high hit-and-kill probability achieved by the terminally-guided HEAT missile removes the necessity for achievement of a high rate of sustained fire—eliminating the requirement for automatic ammunition handling. This MBT will, therefore, utilize a

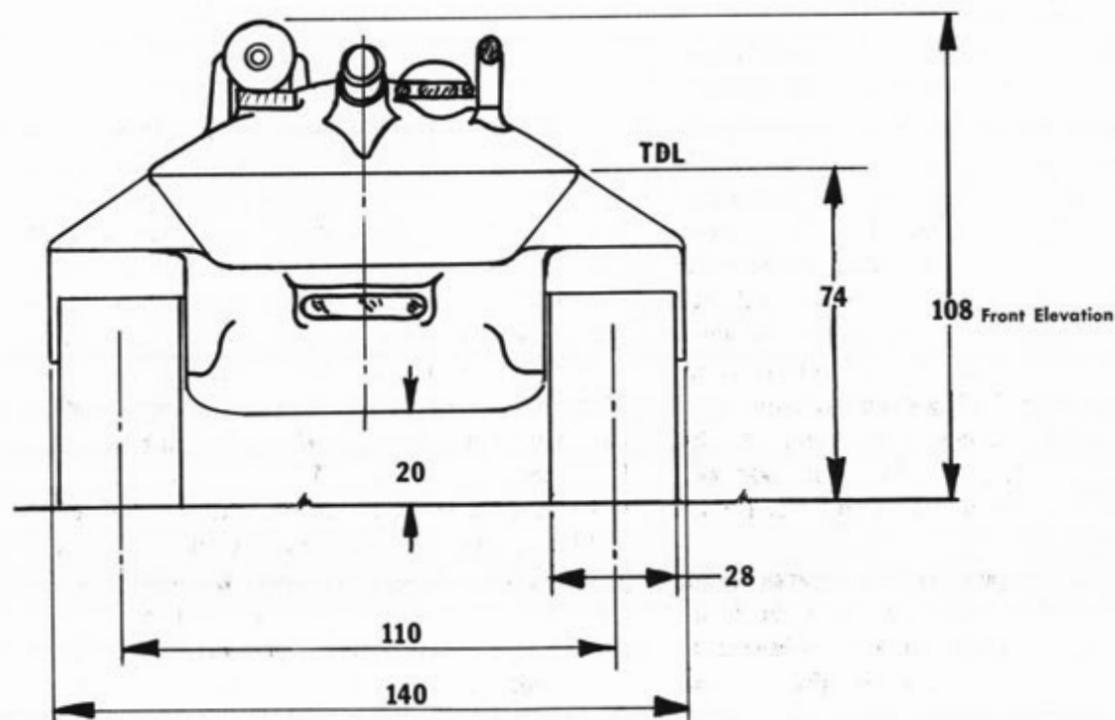


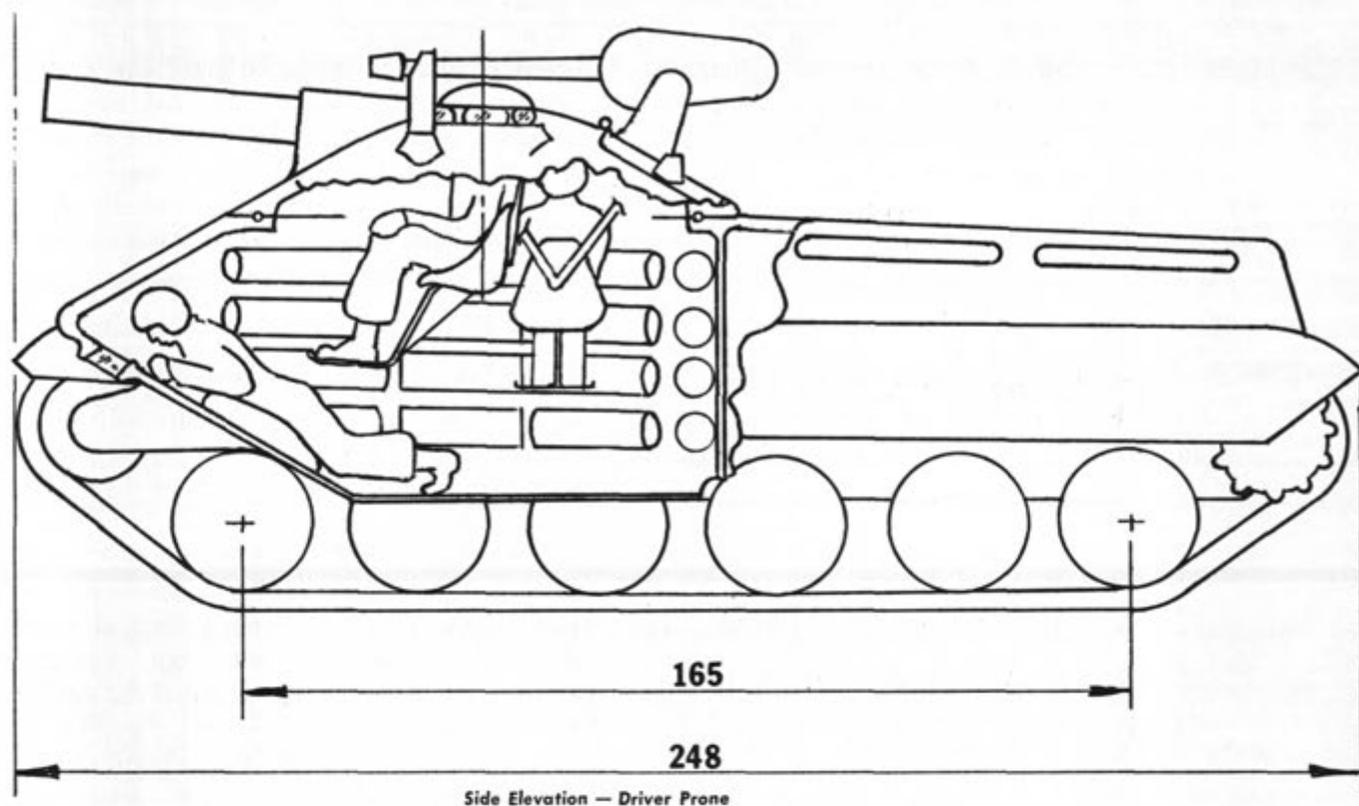
Side Elevation — Driver Seated

missile main armament system, including a gun-like launcher, manually reloadable from inside the turret, rigidly mounted without recoil travel. This choice of weapon permits a reduction in the weight of the gun and mount, reduces the weight of structure required to support the trunnion reaction, and eliminates the armor required to cover the otherwise empty recoil volume in the turret.

A tank is a very expensive bow to have only

one arrow to its quiver. Although this concept places maximum stress on achieving the utmost in performance in the primary MBT role, the need for some secondary armament capability can not be overlooked. To that end an automatic cannon, externally mounted on the turret, will complement the main armament and provide accurate and effective fire against personnel and light vehicles. This weapon, lightly armored and remotely operated, will





be trained in elevation independent of the turret, but move in azimuth only with the turret. Firing circuitry will provide for long or short bursts of fire from a 500-round magazine inside the turret.

Although no coaxial machine gun will be mounted with the missile launcher, grenade launchers will provide fragmentation and smoke for close-in-anti-personnel protection and concealment.

ARMOR

The armor envelope of the *M60* is its heaviest single component. Unfortunately, a foot soldier can penetrate that armor with a weapon he can carry on his back and fire from his shoulder—if he can get close enough. The only way to decrease vulnerability to these weapons is to increase maneuverability and mobility. This is, of course, an argument for a decrease in armor weight. Carried to the extreme, however, the reduction in armor protection can result in an increase in the MBT's vulnerability to a whole spectrum of small automatic weapons which have a high hit-capability, due to their high rate of fire, even against mobile targets. This MBT will, therefore, carry armor sufficient to defeat these weapons. It cannot remain mobile and carry enough to defeat heavy tank and antitank guns firing APHE, HVAP and HEAT ammunition. Mobile enough,

however, it can evade these weapons. The intermediate caliber weapons, such as the 57mm dual purpose guns, mounted on tank chassis offer mobility comparable to that of the MBT and are, therefore, the logical weapons to armor against. The equivalent of two inches of steel armor at 60° obliquity will provide the necessary protection at a minimum cost in mobility.

FUNCTIONAL MECHANIZATION

Although a significant weight saving accrues from the reduction of armor thickness there is another, equally important, way by which the weight of armor can be reduced. That is by reducing the volume which must be enclosed by the armor. The MBT must, of course, provide the space necessary to mount and operate its several subsystems and components. It is possible, however, to minimize markedly this space requirement by a thoughtful selection of the functions to be performed and the mechanisms of performance.

The use of a low-reaction missile main armament eliminates the space which normally is required to permit weapon recoil. If the missile also exhibits a short minimum range (guidance capture distance) and is sufficiently maneuverable to permit its launch from a gun tube fixed in elevation while relying on

the terminal guidance system for range adjustments, the volume required by the weapon is limited to that occupied by the breech and the round being loaded. This volume is required in one position only; the space below the breech is available for other components. Furthermore, the weapon can be placed at the top of the fighting compartment where it is most easily served and where it permits the MBT to take maximum advantage of defilade. The usual gun elevation drive is eliminated along with a difficult-to-seal opening in the turret.

The fighting compartment must also contain the sighting and fire control equipment, azimuth drive

“... a suitable suspension system . . . is available and proven in the current family of track-laying vehicles.”

mechanism, ammunition stowage, OVE, OVM, communication gear and operating personnel. Since the main and secondary armament systems are both direct fire, the fire control system will include direct vision, line-of-sight, devices similar to those now in use. These instruments will be integrated with the missile command and tracking links. This concept does not include the use of optical, or other, range determination devices since range inputs are not required by the main armament. Similarly, indirect-fire instruments will not be provided since neither weapon provides an effective indirect fire capability.

One sophistication will be permitted in the fire control system. Line-of-sight stabilization will be incorporated to permit maximum weapon effect from the moving MBT. The optics will be driven in elevation and the turret assembly in azimuth. The missile guidance system will automatically align with the (fixed) launcher axis at launch and then, after the guidance loop is closed, automatically adjust the missile's trajectory to the line-of-sight established by the gunner and maintained by the stabilization system. The turret controls will be used, of course, to slew the turret for rapid target search and acquisition and to adjust the LOS for target displacement due to MBT-target relative motion.

Elimination of gun elevation motion reduces the power required for elevation stabilization and also reduces system response time. The concept also permits a great reduction in the power required for azimuth stabilization by reducing both the weight and the inertia of the moving components. With the launcher mounted rigidly high in the turret the race ring may be both reduced in diameter, minimizing friction torque and weight, and positioned high above the usual turret datum plane. This has the effect of further reducing the weight of moving armor as well as its moment of inertia. The turret floor will be eliminated and all crew functions performed from seats suspended from the armor envelope. No ammunition for the main weapon will be rotated with the turret—all missiles will be stowed on the hull walls surrounding the fighting compartment and all easily accessible to the loader. In fact, all ammunition carried in the vehicle will be *ready* ammunition.

The allocation of human functions will follow current practice—three men performing the duties of commander, gunner and loader together with the driver comprise the smallest crew which can be expected to operate and maintain the MBT effectively. To make most efficient use of the volume available, the driver will be located in the fighting compartment. He will not, however, be seated in a counter-rotating module as in the MBT 70, but will instead, occupy a dual-position station. Driving controls will be located at the front center of the tank hull, below the race ring. The lower glacis of



NATHAN N. SHIOVITZ, a former tank crewman, has worked with automotive and armament development programs for 15 years, including involvement in the *Shillelagh* and *Chaparral* missile programs.

the hull, above these controls, will be fitted with a fixed-vision-block system for use in the buttoned-up combat mode by the driver who occupies a prone position on the hull lower glacis and floor. In this position the driver is below the race ring and does not interfere with rotation of the turret and/or operation of any of the weapon subsystems. With the turret in the usual travel-lock position, (with the launcher pointed aft), a large viewing hatch in the turret rear will permit the driver to assume a seated position while operating the same driver's controls as before. Driver vision in both the open and buttoned-up modes is the best possible since the driver is always located low and at the front center of the vehicle where he can see the ground immediately in front and out to the terrain limits. This scheme eliminates the mechanical and electrical complexity associated with driving from a rotating compartment, provides better vision for both driver and commander, and makes use of otherwise wasted turret space. Since the operating time spent under combat conditions is short compared to the total operating time, use of the less comfortable prone position will be at a minimum.

The foregoing has described only part of a new MBT—the weapon part. The vehicle part will be

left largely to the ingenuity of the reader. It is possible to suggest, however, that a suitable suspension system providing for adequate springing and large wheel travels is available and proven in the current family of track-laying vehicles. Similarly, the *AVDS-1100* engine and *XTG-411-4* transmission could provide the power and control necessary to achieve impressive automotive performance and the mobility required.

The proposed vehicle configuration and basic characteristics are shown in the accompanying illustrations. It will be noted that the vehicle is comparatively wide and low, and that the weapon is at the top of the silhouette and at the extreme front of the hull. This combination permits the most effective use of defilade, when advantageous, and provides the maximum of terrain clearance for the missile main armament.

The turret is small and its datum line high on the vehicle profile, allowing the vehicle to swim without special sealing provisions being necessary. Ground clearance is generous and the suspension extends beyond the hull, both fore and aft, with good approach angles. Taken together these characteristics make for a high degree of offensive mobility and effective protection derived from that mobility.

COLORFUL, FAMOUS FIRST

Major General William C. Chase, Commanding General of the First Cavalry Division in the forties, made these words household by having them appear on signs and in First Cav news releases:

"The *colorful* First Cavalry Division. First in Manila. First in Tokyo!"

I served with the colorful general at Third Army Headquarters, Fort McPherson, Georgia in 1949-50, where most of the news releases referred to the *Famous* Third Army and the main water tank was adorned with a 4-foot replica of the Third Army patch, by order of.

I left the *Famous* Third Army to join the X Corps in North Korea. On 17 December 1950 I flew into Hungnam, North Korea and checked in to the Headquarters. On 24 December 1950 I bugged out of Hungnam by water on the good ship "Hunter Victory." As we were leaving the North Korean port I sent the following message back to the States to General Chase:

"Greetings to the *Famous* Third Army from the *Big X* Corps. First in Hungnam, North Korea, First out of Hungnam, North Korea!"

To this day I have not received a reply.

COL. GLENN E. FANT, AUS-RETIRED

The Automatic Ambush

by Captain Sewall H. Menzel

"We were moving up the trail toward our base near the border. There were eight of us trained as sappers, and we had just completed a successful reconnaissance of an American base camp. We were moving single file along a jungle trail when suddenly a series of loud explosions occurred. I was knocked to the ground with wounds. *We had been ambushed!*"

When it was over—within seconds—six enemy soldiers were dead and a seventh wounded. All were highly trained sapper/reconnaissance men. The Americans, on the other hand, suffered no casualties and were able to credit another successful ambush not so much to stealth and cunning as to Yankee ingenuity. For the ambush had consisted of only three *Claymore* mines and a *BA200* battery. The enemy soldiers had virtually annihilated themselves by running into one of the most effective weapons in Vietnam, the automatic, or mechanical, ambush.

The automatic ambush is an economy of force measure that allows for wider protection against enemy infiltration and helps to break up his supply routes. It can supplement manned ambushes or be incorporated into a unit defensive system to provide additional security.

Experiments with several techniques have shown that the only reliable method worked on the principle of an enemy unknowingly completing an elec-

tric circuit, thereby detonating an electric blasting cap which detonated a charge or charges.

The components of such a weapon are:

- Power source (*BA200/U* or *BA1090/U* dry-cell battery)
- Electric circuit (*Claymore* firing wire)
- Trigger mechanism and trip wire
- Detonator (electric blasting cap)
- Charge (*Claymore* mines and detonating cord)

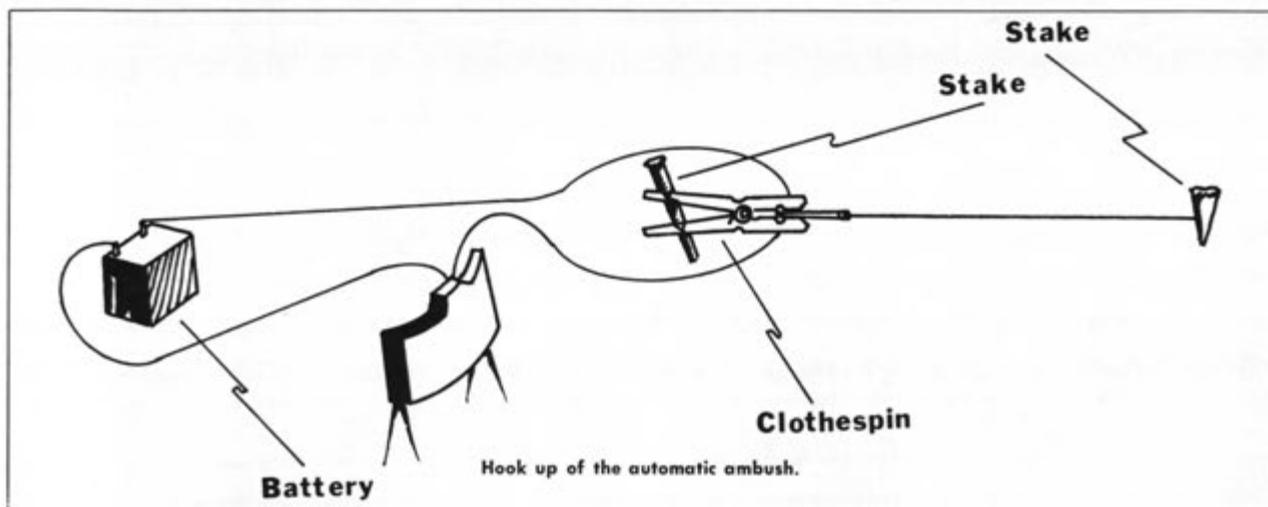
There are several steps involved in emplacing the weapon: Conduct a thorough reconnaissance of the site. This will help determine a suitable kill zone. Secure the site against possible enemy observation or interference. Select the kill zone and trip mechanism location. Emplace the *Claymores*, detonating cord, blasting caps and trip mechanism. Complete camouflaging. Clear the area of all persons except one who connects the battery to the *Claymore* mines.

The power source should not be connected before the mines and trip wires are firmly in place. This reduces the chances of accidental explosion while friendly elements are in the area. The battery wires should be 10-15 meters long and should be stretched the full distance from the side of the *Claymore* mine.

To recover the weapon, disconnect the battery first. This should be done by the same person who connected it, again to lessen the chance of accidental discharge. Then remove the blasting caps from the *Claymore* and recover the rest of the ambush.

The weapon has various advantages, and its employment is limited only by the imagination of the users. No friendly forces are required to remain near the site to watch it, for it can be monitored by either airborne or ground elements from some dis-

CAPTAIN SEWALL H. MENZEL, Armor, was commissioned in 1964 from The Citadel. In 1965-66, he served in the Dominican Republic with the 82d Airborne Division Artillery. In 1968 he served as an S3 air and company commander with the 101st Airborne Division in Vietnam. Then, after duty as a senior district advisor and mobile advisory team commander in Lam Dong Province, he returned to Fort Knox in 1969 to attend the Armor Officer Advanced Course. Following an assignment as S2 of the 2d Squadron, 11th Armored Cavalry Regiment in Vietnam, Captain Menzel commanded Troop G.



tance. Its noise, light and camouflage discipline are perfect. And, it delivers an extremely lethal attack.

It can be set up to engage any size enemy force moving in multiple directions, and allows 24-hour "watch" on enemy communications lines. Additionally, it is a demoralizing weapon because the enemy must either accept casualties or discontinue use of his communications/trail networks. Psychologically, it is demoralizing to the enemy to be unsure of his safety on his own trails.

The weapon, however, does have some shortcomings. Absolutely accurate knowledge of each location is essential to prevent friendly forces from walking into the ambush. And, depending on logistical situations and availability, the number of *Claymores* might be limited. Nevertheless, these do not offset the advantages described above.

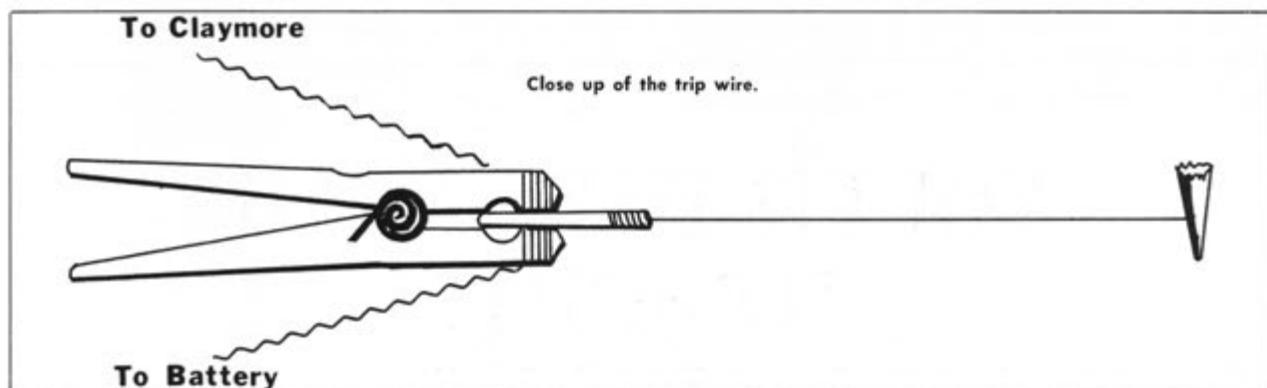
To insure that a cohesive and thorough pattern is achieved, it is best to employ the automatic ambush in specifically assigned zones or areas of operation. This will also preclude accidents from happening to friendly units, especially those not involved with laying the ambush.

The air cavalry troop of the armored cavalry regiment, with its capability to screen and monitor

great distances in a small amount of time, is particularly well suited for the employment of the automatic ambush. The aero-rifle platoon organic to the troop can be inserted near the enemy trails to establish the ambushes. The ambushes can then be monitored from the air, though by hovering directly over the site, the sensitive trigger device might be activated by the rotor wash.

The 2d Squadron, 11th Armored Cavalry Regiment successfully used the automatic ambush during operations in Tay Ninh Province in February and March 1970. The squadron cut swaths across the enemy's north-south trail networks with a Rome plow company, then seeded the multitude of trails with automatic ambushes. This technique resulted in heavy enemy casualties. Additionally, enemy supply and reinforcement was greatly reduced. The enemy was forced to move around the 2d Squadron's area and was unable to sustain his forces immediately to the south.

The 2d Squadron's success showed that with careful planning and aggressive use of the automatic ambush, vast areas can be denied to a foot-mobile enemy. It is more than a booby trap; it is a weapon that can produce devastating results.





WOULD THEY COME
• TONIGHT?

by Major Raymond E. Bell Jr.

A bad dream. The clang of cold metal shrieking roared through my stupor. Images of squat dark figures sneaking behind 50-ton tanks appeared.

A second shot boomed. I jolted into awareness and rolled over. The luminous watch dial read 1:30 a.m.

I waited.

The darkness of Christmas night, 1963, revealed nothing. I drifted back into a cloud of slumber.

Crack! Thud! It was no dream. My watch read 0200. On went the clothes. Wool trousers, socks, shirt—anything at hand to beat the biting cold. Icy wind ripped at my ears as I staggered outside. No one was in sight. Stark Quonset huts merged with the hillsides. A hundred images flipped through my mind—thieves from across the frozen Imjim River, a shivering soldier's gaping self-inflicted wound, an accidental discharge . . . or perhaps a North Korean patrol.

I slid and stumbled down the hill to the latrine. Behind it stood a guard bundled up beyond recognition. My scuffling sent his gloved hand to his pistol. But he recognized me as the company commander and, immediately, he knew what I was after.

"Over by the recreation center, sir, beyond the tank park, maybe three or four."

"Did you fire, Smith?"

"No, sir."

I walked toward the tank park. From across the road the brittle metal of the mud guards on the tanks sang and groaned in the icy wind.

"Halt, who goes there?" The curt challenge bounced out of the stillness.

"The company commander."

"Advance to be recognized."

I started across the tank park in the direction of his voice. I could see nothing.

"Halt."

Suddenly amidst the layers of night shadows I saw a crouched figure. He wasn't taking any chances. I stopped. He identified me.

"The shots came from over there, sir." The guard was on his toes.

"Well, if everyone is as alert as you are, we won't have any trouble."

"Yes, sir."

I walked away, back to bed. Probably it was a thief trying to break into a compound down the road. No evidence of North Koreans. And most important, the guard was on the alert.

The entry in my mental diary says, "Shooting heard in the area of the tank park; investigation reveals no reason for further concern."

Yet, back in bed I stare up at the dark ceiling. For 25 days, I have been in command of the only tank company in Korea that stands north of the Imjim River. It is a choice command, virtually an independent one, as the tank battalion commander is an hour away by road. Operational control of the company rests with a mechanized infantry battalion commander. Entrusted to my care are 17 tanks, various wheeled vehicles and 80 men, both Americans and South Koreans. Of major concern to me and my men—on a continuing basis—is an elusive and wily foe, for 5,000 yards away, dispositions unknown, plans unknown, are the North Koreans.

"Sir, it's six o'clock."

"All right, thank you." But I'm not going to make it to breakfast.

As the day's business gets underway, I am drinking a cup of tea in the messhall. At 0745 the first sergeant brings me some papers to sign. They are the quarterly droppage of lost items. Scanning the list my eye catches an odd entry.

"Since when do we need 11 flour sieves?"

The mess sergeant, standing by, laughs.

"That must be some mistake, sir, we only need one."

I initial the mistake and hand the papers back to the first sergeant. A tank company commander always has a great deal of work to do, and I have to get to it. The event in the cold early morning is not even a remote thought. I have other, more pressing business to accomplish.

From behind my desk I tackle the things to be accomplished. First, I make plans to support an infantry tactical problem. This is a big thing for us. Wherever possible we try to show the versatility of armor in the mountainous terrain of Korea. Tomorrow night we support an infantry platoon test with our searchlights.

Plans made, I trudge off to the tank park to inspect the maintenance. Then, as the two hands of the clock meet at twelve, the thought of lunch creeps

WOULD THEY COME TONIGHT?

into my mind. The morning in the tank park has passed quickly, but the day still has a long way to go.

Walking to lunch I see the green and silver buildings huddled around the sloping quadrangle. Puffs of smoke billow from the blackened stacks at odd intervals. A soldier scampers towards the messhall. Down the hill five trucks are parked hub to hub. That damn gasoline truck is parked right in the middle again. I'll have to have it moved.

Later in the afternoon, the battalion maintenance officer calls to see if the turret mechanic he has sent up from south of the river has arrived. Since I have not seen him, I take the opportunity to get away from the office and check out the maintenance shop.

I walk into the shop where I am greeted by the maintenance sergeant. An aggressive and competent young man, he does a fine job of keeping our vehicles running.

"Sergeant Gopeck, did the turret mechanic show up today?"

"I don't know, sir. He was supposed to come back this morning."

"By the way, what's that you're holding?"

"One of the men found this booklet down by the stream behind the tanks, sir. I don't know what it is."

He hands me a small soggy booklet made of cheap newsprint. There is a picture of a flower on the cover, its blue color veiled by a thin coat of frost.

I open the booklet. There's no color inside. It is kind of like a comic book—a pretty thick comic book at that. It contains Korean characters. There is a picture of a young woman in worker's clothes talking to some men squatting in a huddle. I wonder what she is saying.

"Sergeant Gopeck, get Corporal Yang."

"Yessir."

Yang, a South Korean soldier attached to us, will

know. I turn another page. The men have risen, taken up sticks, and are following the young man who was standing behind the woman.

Yang appears smiling. He is a short sturdy youth of peasant stock who has been with us for six months. He salutes smartly.

"Yessuh."

"Corporal Yang, what does this say?" I give him the booklet opened at a page where a young woman is exhorting a group of men to do something.

He takes the booklet and starts to read. The smile vanishes as quickly as it had appeared.

"Suh, it say, 'We capture Won Syuk Park. He agent for Yankee imperialist . . .'"

All of a sudden things fall into place. Or do they? Those shots early this morning. They came from behind the tank park in the direction of the stream. Does this booklet mean that there could have been infiltrators in the area last night? Is it possible that someone else could have dropped it, say one of my barbers or KPs?

The situation calls for an estimate. Just what is really called for—if anything? Are the two incidents related? Just how much significance should be attached to them? Other questions pop into my mind. What other traces of infiltrators are there? Does battalion know anything we ought to know? Will something more materialize tonight?

Swiftly, I walk back to the orderly room, still mulling over the shots, the booklet and their relationship. I decide to alert the guard and keep my ear to the ground. There just might not be anything to this, but then. . . .

Five o'clock comes and the flag is lowered by the new guard. The charge of quarters reports to the orderly room for instructions. He is briefed on "precautions."

I take a short time out for supper and then meet with the first sergeant. We decide to change the headgear because of the cold. A new regulation on uniforms is coming out. A report on fire inspections is due and must be signed.

At 1930 we are finished—save one item.

"Sir, I turned that booklet into the Intelligence Officer—we find them from time to time." The first sergeant's manner is disarming.

"Do you think it means anything?"

"I don't know, sir, it might—you never know." He isn't about to disclose his true feelings, this crusty veteran who's the best first sergeant I've ever seen. But I detect a note of concern.



Shots in the dark are not a usual occurrence in the area, although we go about armed after dark. Booklets are found from time to time, but not in the rear of a motor pool. There is cause for extra caution. Maybe tonight things will clarify themselves further.

Going to my room, I select a good book to read. The *Race to the Rhine*, puts me 12,000 miles away from Korea, but only for a short time.

"Sir, it's Lieutenant Bates. I've checked the guard. They're all posted and know their guard orders. I instructed them to be especially watchful after what happened last night."

"All right, tell Sergeant Bornden to wake me at eleven thirty. I'll try to catch 40 winks until then."

"Yes, sir."

He leaves and I put my weary head on the pillow.

"Sir, you said you wanted to be wakened," says

Sergeant Bornden. I turn over, sit up and put on my shoes.

"Anything unusual, tonight, Sergeant Bornden?"

"No, sir, everything is quiet. So far."

Quickly, but thoroughly, I make my rounds. I check each post in turn. No shots have been fired. No unusual noises heard. No one has any irregularities to report. Nothing suspicious has happened.

I trudge back to the orderly room.

"Let me know if any shots are fired or if anything suspicious happens, Sergeant Bornden."

"Yes, sir."

I pick up my pistol and walk back out into the black night. Three miles isn't very far. If they come it could be on a night like this. I open the door to my room. It was about this time of year in 1950 when the Chinese Communists "unexpectedly" got into the conflict for the first time. I reach for the light switch. Would they come tonight?

MAJOR RAYMOND E. BELL JR., *Armor*, is a 1957 USMA graduate. A frequent contributor to *ARMOR*, he has served with the 3d Armored Division in Germany, the 1st Cavalry Division in Korea and the 5th Cavalry in Vietnam. Before going to Vietnam, he was a member of the Department of Foreign Languages at West Point, and is now a member of the Department of Social Studies there.

A tank commander's thoughts on the

Canadian Army Trophy For NATO Tank Gunnery

by Major Michael H. Crumley

"Hello, One Alpha and One Bravo . . . This . . . is your National Judge!" As this heart-stopping message pierces your earphones, you realize the moment of truth is at hand. Now, your individual skill, crew functioning ability and thoroughly prepared *Chieftain* tank are to be committed in contest for the Canadian Army Trophy or CAT as it became known to the competing tankers. In the too brief pause, as you await instructions, a hundred thoughts recall how you managed to reach this battle run starting point on Range 9 at Bergen-Hohne in Northern Germany.

It all began in March 1970, when your Regiment, the 16th/5th The Queen's Royal Lancers, was one of two British regiments nominated to represent the United Kingdom in the competition for the Canadian Army Trophy for NATO Tank Gunnery. The Trophy, a solid silver model of a *Centurion* tank, was donated by the Canadian Army in 1963. Sponsored by the Commander-in-Chief Allied Forces Central Europe, the competition is open to armored regiments/battalions of Belgium, Canada, France, Germany, The Netherlands, the United Kingdom and the United States. The aim of the competition is to improve the overall standard of tank gunnery within the participating forces.

The competition would take the form of a fire and movement practice by pairs of tanks. Each main armament engagement would be against a single or

a pair of targets, and there would be 16 tank turret targets and two machinegun (trucks) targets. You would be required to move to three separate bounds at which, on the radio command of "WATCH YOUR FRONT," targets would appear for killing. Their range might be anywhere out to 2000 meters. They would all be the "flip-up" type and would be "puffed" for acquisition. Each tank would carry 16 armor defeating main gun rounds, 100 rounds of coax and ammunition for the .50 caliber ranging gun. Uneasily, you realized that the competing tank commanders, at the onset, would know only the total number of targets to be engaged throughout the run. Any number of targets within the total could be presented at each bound.

The scoring system appeared very complex: for main armament, a hit score—a successful engagement within 30 seconds—would gain 500 points. A time bonus of 10 points per second would be awarded for all targets hit in less than the 30 seconds allowed. For conservation of ammunition, 50 points would be given for each round saved at the end of the run, but only if all targets are hit. Machinegun hits would be worth 5 points for each round put through the target within 30 seconds.

Throughout field training in April and the annual range gunnery period for the regiment in May, you were aware that the squadron leader had his eye on your crew, assessing your abilities to perform under

pressure and, in particular, your employment of the masterful 120mm *Chieftain*. Then six weeks before the competition you learned that your Regiment was selected by AFCENT Headquarters to represent the United Kingdom. Then all of a sudden everything one did became that much more important.

Two weeks later you were informed by the squadron leader that your crew was one of four in the squadron nominated to standby. This did not guarantee you would compete, but you were one of the 20 crews which the regiment commander had nominated. From these, eight would be chosen by lot in early May, two of whom would act as reserves. In any event, you were pleased to be a squadron nominee, since your crew had practiced hard and long in gunnery techniques.

As one of the 20 nominated crews in the regiment, you underwent a concentrated two-week period of training. During this time your crew practiced in pairs with other crews, developed techniques of assisting each other by sensing rounds over the radio, discussed the pros and cons of which of the two tanks should fire first and, all the time, exercised your crew in immediate action drills.

The last two weeks were a blur of activity and

excitement: hearing the regimental commander announce your crew as one of those drawn by ballot to actually compete . . . watching the regiment work as one cohesive team to support your crew's and your tank's needs . . . hearing (you weren't allowed to see!) that the range had been reworked and looked tough as nails . . . and catching glimpses around post of the Canadian and German tank crews who were to compete against you.

In yesterday's competition, the first German crew fired an excellent score and the Canadian tankers also had a good day. This morning your crew methodically checked and rechecked every weapon, confirmed your boresight and talked to each other, somewhat nervously, about the day's challenge. Twenty minutes ago your tank was summoned from the waiting area to the starting point.

As you drive up to the start of the run, you noticed that a new control tower and stand had been built. The flags of every country in NATO flutter gaily from behind the stands, whose terraces are packed with what appears to be the top brass of every nation in Western Europe. (You learn later that this impression is very close to the truth.)

1970 CAT winners: 16th/5th The Queen's Royal Lancers



Lieutenant Colonel John Pownall (right), Commanding Officer of the winners, and General Sir Desmond Fitzpatrick, Commander Northern Army Group, display the 1970 CAT for NATO Tank Gunnery.



You were horrified to discover that your urgent and sometimes blasphemous radio messages to your teammate are amplified and broadcast to the spectators.

"ACTION" . . . You drive to the start of the run. The ground undulates away from you covered in scrub and heather. You fire a few bursts from your ranging gun to warm it up and range onto likely target areas. The spectators are forgotten now, and the world narrows to a small panorama of heather and dusty hills.

"WATCH YOUR FRONT" . . . Total concentration now . . . There is the puff . . . You lay the big 120mm gun onto it . . . There is the target, a tiny canvas screen a meter high, black and hard to pick up more than a mile away . . . You begin to bark out the fire order, but the gunner is already ranging . . . You observe the .50 trace, then shout the final range "Sabot, Dot 4, FIRE." At once the main armament fires, completely dazzling you, but your partner's voice comes crisply over the radio, giving observation from the other tank. "Target!" The run has begun.

Much later you stand to attention before the spectators while your team captain receives the massive silver trophy from General Jurgens Bennecke, Commander-in-Chief AFCENT. He makes a speech congratulating the team, but as he begins

to call for closer cooperation between the nations that comprise NATO, your thoughts are already wandering to the planned celebrations of the evening.

These, then, were the musings of a CAT crew commander of the 16th/5th The Queen's Royal Lancers, winners of the 1970 Canadian Army Trophy for NATO Tank Gunnery. His score, added to those of his five fellow crews, provided a resounding total of 29,250 points and earned for his regiment the coveted first place, while Germany in their *Leopard* tanks were second with 24,895 points and Canada, equipped with *Centurion* tanks, followed a close third. 1971 will be a new year for NATO nations to compete for the Canadian Army Trophy. However the same diligent effort, tireless attention to detail and concentration on tank gunnery techniques will win for the best tank regiment or battalion the silver first place prize. The designation "CAT Crew" will continue to be a mark of distinction.

MAJOR MICHAEL H. CRUMLEY, *Armor*, is currently on a two-year attachment to the British Army of the Rhine in Northern Germany. He is commander of "A" Squadron, 16th/5th The Queen's Royal Lancers, an armored regiment (US battalion) equipped with the *Chieftain* tank.

From The Armor Branch Chief...

Come See Us!

Schedule a visit to Armor Branch to review your records and to discuss your file at least once every three years. While this could be a costly proposition for many officers, it can be tied in with a vacation, a PCS or TDY travel. In any event it will be well worth while. Communication by mail and telephone is fine, but there is no real substitute for "eyeball" contact in personnel management and human relations.

We have the responsibility of creating and maintaining a climate in which Armor officers can operate at a high level of efficiency throughout their careers. One method of helping to create such a climate is to insure that both you and we at Armor Branch have plenty of accurate information at critical points in your career development. An exchange will help us to help you with forecasts and decisions on your career development. We are at your service—use us!

There are many "moments of truth" in our careers. These include selection for AUS promotions, an RA appointment, RA promotions, selection for military and civil schooling, and retention on active duty. The criticality of these events will vary with each officer. A visit to Armor Branch will prove both educational and beneficial as you approach these hurdles.

First and foremost, we will give you our honest and frank evaluation of your strengths and weaknesses, review the major features of the Armor officer career program, and outline what we feel you should do to develop better your career. Secondly, we will do our very best to answer all

your questions and to satisfy your personal interests. Satisfaction will not, in all cases, mean that you receive the "choice assignment" you were thinking of or attend a particular school. Frequently, it means our giving you the reasons why a particular assignment of personnel action is not recommended, practical or possible at a given time.

We would be pleased if we could fulfill all the personal desires of every Armor officer. However, we all know that the needs of the service prevail over personal desires. And also, there are times when we of Armor Branch must make decisions that are not in accord with your personal desires but which are in your career interest. Bear in mind too that your overall manner of duty performance, as evidenced by all efficiency reports rendered on you, will enhance or detract from your chances for a particular assignment or favorable personnel action.

Come by and let us talk with you personally about your career and your personal desires.

When visiting Armor Branch take time also to review your Official Military Personnel File (OMPF) in the Office of the Adjutant General. The OMPF is used by all Department of the Army promotion and school selection boards. You should review that file to ensure that it is complete, accurate and current. An appointment to review your OMPF may be made by calling OX2-1924 or OX2-1925 a day or two in advance to ensure the availability of your records. It should be noted that no appointment is necessary when you visit Armor Branch.

Our job is to assist and guide you in achieving your goals and to increase your overall military

value to the US Army. Your visits to Armor Branch are encouraged—the door is always open.

EDUCATION UPDATE

The May-June 1970 issue of *ARMOR* carried a review of the Army's education programs. We now have three additional programs. We suggest that you be on the lookout for the implementing instructions.

CHANGE TO AR 621-5

The latest change, effective 1 August 1970, expands the familiar "Bootstrap" Program and provides for a maximum of two full years of full-time civil schooling to obtain a bachelor's or advanced degree. A permanent change of station instead of

"There are many 'moments of truth' in our careers. A visit . . . will prove both educational and beneficial as you approach these hurdles."

permissive TDY is now authorized if the schooling required to attain the degree exceeds 20 weeks. For those already in the Degree Completion Program on 1 August, individual instructions will be forthcoming from Armor Branch.

ADVANCED CIVIL SCHOOLING FOR SENIOR ROTC INSTRUCTORS

An Army goal is to assign only officers having advanced degrees as ROTC instructors. Therefore, a new program has been devised for those not having at least a master's degree. This will encompass three or four years, depending on the time required to earn a master's degree. Schooling as outlined in AR 621-5 will extend from one to two years. The subsequent ROTC instructor assignment will be for two years. Whenever possible officers will be assigned so that they can earn their degree and instruct at the same institution.

CGSC COOPERATIVE DEGREE PROGRAM

Beginning with academic year 1970-71, the Com-

mand and General Staff College Electives Program will make it possible for a student to earn six credits toward a master's degree. If a student enters the CGSC with six hours of acceptable credit in an appropriate discipline, he will be able to complete his degree following graduation from CGSC by completing a summer session and a fall semester of on-campus work.

Students enrolling in the program who enter the CGSC without graduate credits must arrange with the cooperating institution an acceptable way to fulfill the final six credit hours of graduate work. The University of Kansas, Kansas State University and the University of Missouri at Kansas City are the cooperating institutions. Political science, history, business administration and public administration are the disciplines in which degrees may be earned in this program.

SHORT TOUR ASSIGNMENTS

Armor officer assignments for second lieutenants through lieutenant colonels continue to be related directly to short tour requirements. Armor lieutenant colonels who are not aviators will begin second involuntary tours in October 1970. Our turnaround time for non-aviator majors is currently 18 months; and it is 16 months for captains. These turnaround times represent a general forecast through the fourth quarter of FY71. They are subject, of course, to change because of supplementary and unprogrammed requirements for Vietnam. Most of our Armor captains and majors going to Vietnam are being assigned to MACV.

Turnaround time for Armor aviators, for short tour assignments, is approximately 24 months for all grades. Aircraft qualifications and supplementary requirements are the major variables in Armor aviator turnaround time.

About 95 percent of all available two-year OBV II lieutenants can expect assignments to short tour areas. Most of these officers will be assigned to USARV, with reporting dates generally in the 12th month of active commissioned service. Second lieutenants in the voluntary indefinite category, those who extend their service agreement for 24 additional months, and RA second lieutenants are normally assigned to CONUS and overseas sustaining bases. They will then be assigned to Vietnam as captains generally during their 20th to 24th month of commissioned service. This assignment policy provides the most equitable short tour program for all company grade officers.



SHORT, OVER, LOST or...TARGET

MTX

Keeping your vehicles on the road

by Lieutenant Colonel George B. Bartel

Commanders of armored or mechanized units shouldn't bother with any tactical training until they solve their maintenance problems. If the vehicles don't run, they won't get there to train.

The problem is to have good maintenance without reducing training time.

Everybody agrees that maintenance needs improving. Consequently, much time is devoted to this in unit training schedules. Unfortunately, a lot of these hours are spent merely wiping things.

Although we expend elaborate effort inspecting (CMMI, Pre-CMMI, etc.), we don't really attack the problem where it lives—with the operator.

All our equipment comes with operator instructions. For vehicles these are in the form of numbered technical manuals with the suffix "10"—referred to as "dash tens." If operators use these manuals properly, most maintenance problems will be solved. In each dash 10 there is a section, usually in easy-to-follow table form, covering before, during and after operation services. If these services are performed as prescribed, and, if proper follow-up is made when faults are found, good maintenance is achieved.

Why don't operators use dash 10s and perform these services? Generally there are two reasons: (1) They don't *have* the manuals; or (2) Their leaders don't make them *use* the manuals.

Sound simple? It is. You can solve the first problem by getting the manuals. Each company size unit must have pinpoint distribution working as it is described in DA Pamphlet 310-10. The second problem can be solved by any of a dozen leadership/management techniques. Whichever one is used though, it requires that old reliable ingredient—command emphasis.

Here is a technique that worked for me to improve maintenance, to cut maintenance deadhead time and to increase field tactical training.

It has the gimmick name "MTX."

This stands for "Maintenance/Training Exercise."

In using this gimmick, you purposely overdue one phase of training—the maintenance part. The dash 10 tells you always perform the operator services. But since some operators don't have the manuals and many of the ones who do have them don't open them, these vital services often do not get done. So we need a way to focus on the operator services.

MTX = Maintenance/Training Exercise. Break it down. Maintenance stands for before-during-after operations service of vehicles, by the manual, supervised by leaders. Training stands for just that, a field exercise in a nearby or distant training area. How long? From four to 72 hours or more. How does an MTX work? Here is an example:

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!!



"If your vehicles don't run, you can't train."

Subject: Combined arms training in road march and occupation of position.

1st Hour: Tank Company (—)—Motor Park Infantry Platoon—Motor Park

Before operations service—Company commander, platoon leaders, and in fact all the chain of command in the motor park from the start. Battalion commanders must personally check this or it will not happen. Dash 10 manuals open and being used to insure all checks are made. No driver starts a vehicle until leader gives okay. Unit maintenance personnel on hand with parts, oils, etc.

2d Hour: Cross attachment effected. Road march conducted. During operations check made. Training in tactical road march procedures. Air defense procedures. Traditionally this is the point where the company commander or principal instructor takes over because this is the "meat" of the training day. Turn it around. Assign this part to Lieutenant Fuzz. The company commander gets with the maintenance part.

3d & 4th Hours: Occupation of position. Establish perimeter defense. Local security. Preparation of range cards, etc. Tactical feeding of noon meal.

5th Hour: Road march (to include ambush reaction) same as 2d hour.

6th & 7th Hours: After operation service in motor park. Company commander and all chain of command present. Top off vehicles. Wash vehicles if required. TMs open and being used. Maintenance personnel in motor park with parts, oils, etc. Company commander, platoon leaders, platoon sergeants—all must stay 'til last dog dies.

8th Hour: Organized athletics, PT, command retreat, or occasionally, release troops early.

For the first five or six times (it will take that long to get the idea across) put maximum leader emphasis on the maintenance part of the drill. Later, the drill will become habit (provided the leaders don't stay away). That is when you put the emphasis on the finer points of the tactical training—not before.

Frequency of MTXs should be once a week or bi-weekly. If the company commander makes this work, "motor stables" can be eliminated. And it will no longer be necessary to direct so many hours or days per week be spent on organizational maintenance. Also, the so-called "intensified maintenance weeks" some units use after field training can be eliminated.

MTXs can be used for:

- Tank gunnery training.
- Mechanized infantry training.
- Combined arms training.
- Scout and armored cavalry platoon training.
- Artillery section/battery training.
- Headquarters company field training (CP preparation, etc.).

In short, the MTX can be used for all field training.

The MTX must be force fed. No one will like it initially. Battalion commanders must cram this down everyone's throat (nicely, if you wish).

To make this work, commanders must have:

- The pin-point publication system working in each company as described in DA PAM 310-10.
- Support people organized to accomplish fueling plus oil, grease and parts supply. Mechanics help when needed.
- System of follow-up organized to record and report faults, prepare requisitions, make repairs.

If you make the MTX work you can:

- Eliminate motor stables.
- Eliminate intensive maintenance periods.
- Increase crew, squad, platoon and company tactical training time.

LIEUTENANT COLONEL GEORGE B. BARTEL, Infantry, a 1952 USMA graduate, has served extensively with mechanized infantry units in the 2d and 4th Armored Divisions, to include command of the 2d Battalion, 51st Infantry in the latter. He has, in addition, been a brigade S3 and a division G3. He is now beginning a second tour in Vietnam.

HOW WOULD YOU DO IT?

US ARMY ARMOR SCHOOL PRESENTATION



SITUATION

You are the platoon leader of an armored cavalry platoon on your first operation in Vietnam. Your platoon has six armored cavalry assault vehicles (ACAV) and three M48A3 tanks. (This organization may vary from unit to unit.) At 0800 your troop commander assigns you the mission of clearing and securing 4,000 meters of road for use by a resupply convoy due that afternoon. Another

AUTHOR: MAJ VAN ZANT

platoon from the troop will follow your platoon as the reaction force.

PROBLEM

You know from your past training and talking to your platoon sergeant that you can adequately clear between 300-1,000 meters of road an hour. You immediately realize that:

1. You should sweep the entire road with mine detectors if possible.

ILLUSTRATOR: SP5 RICHARD A. RIPPLE

2. You should have a contingency plan for clearing the route if time grows short, and you cannot sweep the entire road.

3. No engineer support is available for clearing mines and obstacles.

4. You must provide security along the route once it is cleared.

HOW WOULD YOU DO IT?

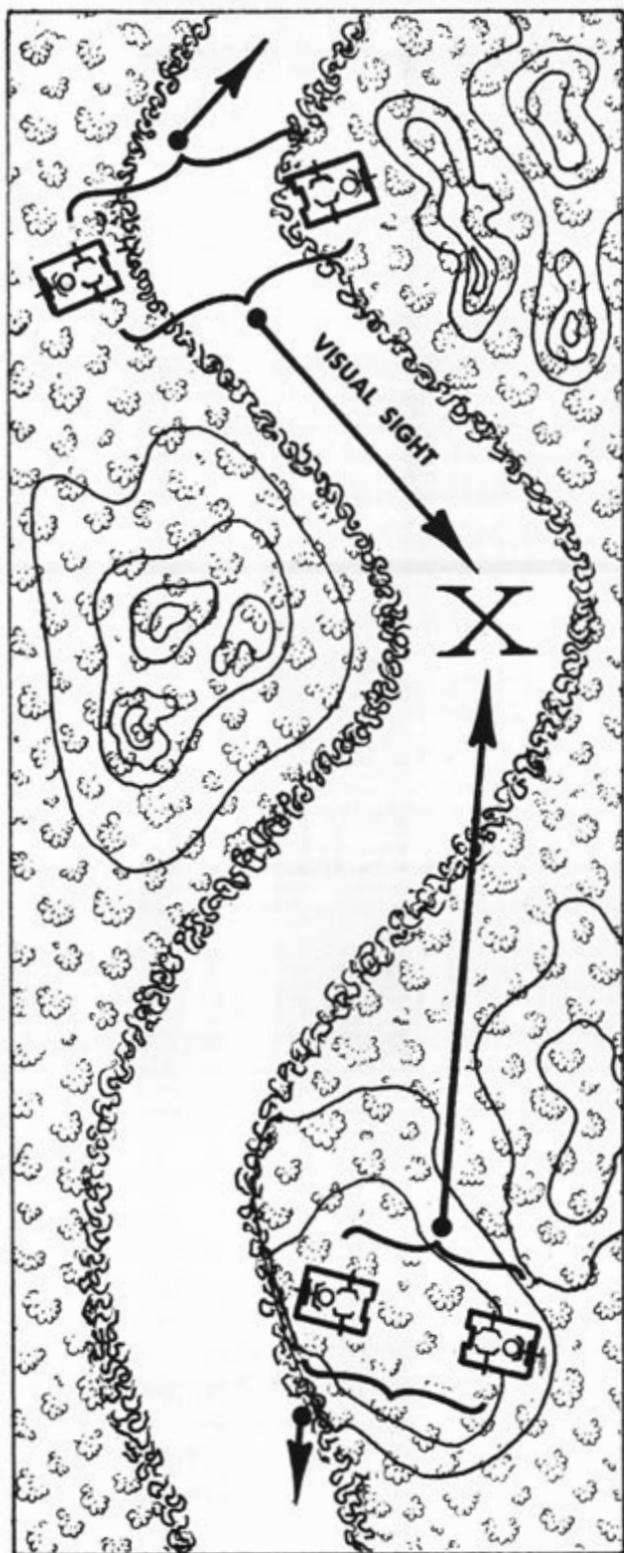
SOLUTION

You immediately request to borrow the mine detectors of the other two platoons of the troop. You also request that, if possible, the platoon following your platoon, as the reaction force, outpost the road as you advance. This would save time as you would not have to come back and outpost the road after clearing it. You plan for continuous supporting artillery along the route, with emphasis on the areas you have determined to be dangerous. The support squad organic to the platoon will be used to fill gaps in the artillery coverage. You then brief the resupply convoy commander on your plan of operation. Terrain permitting, the platoon organization should have a tank and a scout squad securing each side of the road. This security should be to the flanks and forward of the dismounted elements as far as visual contact permits, or approximately 200 meters. You organize the dismounted element from your infantry squad into 3 teams; (1) a clearing team to operate the 3 mine detectors, (2) a security team to provide local security on the ground, and (3) a demolition team to probe for mines and look for obstacles that must be destroyed. The personnel in these teams will have to be rotated every 15 to 20 minutes to ensure that the personnel operating the mine detectors do not become tone deaf. The clearing team marks suspected mine locations and continues to sweep. When the demolition team has probed the area and is prepared to blow the mine in place, they ensure that all personnel are alerted and are under cover. You lead your mounted elements with a tank to provide immediate fire support for the dismounted elements. If terrain does not permit their operation with the scout squads on the flanks, the ACAV from the infantry squad follows the lead tank, followed by the other two tanks. The remaining ACAV follows the tanks or infantry ACAV and provides rear security. The herringbone formation should be used at a halt. You are mounted in the lead tank and your platoon sergeant is

mounted in your ACAV, which is the trail vehicle, to keep you informed of any element that may have dropped out, and also to provide rear security. If time grows short you plan to remount all elements and move down the road with a tank leading formation, using a heavy volume of fire to the flanks to clear the road. You will have to inform your troop commander at what point this was started. The road should be secured by using outposts of two to four vehicles spaced so they can maintain visual coverage of the road as well as provide mutual support and security. If the following platoon from the troop can drop these off as you proceed, time will be saved. If your platoon has to provide the outposts, these should be set up after the route has been cleared. On portions of the road that cannot be covered visually by the outposts, you may have to use a roving patrol of 2 to 4 vehicles patrolling between the outposts.

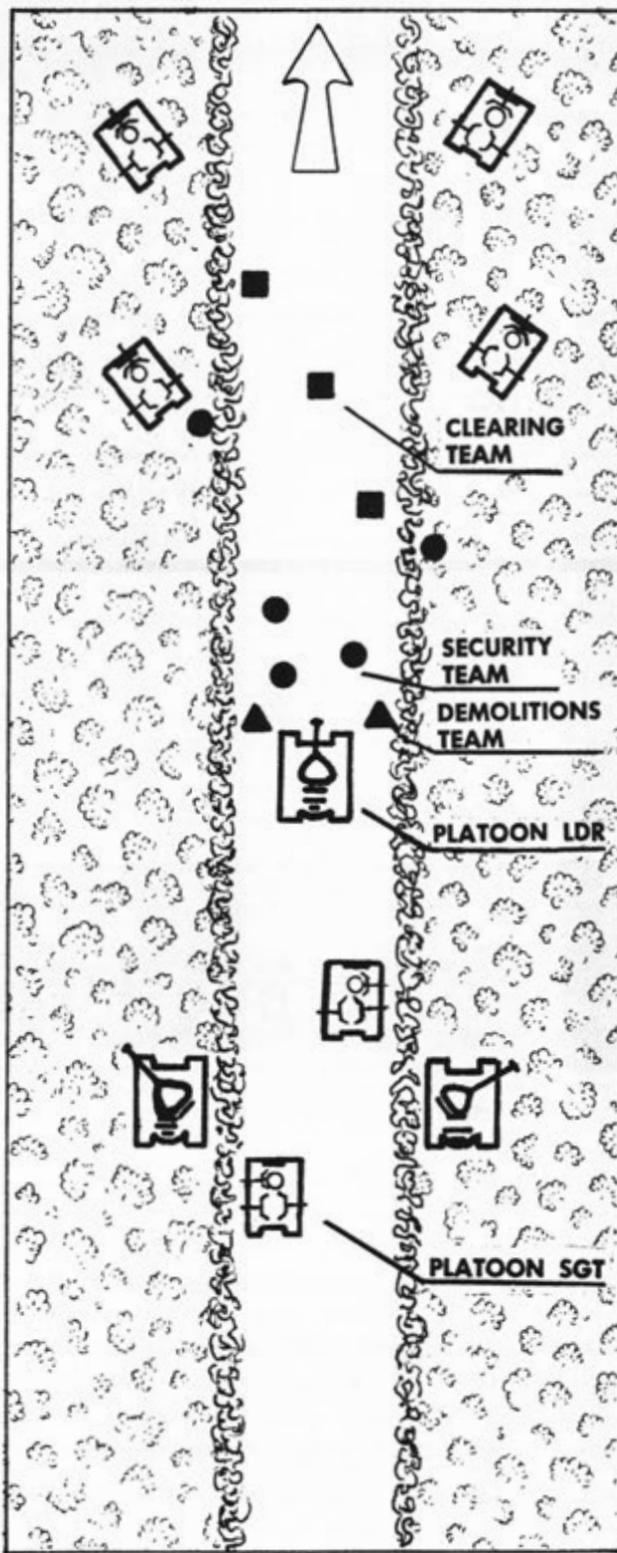
DISCUSSION

Borrowing the mine detectors from the other two platoons of the troop assists in rapid clearing, since it reduces the amount of road each sweeper has to cover. The sweepers should be staggered to ensure that area overlap occurs during the sweep and no portion of the road is missed. The exact makeup of the dismounted elements will vary slightly from unit to unit, according to the local SOP, and the availability of additional support. If time grows short, the road can be hastily cleared by driving it, using a tank leading formation and reconnaissance by fire. This provides the added weight of the tanks to detonate pressure mines in the road as well as giving the vehicles and crew a good chance of survival, since a tank and crew will sustain less damage from a mine than will an ACAV. The troop commander will dictate the type and volume of reconnaissance by fire you will use. The flanks of the road should be visually inspected for evidence of fresh digging or wires leading to mines in the road. If the troop commander approves the use of the reaction platoon to provide the route security, more rapid accomplishment of the mission will be possible. If this is not approved, you will have to come back after the clearing operation and outpost the route. In rare cases, if the situation dictates, you may drop off an outpost along the road to maintain security in the area you have already cleared; however, this reduces your effective strength. The use of a mounted roving patrol between the outposts denies the VC the time required

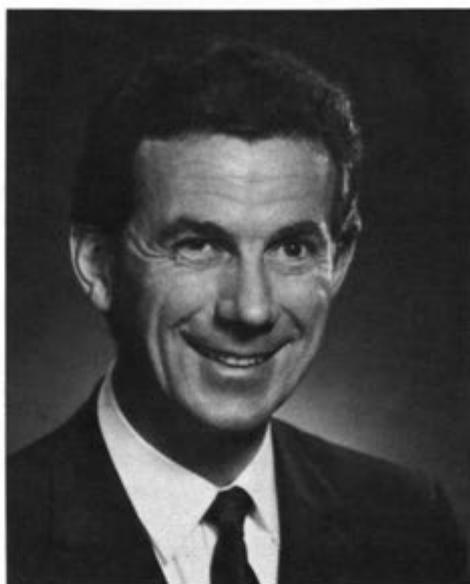


to come in and mine the road; however, the patrols should not run on a predictable schedule.

Normally, the personnel in the infantry squad receive training in the operation of mine detectors. You and your platoon sergeant, during the normal course of events, should ensure that as many other



personnel in your platoon as possible are trained in the operation of this equipment. Scouts receive training in demolitions work. You again, would want to ensure that your other people are trained in demolitions work. You cannot normally expect to have an engineer demolitions team attached.



RICHARD M. OGORKIEWICZ

Lifetime Honorary Member

Richard M. Ogorkiewicz, world authority on armored fighting vehicles and frequent *ARMOR* author, recently was feted at a dinner in the London Columbian Club marking his election to lifetime honorary membership in the United States Armor Association. Making the presentation of an illuminated scroll on behalf of the President of the Armor Association, was Major General Morgan G. Roseborough, Commanding General of the 3d Armored Division, who travelled from Germany for the occasion.

In his remarks, General Roseborough cited Mr. Ogorkiewicz's many contributions to *ARMOR* and noted that he was the first citizen of a country other than the United States to be elected to honorary membership in the Association. In all, fewer than 10 persons have been so honored. These include Frederick Remington and General of the Armies John J. Pershing.

After his expression of appreciation for the honor

bestowed upon him, Mr. Ogorkiewicz commented briefly on the future of armor as he now sees it. "As long as the human race is what it is, there will be ground forces," he said. "And as long as there are ground forces, there will be tanks. But their shape is likely to change."

Acting as host for the Armor Association was Armor Colonel James O. Daulton, Senior Representative, US Army Standardization Group and senior Association member in the United Kingdom. In attendance were Brigadier R. E. Simpkin, who is responsible for British Army combat vehicle and ground weapons development, and Brigadier Basil G. Rawlins who has responsibility for management of all British Services combat and general purpose vehicles as well as combat engineer equipment. In addition, there were present at the gathering a number of others prominent in the fields of design, manufacture and employment of armored materiel.

*The United States Armor Association
Resolution
Whereas*

Richard M. Ogorkiewicz

M.Sc. (Eng.), A.C.G.I., D.I.C., A.M.I. Mech.E., Senior Lecturer in Mechanical Engineering at the Imperial College of Science in London, engineer, scholar and author has distinguished himself in learning, and

WHEREAS, beginning in 1950, with the first issue of our professional journal ARMOR under that name, he has contributed over fifty scholarly articles on armored fighting vehicles during a period of twenty years, and

WHEREAS, he has ever and always been advisor, mentor, supporter and friend of the Association, of ARMOR and of countless Association staffers and members seeking to promote its scholarly aims, and

WHEREAS, he has endorsed the Association and its journal to scholars in the field resulting in their contributing worthy papers for publication, and

WHEREAS, he has commented favorably on American Armor and its journal, and referred to these frequently in his two renowned scholarly works *Armor* (1960) and *Design and Development of Fighting Vehicles* (1968) and in a host of articles in *The Engineer*, *The Royal United Services Institution Journal*, *Brassey's Annual*, *The New Scientist*, *Ordnance*, *Automotive Industries*, *Machine Design* and numerous other military and scientific periodicals, as well as in professional lectures throughout the Free World, and

WHEREAS, he continues to work diligently to disseminate knowledge of the military arts and sciences with special attention to mobility in ground warfare and to promote professional improvement

NOW THEREFORE, we the Officers and Executive Council of the United States Armor Association assembled, do confer upon

RICHARD M. OGORKIEWICZ

lifetime honorary membership in said Association together with all rights and privileges pertaining thereunto.

In witness whereof, the President and Secretary-Treasurer have set their hands and seal this 23d day of January, Anno Domini One Thousand Nine Hundred and Seventy and in the Eighty-fourth year of our Association, in the City of Washington, District of Columbia, United States of America.

W. H. S. Wright
Lieutenant General, USA-Retired
23d President

O. W. Martin, Jr.
Colonel, Armor
29th Secretary-Treasurer

ARMOR INNOVATIONS CENTER

NEW USATCA FACILITY

August 1970 saw Major General Richard L. Irby break ground to start construction on a new \$2 million armor and reconnaissance training complex. Construction is expected to be completed by August 1971.

The complex will consist of four major facilities:

- A 34,980 square foot classroom and weapons pool building will make available six 140-man, or twelve 70-man, centrally located modern classrooms for armor and recon instruction. This building will also house a 2850 square foot weapons storage and cleaning area. Complementing the classroom building are the three remaining facilities which still make possible practical, on-equipment training for the students.

- An ultra-modern moving target system will be flanked on each side by two structures housing firing bays. The moving target system consists of targets suspended from four monorail systems. The electrically operated system will provide completely reversible targets, enabling as many as 20 tanks and 30 turret trainers to engage the targets simultaneously with laser beam firing systems. A 750-foot long, 14-foot high concrete partition erected between the two sets of target track will prevent injuries from the laser beams when both firing lines engage the targets. The unique laser beam firing system will enable students to gain practice and experience in target acquisition and firing that is currently possible only on live fire ranges.

- The maintenance training and tank bays building is the larger of the two structures paralleling the moving target system. This 32,286 square foot single-story structure will contain 20 tank firing bays and five turret training bays facing the target

line, while the other side of the building facing away from the targets, will house 20 tank maintenance bays plus shop, office, latrine and storage areas.

- The turret training building, like the tank bays building, parallels the target line but on the opposite side. Its 19,036 square feet will house 25 tank turret firing bays, 15 of which will be confidential access.

The entire complex will provide a consolidated facility for both armor and reconnaissance advanced individual training.

M551 TIPS

- *Missile Gunnery.* The maximum number of missiles the *Sheridan* gunner will fire for qualification is three. If gunner proficiency is to be obtained and maintained, effective use must be made of the *XM41/42* Conduct of Fire Trainer. Emphasis in missile gunnery training should be on moving, rather than stationary, targets at extended ranges. Commanders should become familiar with the chart recorder portion of the *XM41* which produces a printed readout of gunner tracking performance. This is an excellent tool for critiquing and improving tracking skills.

- *Conventional Gunnery.* Until the *M551* is equipped with a rangefinder, the vehicle commander's ability to estimate range rapidly and accurately will be critical to crew performance in training or combat. Increased training time should be set aside for range determination training. In addition, gunners should be given extensive training in choking targets of varying sizes and at varying ranges with the stadia reticle.

- *Maintenance:*

- Crew members must not replace or change printed circuit boards. Although they are easily accessible to crew members, replacement of these boards is the responsibility of the turret repairman.

- Crew members periodically must inspect ammunition on the *M551* with particular attention to any damage to cartridge cases.

- Oil, lubrication, instrument, OAI, is the only type of oil to be used in the closed breech scavenger system compressor. Use of any other type oil will damage the compressor.

- Because of its relatively inaccessible location, forward of the *XM44E1* periscope, the *XM44E1* battery is often neglected. This battery is the source of emergency power for the periscope. The only way to remove the battery for servicing is to remove the periscope body first. Since the peri-

scope must be purged whenever this removal takes place, the battery is infrequently serviced.

• *M551* torsion bars are not interchangeable. Torsion bars No. 2 and 3 are hollow; No. 3 is reverse twist and therefore only interchangeable with No. 2 on the other side of the vehicle (and vice versa). Torsion bars No. 1, 4 and 5 are interchangeable on the same side only.

M551 TRACK ADJUSTMENT

The normal method of checking track adjustment on the *M551 Sheridan* taught by the Armor School Automotive Department is that shown and described in TM9-2350-230-12. The vehicle is allowed to coast to a halt and a string is then stretched along the top of the track and held taut by weights on both ends. The distance between the track and the string is then measured at a point directly over the third roadwheel. The distance should be $3\frac{1}{2}$ inches. If it exceeds 4 inches, the track must be tightened.

Recognizing that string and a ruler may not always be available in the field, several field expedients are taught. With the *M551* on a level surface, a canteen cup may be laid on the track at the No. 3 roadwheel. An eyelevel sighting is then made by pushing the front mud flap back and aligning the top of the track at the idler wheel and at the drive sprocket. If the canteen cup on its side aligns with this line of sight, the track sag is $3\frac{1}{2}$ inches. If the cup is stood upright and it aligns, the sag is 4 inches. Other field expedient measures are a 7.62mm ammunition box on its side, a spent cal .50 round and a cal .50 machinegun headspace gage fully extended. These expedients were first discovered by the Sheridan Project Managers at Pock Island Arsenal



M551 Track Adjustment



The TOW

ANTITANK FIREPOWER

The *TOW* (tube-launched, optically-tracked, wire-guided missile system) is a weapon new to the Army inventory, developed to fulfill a requirement for a heavy antitank/assault weapon (*HAW*). The *TOW* is designed for employment against armored vehicles, field fortifications and emplacements.

TOW eventually will be organic to infantry, mechanized infantry, airborne and airmobile battalions. It can be fired either from a ground tripod or from specifically adapted wheeled vehicles and armored personnel carriers. In still another adaptation it can be fired from selected helicopters.

In sharp contrast with the trend toward ever increasing weapons sophistication, the *TOW* was designed with simplicity of operation and ease of maintenance in mind. This fact will be stressed in presentations to resident students attending the Armor school's Organizational Maintenance Officer (OMO) Course. Beginning with OMO Class #5 in October 1970, the Weapons Department will point out that the gunner simply loads an encased missile into the launch tube, visually selects his target, connects the loaded missile to the launcher's electrical system, aligns the optical sighting system on target center of mass and presses the firing trigger. Keeping the sight cross hairs centered on target assures that the missile is automatically guided to a successful impact.

Organizational maintenance requirements are limited to keeping the equipment clean, inspecting for damage and performing a launcher self test. Under the Land Combat Support System (*LCSS*), direct and general support field maintenance will repair or replace both electronic and mechanical components.

In addition to these operating procedures and the maintenance concept, OMO students will be briefed on the background leading to the *TOW* development and shown several film clips of firing sequences.



NEWS NOTES



ARMOR NCO IS SMA

Well known and widely respected true professional soldier Silas Lee Copeland became the third Sergeant Major of the Army on 1 October 1970. SMA Copeland entered the service from Huntsville, Texas, on 28 October 1942. During World War II combat, he rose from tank commander to platoon sergeant in the 66th Armored Regiment, 2d Armored Division, with which he served for more than five years in Europe and at Fort Hood.

In February 1950 SMA Copeland joined the 1st Cavalry Division in Japan. On 18 July 1950 he entered Korean Conflict combat as Intelligence and Reconnaissance Platoon Sergeant of the 1st Battalion, 8th Cavalry. The next summer, he returned to the United States to become an ROTC instructor for two years at Texas A & M. In 1954, after a tour as first sergeant of an infantry company in Europe, SMA Copeland returned to Fort Hood to become operations sergeant and sergeant major of the 4th Tank Battalion, 1st Armored Division.

After a second two-year ROTC tour at Centenary College, in July 1959, SMA Copeland joined the 3d Squadron, 8th Cavalry, 8th Infantry Division in Germany, where he served as first sergeant and sergeant major. In September 1962, he again returned to Fort Hood to become sergeant major of the 2d Battalion, 37th Armor, 2d Armored Division.

In June 1963, he began a 3½-year tour as command sergeant major of the 2d Armored Division. This period included Exercises "Big Lift" and "Desert Strike," as well as preparation of units and individuals for deployment to Vietnam.

December 1966 saw SMA Copeland's appointment as command sergeant major of the 2d Brigade, 4th Armored Division. In July 1968 he became 4th Armored Division command sergeant major. One year later he left that position to become command sergeant major of the 1st Infantry Division in Vietnam.

In April 1970, when the "Big Red One" returned to the United States, SMA Copeland became sergeant major of the 4th Infantry Division in Vietnam. It was from this position that he was selected to be Sergeant Major of the Army.

It is interesting to note that SMA Copeland's distinguished service includes assignment to the three 1st Divisions (Armored, Cavalry and Infantry) and to three of the four Regular Army armored divisions.



HOW'S THAT AGAIN PLEASE?

Making fluids more fluid may help to get more of them through pipelines, and thereby increase the flow of bulk petroleum distribution, the Combat Developments Command reports.

Charles S. Grazier of CDC's Engineer Agency said they are expecting the development of "non-Newtonian flow" to get more use out of the pipelines.

"Newtonian flow" refers to the phenomenon occurring when fluids pass through a pipeline where the line becomes "crowded" with turbulence. Bubbles and eddies (called "excitement") cause drag or friction, limiting the capacity of the pipe.

An additive to make the fluid heavier, composed of macro-molecules, is the apparent answer. This would reduce the friction within the fluid by absorbing turbulence, allowing a greater flow.

The Bulk Petroleum Facilities and Systems Study focuses on Army needs through 1985. Developments in plastic and aluminum pipe, jointing machines, reels, pumps and tanks were studied, with computer simulation used to evaluate candidate pipeline systems.

TWISTER PASSES ARCTIC TEST

Twister (ARMOR, November-December 1969) can operate effectively on the Arctic Ocean ice, Lock-

heed Missiles & Space Co. officials have concluded after tests.

The Arctic trials lasted three weeks, and were the latest in a four-year series of tests to measure Twister's off-road performance. The tests were held on the Atlantic Richfield Company's Prudhoe Bay facilities, 200 miles north of the Arctic Circle.

Frozen terrain posed the most severe problem to both man and machine, according to William R. Janowski, leader of the Arctic team. Even at modest speeds the vehicle and its passengers took a beating.

"The terrain looks nearly flat," he said, "but isn't at all. The frozen hummocks of tundra can stand 3-4 feet high. Pressure ridges of ice on the Arctic Ocean can be even higher, and until you're right on them, you don't realize how difficult they are because of the unusual effects of Arctic sunlight.

Because of Twister's suspension system, it was able to maintain a relatively high speed, Janowski said. He also credited the vehicle's ability to keep all eight wheels on the ground as an advantage.

LOOKING FOR DRAPER WINNERS

Captain Thomas W. Templer, custodian of the Draper Combat Leadership Trust Fund, has found that historical records of the fund list no names of the winners in 1924-26, 33, 46 and 48-55. Anyone knowing where such names and units can be found is asked to contact Captain Templer at the Armor School.

MRS. EISENHOWER ATTENDS TANK CORPS BIENNIAL

The presence of Mrs. Mamie D. Eisenhower added extra luster to the July biennial reunion of

the World Wars Tank Association at Camp Colt, Gettysburg, Pennsylvania, where then Captain Eisenhower was commander when the Tank Corps was founded in 1918.

Mrs. Eisenhower participated in a memorial service at the Eisenhower tree after attending the ladies' luncheon and reminiscing with others about past days at Gettysburg.

During the ceremony, she received a bronze plaque expressing the affection of the Tankers and their ladies for the Eisenhowers, and she promised to send it to the Eisenhower Museum in Abilene, Kansas.

Colonel James H. Leach, Chief of Armor Branch, told a banquet audience at the biennial that American troops in Vietnam "are the finest soldiers."

"They are the hardest workers," he said. "They accomplish two years' work in one year."

He said American soldiers have the benefit of more intelligence in Vietnam than in any other war. Extensive communications facilities, which enable commanders to be in constant touch with ground, artillery and air forces, permit armor forces to move unprecedented miles each day, he added.

"The troops are in the field for several weeks," he said, "fighting actions each day over areas of nearly 200 miles. Like you in 1918, the modern tanker rides to work the same as he did in World War I and II, and he fights from his vehicle."

Also appearing as a speaker was General Bruce C. Clarke, former U.S. Armor Association president, who told the group the American soldier in Vietnam deserves the unqualified support of the country.

General Clarke credited the concept of mechanized cavalry to General Eisenhower and General George Patton, whose ideas of speed and force brought about faster tanks.



THE GETTYSBURG TIMES

Mrs. Eisenhower observes a Ford World War I tank displayed at the biennial.

ARMOR AT FORT BRAGG

ROTC cadets attending their six-week summer camp at Fort Bragg this year gave high marks to the four-hour bloc of instruction—and instructor—in Armor.

Major Dannie Morris, ROTC instructor at Middle Tennessee State University, received many standing ovations from the 20 cadet companies who heard him. And the cadets also seemed to appreciate the power and accuracy of the *Shillelagh* missiles demonstrated.

A Citadel cadet told visiting university officials that the Armor presentation was the finest block of instruction he had ever seen, while a Florida cadet said he decided to go Armor after only five minutes in the stands.

Each class consisted of a lecture and a firepower demonstration. Then a platoon of *Sheridans* was brought on line and the cadets swarmed over them under supervision of assistant instructors. Last, half the class went for a ride as they assaulted a hillside while the others received orientations on the *M48 tank*.

SPACE AGE ARMOR

Armor vehicles of the future may be protected by the same materials which protect space ships during reentry into the earth's atmosphere.

A suggestion by Captain Thomas L. Beale, recent graduate of the Armor Officers Advanced Course, to study the feasibility of such materials brought a positive response from the Combat Developments Command at Fort Belvoir, Virginia, and a \$100 savings bond to Captain Beale.

Special materials used on the outer heat shields of space craft protect them and the crew by resist-

ing molecular separation when subjected to intense heat. A common antitank weapon creates a similar situation when striking the surface of armored combat vehicles by releasing a jet stream that creates heat and pressure, sufficient to burn through the outer shell of the vehicle.

Captain Beale said heat resistant, or ablative, materials would reduce or eliminate the penetration of armored vehicle by heat producing rounds.

ARMOR BALL

The Washington Area Armor Anniversary Ball is scheduled for 22 January at the Bolling AFB Officers Club. Reservation Forms will be mailed by 20 December.

The Tarpaulin

TAKE COMMAND

MG William A. Burke, 4th Inf Div . . . **MG James F. Hollingsworth**, US Army Alaska . . . **MG George W. Putnam**, 1st Air Cav Div . . . **BG William R. Kraft, Jr.**, CG, USAREUR & Seventh Army Trps . . . **BG John G. Wheelock, III**, USA Tng Cen Inf & Ft. Polk . . . **COL (P) Harry H. Hiestand**, ADC, 8th Inf Div . . . **COL William J. Buchanan**, 2d Bde, 1st Air Cav Div . . . **COL Edward P. Crockett**, 1st Bde, 1st Armd Div . . . **COL Vincent deP. Gannon**, Seventh Army Tng Cen . . . **COL Sidney S. Haszard**, 3d Bde, 3d Armd Div . . . **COL Paul B. McDaniel**, Spt Comd, American Div . . . **COL Douglas G. Younger**, USA Inst of SP Studies, CDC . . . **LTC Milton L. Aitken**, 12th Bn, 5th Bde, USATCA . . . **LTC Robert S. Anthis**, 2d Sqdn, 10th Cav, 7th Inf Div . . . **LTC Clayton J. Bachman**, 4th Bn, 37th Armor, 194th Armd Bde . . . **LTC John L. Ballantyne**, 2d Sqdn, 11th Cav . . . **LTC Reno J. Bonomo**, 16th Bn, 4th Bde, USATCA . . . **LTC Lavere W. Bindrup**, 2d

LETTERS...

(continued from page 2)

could ever consider either the Crimean War or the Russo-Japanese War as anything remotely approaching an attempt to subjugate Russia. WWI is a different case, but there again the German intent fell rather short of conquest. Those three wars were important, of course, but in their own context only. They were not invasions in the same sense that the others were.

Secondly, "Diades" believes that the fallacy in the concept of an "invasion through China is one of logic." He explains his assertion by saying, "...the author dismisses the Arctic and south-

ern approaches as physically unsuitable and then bases his whole argument on technological wonders that will overcome all barriers." The error in logic might in this case be attributed to the wrong author. To begin with, the China route is discussed as *a* path, not *the* path. Moreover, advanced technology is in fact most vital to provide fire support over the Polar Region and to support feints from the south. The whole gist of my argument was that new technology may open up new avenues; and we should — yea must — examine each and every one of them.

As for his comments on Russian press reaction to my article, I can only say that "Diades" is overstating the case. Obviously, none of us should help the Soviets propagandize their own people. But any Red bureaucrat can always dig up or fabricate any amount of material he needs to con-

vince his countrymen of America's "evil" intent. Whether or not soldiers talk openly of invading Russia makes no difference to men in the Kremlin — except maybe to remind them in their more bellicose moments that such an event is, after all, not impossible. Nor does "Diades" even take his own words seriously; after expressing dismay over the *Red Star* comments, he promptly devoted the remaining half of his article to his own thoughts on invading Russia!

All in all, I enjoyed "Other Views." It packs much information into a compact package. I urge readers of *Armor* to study both articles and then, most important to make their own analysis.

DAVE R. PALMER

Lieutenant Colonel, Armor
Commanding

2d BN, 32d Armor, 3d Armd Div
APO New York 09045

Sqdn, 17th Cav, 101st Abn Div (Ambl) . . . **LTC Dennis M. Boyle**, 18th Avn Bn, V Corps . . . **LTC Standish O. Brooks**, 2d Bn, 72d Armor, 2d Inf Div . . . **LTC Oliver B. Coons, Jr.**, 1st Bn, 5th Inf, 25th Inf Div . . . **LTC Walter C. Cousland**, USMA Prep Sch, Ft. Belvoir . . . **LTC Sidney Davis**, 3d Bn, 3d Arty, 194th Armd Bde . . . **LTC Jack E. DeMuyneck**, 2d Bn, 13th Armor, 1st Armd Div . . . **LTC Clyde Fisher, Jr.**, 2d Bn, 2d BCT Bde, USATC, Inf. Ft. Dix . . . **LTC Allan T. Ford**, 1st Bn, 4th CST Bde, USATC Inf, Ft. Ord . . . **LTC John C. Gazlay**, 2d Bn, 8th Inf, 4th Inf Div . . . **LTC James H. J. Hancock**, 3d Bn, 68th Armor, 8th Inf Div . . . **LTC Bobby J. Harris**, 3d Bn, 51st Inf, 4th Armd Div . . . **LTC Robert Helmlinger**, 1st Bn, 73d Armor, 7th Inf Div . . . **LTC Bernard F. Hurless, Jr.**, Inf, 4th Bn, Sch Bde, USAARMS . . . **LTC Harold E. Klingman**, 1st Bn, 37th Armor, 4th Armd Div . . . **LTC Warren G. Lawson**, 4th Bn, 54th Inf, 194th Armd Bde . . . **LTC Joseph C. Lutz**, 1st Sqdn, 17th Cav, 82d Abn Div . . . **LTC John Mason**, 1st Sqdn, 10th Cav, 4th Inf Div . . . **LTC Robert J. Moore**, 4th Bn, 12th Inf, 199th Inf Bde . . . **LTC Harold R. Page**, 3d Sqdn, 5th Cav, 9th Inf Div . . . **LTC Edward E. Roderick**, 1st Bn, 81st Armor, 1st Armd Div . . . **LTC James D. Rogers**, Inf, 1st Bn, 31st Inf, 7th Inf Div . . . **LTC Crosbie E. Saint**, 1st Sqdn, 1st Cav, Americal Div . . . **LTC Tommy G. Smith**, 2d Sqdn, 2d Armd Cav Regt . . . **LTC Anthony M. Solberg**, 4th Sqdn, 12th Cav, 5th Inf Div . . . **LTC David F. Stoutamire**, 2d Bn, 1st Bde, USATCA . . . **LTC Landon P. Whitelaw**, 2d Sqdn, 1st Cav, USARV . . . **LTC Billie G. Williams**, 3d Sqdn, 17th Cav, 12th Avn Gp . . . **LTC Thomas R. Woodley**, 6th Bn, 32d Armor, 194th Armd Bde . . . **MAJ John F. Lehmann**, 1st Rcn Sqdn, 2d Bde, USATCA.

ASSIGNED

MG William E. Shedd, III, Dep Dir, DASA . . . **BG**

Frank B. Clay, Dep Dir, Joint Staff . . . **BG Rolland V. Heiser**, J3, MACV . . . **BG Arthur W. Kogstad**, Dir of Intl Log, Hq AMC . . . **BG Jack MacFarlane**, Deputy Sr Adv, ARVN II Corps . . . **BG William J. Maddox**, Dir of Army AVN, OACSFOR, Hq DA . . . **COL (P) John C. Burney, Jr.**, Asst DCSOPS, Hq, USAREUR . . . **COL (P) Ronald J. Fairfield**, ADC, 7th Inf Div . . . **COL (P) Alfred B. Hale**, DCSPER, Hq, USARPAC . . . **COL (P) Donn A. Starry**, Dep Dir of Opns, ODCSOPS, Hq, DA . . . **COL Stephen O. Edwards**, Hq MACV INFO . . . **COL Earl W. Sharp**, C of S, 1st Armd Div . . . **COL Jack P. Geise**, Dir of Instr, USAARMS . . . **COL George E. Kimball**, Dir Gen Subj Dept, USAARMS . . . **COL Kenneth R. Lamison**, Dir Comd & Stf Dept, USAARMS . . . **COL James J. McAloon**, USA CDC Ln Off Hq USAREUR . . . **LTC Ronald E. Artzberger**, XO, 2d BCT Bde, USATC, Ft. Leonard Wood . . . **LTC James S. Cronen**, G2, 101st Abn Div (Ambl) . . . **LTC Fred R. Doran**, G2, 5th Inf Div . . . **CSM Harold L. Bocock**, 12th Bn, 5th Bde, USATCA . . . **CSM Trinidad Prieto**, 2d Bn, 34th Armor, 25th Inf Div . . . **CSM Frank S. Zlobec**, 5th Bde, USATCA.

VICTORIOUS

Armor Officer Advanced Course 2-70 Distinguished Honor Graduate was **CPT John M. Deems**, Inf. Honor graduates were **CPT William M. Annan**, Inf, **CPT Gordon A. Larson**, **MAJ Larry G. Lehowicz**, Inf, and **CPT Larry G. Smith**. Armor Association writing awards went to **MAJ Albert G. Schooler**, Inf, **CPT David A. Bramlett**, Inf, **CPT Gerald L. Cossey** and **CPT Donald L. Cummings**, whose articles appeared in the September-October *ARMOR* . . . Distinguished Armor Officer Basic Course Graduates: 21-70 **2LT John I. McClurkin, III**, USMC; 22-70 **2LT Kenneth G. Wimmer**; 23-70 **2LT Jan B. Barlow**.

ARMOR—The Magazine of Mobile Warfare

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FROM THE BOOKSHELF

ALTERNATIVE TO ARMAGEDDON — The Peace Potential of Lightning War

by Colonel Wesley W. Yale, General I. D. White and General Hasso E. Von Manteuffel. Foreword by General Lyman Lemnitzer. Rutgers. 257 pages. 1970. \$9.00.

"The blitz capability must be regarded as a tool of national defense and not an instrument of aggression. It is important to remember that to be effective it is not necessary for a deterrent to intimidate the people or even the politicians of another nation. It is necessary to give pause to its professional soldiers who advise politicians, who in turn base aggressive policies on the probability of winning. They will not risk war with a nation they know is able to respond quickly with strategic air forces and with tactical forces, able to mass weaponry under experienced and skilled commanders." Page 250.

Many readers who are concerned with a loss of vision and training for "lightning war," as they interpret recent trends in the United States, will find many passages in this book which will confirm some fears and dispel others. For those who see the need for a national capability for multiple responses to various power threats in the international community, there will be dismay as many of these forces are seen as detracting from the strong, but lean, blitz-oriented deterrent.

The authors are distinguished professional soldiers, from both sides of World War II, with strong credentials in blitz warfare. They are best at detailing developments in this field; the chapters focusing on the history of, lessons learned from, and training for lightning war are most useful. Much of the historical material is sketchy but interesting, useful more to the infrequent reader of military history than to those who have achieved familiarity with the Great Captains of history. Those selected for discussion here, with considerable difficulty in some

instances, were Napoleon, Forrest, Rommel, Patton, Harmon and the Israeli Composite. Out of the historical vignettes presented comes a vivid evocation of audacity and mobility which is only infrequently achieved in such writings.

An excellent statement of the need for highly effective, mobile-minded commanders operating well forward is made in succeeding portions of the book. Some of the suggestions for training, particularly the simulation training mentioned, are fascinating and should elicit a great deal of interest from those who, like this reviewer, are not adequately familiar with this important subject.

What is lacking, however, is a convincing argument of how this posture becomes the only alternative to a massive holocaust. The assumption is there but there are many who will remain unconvinced by the brief discussions presented. There is criticism of political decisions of the recent past but no clear guide to how the advocated capability would have given the United States the needed alternatives in crisis situations as they arose. Blitz was not enough, for example, to resolve the political problems for the Israelis, even though the Lightning War of 1967 was clearly a remarkable military achievement.

The book makes a useful case for the continuing need for the blitz-oriented deterrent. It properly emphasizes the human element in war and the importance of the leadership required for tomorrow's complex military operations. The training suggestions are quite useful. It does not, however, answer the political questions, which are of overriding importance in many cases. It implies that the probable costs involved, are small. However, all too frequently the costs for such programs have been underestimated in the past.

There is a great need for thoughtful discussion, comment and writing on alternatives to mass destruction in the interplay of power in the world community of the future. If this volume encourages development of thoughtful comment along these lines, it will serve a useful purpose. Hopefully it will. COL. GARLAND R. MCSPADEN, USAWC.

STRATEGY FOR TOMORROW

by Hanson W. Baldwin. Harper & Row. 377 pages. 1970. \$12.50.

Hanson Baldwin has done us all the great service of "telling it as it is" in analyzing our country's strategic position in the 1970s. Although you might not agree with all his conclusions — he develops a national maritime strategy — his analysis is well done, logically presented and thought-provoking. In fact, disturbing might be a better description.

Baldwin gets well into the primary issues of national power, forces, trends and national will. He looks at the world situation in its starkest reality; not as we might wish it to be.

From the recent wars, he draws what he considers to be the key lessons. Some of these are controversial, but all give important insights concerning future strategy. From the Vietnam struggle, he concludes that we must "lead from strength" and "must fashion a strategy which maximizes the natural advantages and the inherent skills of one's own nation and minimizes the strengths of the enemy." He goes on to stress "the high importance of selectivity in strategy" in that "intervention anywhere and everywhere is a sure invitation to disaster."

"The geographic areas to be defended must be important; the conditions for success present, even if obscured," he writes.

To a large extent, he builds his book and strategy on these themes.

Considering that the American strength is in technology and geography, Baldwin would have us accentuate a maritime concept for future planning and force composition, remembering, however, that "military force is indivisible, and military power of all types from all services will be required in the years ahead." He adds that "the man on the ground with the gun in his hand is still the ultimate weapon."

His strategy would place the first line of defense on the "diplomatic and political — 'image,' the will, the policy of the United States"; the second on "the dollar"; the third, on "United States naval and air power"; the fourth on "troops of our allies and indigenous forces"; and the last on "the United States soldier." This strategy would translate itself into a defense budget which places unexcelled weaponry as its top priority, followed in order by command of the air and of the oceans and of aerospace, and by small, ready but modern and mobile ground forces, backed by an administrative structure and mobiliza-

tion potential capable of providing sizable reserves.

It is obviously the idea of "small . . . ground forces" which would give the Army discomfort. It is also here that Baldwin's logic is weakest. He would pare down our ground forces to meet brush-fire situations and "to handle continental emergencies around the rimlands involving up to 100,000 ground troops." Any fight which would require a greater commitment than this, Baldwin believes, should be avoided by calling it quits, or should be met by escalation to advanced weaponry such as tactical nuclear weapons, or should be handled by mobilization. In NATO, where Baldwin ultimately would cut our strength to one or two divisions, this would bring almost immediate recourse to nuclear weapons if the Soviets attacked. He would assure use of nuclear weapons by placing the fingers of the other NATO members on the trigger. In developing countries, such as Vietnam and Thailand, he would advocate use of "small, defensive nuclear devices" under certain conditions. However, Baldwin's quick use of nuclear weaponry might just not be in the political cards — irrespective of the military logic.

At the same time, one gets the feeling that although Baldwin clearly understands the future threat from "wars of national liberation," he really does not understand the full context of the problem. There are certain areas of the world, especially in Latin America, where our vital interests are involved, but where use of nuclear weapons just would not be responsive to the threat. Rather, the answer might be rapid commitment of more than 100,000 troops to prevent control of the area by a hostile power, especially one owning ICBMs. Technology is not the best answer to "wars of liberation." Neither are United States naval power and air power. Nevertheless, one can agree to Baldwin's emphasis on the US image and aid to preempt situations requiring commitment of US military forces in "wars of national liberation."

In spite of these soft spots, Hanson Baldwin has published a great book on strategy. He analyzes the world area by area in specific terms. He talks about the forces and weaponry in equally specific terms. One is not likely to read a better strategic study even with "Top Secret" stamped on its covers. *Strategy for Tomorrow* is a must for all those concerned with national security, both in and out of the military. Most importantly, it should be read by those intent on unilaterally downgrading the security position of the United States. COL JOHN J. MCCUEN, USAWC.

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We do not like to be boxed about the ears for omitting important items concerning Armor people and units from "The Tarpaulin." Be it Active Army, Army National Guard or Army Reserve, we intend that full coverage be given. If the truth be known, 99 plus percent of what does appear is picked up by us from other publications. That's a hell of a note.

MORAL: Don't complain when your name and fame does not appear. Send in the item while it's still news.

CASE IN POINT

To the Armor Selections for the FY71 US Army War College Non-Resident Course should be added:

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