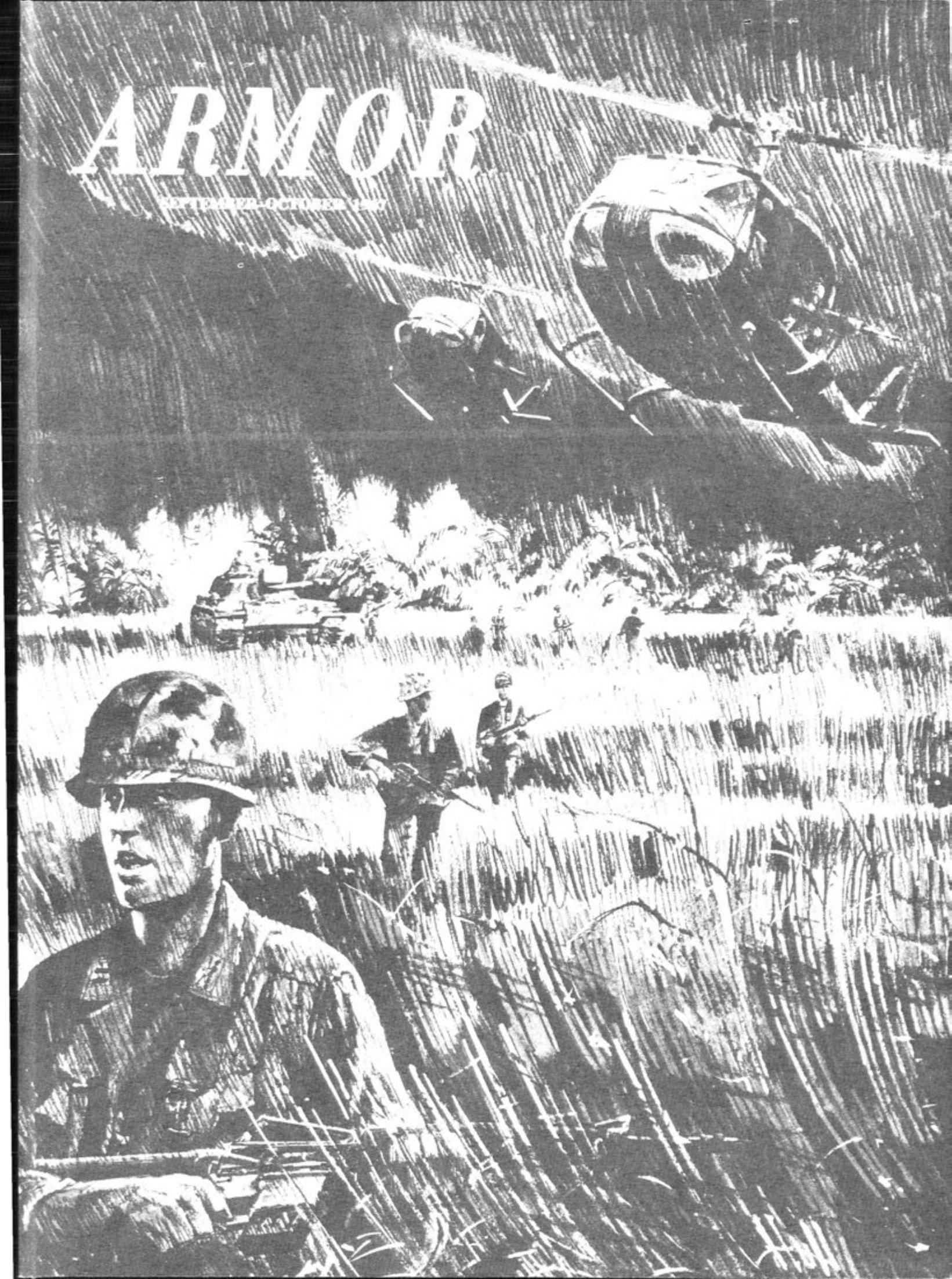
ARMOR

THE UNITED STATES ARMOR ASSOCIATION

Established 1885 as *The United States Cavalry Association*

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

ARMOR

The Magazine of Mobile Warfare

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COVER

ARMOR PLAYS THE HISTORIC CAVALRY ROLE IN VIETNAM DEMONSTRATING THAT ITS PRINCIPLES OF EMPLOYMENT APPLIED WITH FLEXIBILITY, IMAGINATION AND DRIVE LEAD TO VICTORY.

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Letters to the Editor

"THE CHANGING BALANCE"

Dear Sir.

I found the article of Colonel Merglen highly interesting. Nevertheless, I believe that his theory concerning the changing balance between tanks on one side and assault guns and tank destroyers on the other side does not match with the historical facts. I do not doubt the statistics which Colonel Merglen uses but I do not know from what source he learned that "German generals . . . made clear . . . that the era of the battle tank had closed, and that they wished to see it replaced by the assault gun and the tank destroyer." In this context the reader would be led to believe that increased emphasis on assault guns and tank destroyers was due to a military decision to replace one system with another.

To me it seems obvious that the rising production of assault guns and tank destroyers was *not* the consequence of a decision of replacement. The reasons why the production of assault guns and tank destroyers rose much faster than that of the tanks were, according to my knowledge, the following:

1. The need to build up mobile anti-tank elements became obvious only during the war and especially only in the Russian Campaign. The infantry division needed much stronger anti-tank weapons than it had before.

2. The introduction of the assault artillery guns was based on experience in World War I. The original task was direct artillery support for the infantry. On account of these artillery tasks the assault artillery, established in 1939/40, was officered mostly by artillerymen. During World War II, especially in Russia, the task of fighting tanks was added. Because of the great demand for assault artillery the production had to be increased accordingly.

Thus it is quite evident that the rising production of assault guns and tank destroyers did not aim at a replacement of the tank. Assault guns and tank destroyers were needed in addition to the tank. The necessity became evident only during the war as a new demand added to another one already existing.

So the theory of Colonel Merglen of a balance between tanks and assault guns and tank destroyers pictured as a scale does not hit the point. It is not a question of more of the one and less of the other type but a very typical development of two weapons systems alongside each other and each with a very special task, balanced only by the overall economic capacity.

And finally, a last point concerning the number of battle tanks and tank-destroyers in the Bundeswehr. Colonel Merglen points out that "a thousand new battle tanks, the *Leopard* of 39 tons with the 105 mm gun, are being procured and issued. At the same time, eight hundred 23-ton tank destroyers (*Kanonenjagdpanzer*) are to be produced." This could give the impression that there is a balance of almost 1:1 in the German Armed Forces. To prevent readers coming to a wrong conclusion, I would like to mention that only approximately 50 percent of the German tank units are equipped with the *Leopard*. The others are still equipped with the American battle tank *M48*. Taking this into consideration the balance between tanks and assault guns and tank destroyers looks quite different.

ERICH ROTHER
Colonel

Military Attache
The German Embassy
Washington, D. C.

Dear Sir:

Colonel Merglen's article, "The Changing Balance," raises a question which is worthy of further thought and research. I must take direct issue with the Colonel's contention that it was Guderian who promoted the change in production from battle tanks to assault guns and tank destroyers. I shall cite, by page, excerpts from *Panzer Leader* chapters 8, "The Development of the Armoured Force 1/42 to 2/43," and 9, "Inspector General of Armoured Troops," to illustrate that just the reverse was true. On page 277, "He (Hitler) believed that if this new development (hollow-charge shell) should, in fact, fulfill its promise, the answer was to have much more self-propelled artillery and he therefore wished to divert tank chassis to the artillery for this purpose. On this 23rd of January, 1942, he requested that measures be taken along the lines indicated." The effect of this measure was noted by Guderian on page 278, "At the same conference the question of mounting self-propelled guns on tank chassis was again seriously discussed, even though the production of such weapons must inevitably result in a decrease in the number of tanks produced." On page 280, "In October tank production suffered further in favour of the production of assault guns." "Interesting as all these new designs were, the actual result was simply a decrease in the only useful combat tank available to us at the time, the *Panzer IV*."

Guderian criticized the weakening of the anti-tank force by the mounting of the chassis with light field howitzers. "This gun, with its low muzzle velocity and its very high trajectory, was undoubtedly well suited to the requirements of the infantry, but its production resulted in a fresh weakening of our defensive power against hostile tanks. (p. 281)" Thus, in the space of two pages he challenges the transfer of production to *Stu. G.3* and *Jag.Pz.4*.

Guderian, on his appointment as Inspector General of Armoured Troops, immediately sought to implement his views at a conference of March 1943 attended by Hitler, the whole OKW, the Chief of the Army General Staff and the senior officers of Infantry and Artillery. Point two of his conference notes as reported on page 296 states, "The mainstay of our tank equipment is at present the *Panzer IV*." Point ten (page 298) "as a matter of basic importance I request approval for the continued production of the *Panzer IV* in 1944-5." Consequently "In the tank production field it was decided during April, in accordance with my suggestion, that the *Panzer IV* should continue to be built until such time as a high-level of mass-production was absolutely assured for the *Panthers* (p. 308)." Nevertheless, in his absence in October of that year, "an attempt had been made to stop producing *Panzer IVs* and to built assault guns in their place." Guderian hardly sounds like the advocate of assault guns that the Colonel sees in the production figures when on page 313 he (Guderian) states, "In view of our limited production this would undoubtedly be a serious blow to our mobile tank forces and showed a complete lack of comprehension of the real situation." As production of the

Panthers increased the chassis of the *Panzer IV* was increasingly shifted to assault guns and tank destroyers.

I feel that Colonel Merglen has incorrectly interpreted the production figures of the *Leopard* and the *JagPz Kanone* as a reflection of the experience of World War II. My understanding is that the latter vehicle is intended to provide the *Panzergrenadier* Divisions with an armored full-tracked anti-tank capability at a cost substantially less than the *Leopard*. The *JagPz Kanone* seems to challenge the Colonel's classification of the tank destroyer which accords the highest priority to armament. Mobility appears to be the most important consideration in the German tank destroyer. I think that this contradiction stems from an appraisal of battle tanks which were later converted to tank destroyers (as the *T-34* to *SU-85*) and not independent designs in the tank destroyer classification (as the *M-18*).

I feel, that the category that the Colonel assigns to the tank destroyer in terms of relative priority (armament, mobility, protection) might better describe what I would call the support tank (*Chieftain, T-10*). I actually believe that the priority in such a tank is more like that of Merglen's assault gun in that protection is given priority over mobility, but the character of the gun would be vitally different. I think that the matter of secondary priorities is moot in such a vehicle.

As I see it the potential mix then is of battle tank, support tank, and tank destroyer. Any optimization of mix can only be obtained after a thorough assessment of the geographical and topographical environment in which the armored force must operate. One of the considerations which lead to the continued production of the *Sherman* in the face of increasingly superior German battle tanks was that of the need to transport the tank several thousand miles, and, initially, to land large numbers on hostile beaches.

I think if any meaningful discussion is to come of Colonel Merglen's article that contributions should be addressed to the needs of particular regions or, in the case of the United States, areas of potential large scale employment of armored vehicles.

BENJAMIN ELLIOT KAPLAN
San Francisco, California

Dear Sir:

I feel sure that Colonel Merglen has misinterpreted the reasons for the large use of *Sturmgeschutz* type vehicles by the German Army in 1940-45, and has arrived at conclusions which are not in agreement with the facts.

In the German system of organization, tanks and all anti-tank weapons, with the exception of those operated by infantry regimental anti-tank companies, were part of the armor or *Panzer* branch. The concentration of tanks within armored divisions meant that the infantry divisions would have no armor support.

To overcome this deficiency, *Sturmgeschutz III* was manufactured. This was a turretless adaptation of the *PzKpfw III* medium tank mounting the same 7.5cm L/24 as carried on the original model of the *PzKpfw IV* heavy medium. *Stu G III* was considered to be an artillery weapon, and was manned by artillery personnel. It was usually found in brigades, actually 42 piece battalions. There were 11 such brigades, plus five independent batteries, in existence in June of 1941, and the total number may have risen to as high as 85 in 1944.

Without going into a lengthy history of German AFV development, the demand by all elements of the German Army for superior anti-tank performance by both tanks and assault guns resulted in the introduction of a 7.5cm L/48 (variously known as *PaK 39, KwK 40* and *StuK 40*) as the main weapon of both the *PzKpfw IV* and *StuG III*, the latter then being generally termed *StuG 40*.

The reason for the sudden great increase in the number of *StuG III* or *40* vehicles in 1940 was twofold. As one can see from Colonel Merglen's figures there was a very large increase in the production of all AFVs from 1942 to 1943. More particularly, the PzKpf III tank was taken out of production early in 1943. This resulted in the production facilities which had been available for the tank and assault gun both being devoted solely to assault gun production in 1943. Thus, in 1942, the total production of *Pzkpfw III* and *Stu G III* was roughly 2600 tanks and 800 assault guns. In 1943 it was 3245 assault guns and 200 tanks. This was a very modest increase in production compared to that of *PzKpfw IV*, which went from 1000 in 1942 to 3073 in 1943.

It is true that the losses of German tanks through the winter of 1942-43 had been so high that it was necessary to replace tanks with *StuG III/40* vehicles in many Panzer divisions. However, the increase in production from 1943 on was sufficient to rearm Panzer divisions with tanks. By early 1944 it is safe to assume that most *Panzer* divisions had eliminated the use of *StuG* types within the *Panzer* regiments. In a few cases, these vehicles may have been retained as a third battalion. Also, they were used as a substitute for the *Panzerjager IV* type vehicle within the anti-tank battalions of *Panzer* divisions. *Panzergrenadier* divisions, however, were almost universally organized with a *StuG* rather than a tank battalion.

The 1944 figures do indicate a trend which might bear out Colonel Merglen's contention that the Germans preferred assault artillery vehicles to tanks. However, careful analysis reveals some anomalies.

First, of the 5751 *StuG* vehicles produced on the *PzKpfw III* chassis in 1944, 900 were armed with a 10.5cm L 28 light field howitzer. (Actually, in 1943, 204 of these *StuH* 42 vehicles had been manufactured). Therefore, the Germans themselves did not seem to be too convinced of the great defensive value of *StuG* vehicles. Why else would they have produced large numbers of a vehicle armed with a main armament much better suited to infantry support in the offensive? Actually, the production of these howitzer armed vehicles seems to have been the result of the fact that artillery officers still operated the bulk of these weapons.

Secondly, it is true that the total number of *StuG 40-StuH 42* produced increased from 3245 in 1943 to 5751 in 1944. However, 1944 showed the greatest increase and total production of any year for the German armaments industry overall, including aircraft. Furthermore, the percentage increase in *Panther* tank production between 1943 and 1944 was even higher than the increase for the types of assault artillery mentioned above.

There were two other types of assault artillery-tank destroyers produced in large numbers in 1944. One of these was *Panzerjager 38*. This was a small vehicle mounting the standard 7.5cm L/48 assigned for service with anti-tank battalions of infantry divisions. 1577 of these were manufactured, and the reason for their manufacture was to utilize existing production facilities within Czechoslovakia.

The final type was the one most commonly known as *Jagdpanzer IV*. This was an improved version of *StuG* 40, mounting for the most part the 7.5cm L/48. 1746 of these were manufactured in 1944, with a much smaller number having been previously manufactured.

This is the one case where Colonel Merglen's theory seems to have been borne out, for this was a case where *PzKpfw IV* chassis were utilized in the turretless configuration, utilizing the same main gun as the tank, in preference to an equal number of tanks. However, it should be pointed out that, in 1942, when the *Panther* was first designed, it seemed reasonable to assume that the *PzKpfw IV* tank would become redundant. Therefore, plans were made for a number of vehicles utilizing existing *PzKpfw IV* facilities, just as had been done with *PzKpfw* III, presumably phas-

ing out the latter production lines entirely.

Jagdpanzer IV, also known in its various modifications as *StuG IV*, *Panzerjager IV* and *Panzer IV (lange)* was originally designed to carry the *Panther* gun as its main armament (7.5cm *KwK 42* L/70). The utilization of the *PzKpfw* IV Chassis offered the advantage of permitting a less cramped crew space with better ammunition capacity, plus a presumably less overloaded suspension. In any event, most of the vehicles constructed using this chassis were equipped with the L/48 gun, for it was discovered that the longer gun resulted in a nose heavy vehicle with excessive suspension wear.

Therefore, we have the anomalous situation of *PzKpfw IV* production continuing at the same time that a tank destroyer mounting the same gun on the same chassis was being produced, with, presumably, an attendant reduction in tank production. It should be kept in mind, however, that for the most part these two types of vehicles were produced in separate factories. Furthermore, the Germans would have been delighted to replace *PzKpfw IV* with a superior tank, the *Panther*, and turn all *PzKpfw IV* facilities over to the manufacturing of assault guns, tank destroyers, self-propelled artillery and any number of other auxiliary AFV types. Unfortunately for them, *Panther* production was never sufficient for them to take this step. But, if Colonel Merglen is correct in his interpretation of the German point of view concerning the relative combat importance to them of tanks and assault gun/tank destroyer types, why did the Germans not cancel production of the *PzKpw IV* in 1944 in favor of *Jagdpanzer IV?* Actually, roughly twice as many tanks were produced in that year as were tank destroyers on the same chassis.

Colonel Merglen quotes Colonel General Guderian as being in favor of the assault gun configuration. He may have superior source material, but in *Panzer Leader* when Guderian discusses his service as Inspector General of Armored Troops from February 1943 through July 1944, his main concern seems to have been in getting control of *StuG* vehicles away from the artillery and into the armor branch. (This interbranch warfare, incidentally, accounts for much of the confusing nomenclature applied to these weapons—if one built two identical units and called the first a *Sturmgeschutz* and the second a *Jagdpanzer*, the first would belong to the artillery and the second to armor). His overall reaction seems to me to have been one of regarding the assault gun types as useful to have as long as they did not interfere with tank production.

To sum up: My feeling is that the main reason for the extensive manufacture and use of assault gun/tank destroyer types by the Germans was to utilize existing production facilities which had been used for the manufacture of tanks which were no longer combat worthy. The particular configuration adopted was chosen because originally these weapons were designed to work with infantry units, who would provide close-in protection.

These are the facts, and I personally find it very difficult to see where they demonstrate any advantage for the turretless vehicle over the conventional tank in armor units.

EDWARD C. WEINSTEIN
Scarsdale, New York

FINE SUPPORT FOR ARMOR

Dear Sir:

I have received your letter concerning memberships and subscriptions to *ARMOR*. I agree with everything you say and I promise you full support in the near future.

We have just finished [several membership and other campaigns]. At this time a drive on *ARMOR* would be unwise as you mentioned in your letter concerning long-range ill will and command pressure.

I have made sure that all of my units subscribe to *ARMOR* for the dayrooms. I assure you that at an early officer's call I will discuss the Armor Association, the *whys* of belonging to and supporting the association, and the role of *ARMOR* Magazine. I hope that by early fall this will be a 100 percent unit. Just to insure that we make a start inclosed is a check for my dues.

LTC, Armor
Commanding

APO New York

In a recent letter we focused the attention of all active Army Armor battalion and squadron commanders on the objectives of The United States Armor Association. We outlined what we believed to be necessary in the form of increased memberships and subscriptions to achieve these objectives. The hard economic facts were illustrated. We urged that they sell *their people on supporting their association through membership and contributing to their professional journal ARMOR. We made it plain that heavy-handed pressure campaigns would probably produce spectacular immediate gains but would doubtless engender long-range ill will toward the association and should therefore be avoided. The response was gratifying. The foregoing letter is typical. With just this kind of support our association and its journal will grow and become even more effective.* EDITOR.

A COMMENT ON EDITORIAL POLICY

Dear Sir:

Your publishing of young officers' articles is excellent policy. It affords them a chance to be recognized, "sound off" and present fresh views on new or old subjects. This, along with older heads' experience and views, is a desirable balance. Continue to publish articles from other arms and services and even from non-service sources. Let there be pros and cons from all sources.

Best wishes for continued success of, and improvement in, *ARMOR* Magazine. Only total support in the form of memberships of all active duty Armor personnel can insure its survival. Long live the spirit of Cavalry!

F. DAUGHERTY
Colonel, USA-Retired (Armor)

While we recognize that not every young author is a future American Captain B. H. Liddell Hart, the chance exists that one of them might be. The past record of ARMOR and its predecessors indicates that many of these authors will contribute much to future thought and action in the field of mobile warfare. We intend that their views continue to be presented along with those of other authors whose reputations have been established. EDITOR

WORLD WAR II JAPANESE ARMOR

Dear Sir:

I am collecting information on the armored vehicles of the Japanese army. I am specifically interested in those tanks and armored vehicles used during World War II.

Technical information, which I wish to discuss, is almost non-existent. The type information I will need includes nomenclature, physical dimensions, weights, armor thickness and qualities, armament, ammunition, manufacturers' names, addresses and code symbols, unit symbols and designations and communications. Photographs of the vehicles in production, training and combat will be most helpful.

IVAN TRIFON
P. O. Box 10206
Houston, Texas 77018

BACK ISSUES AVAILABLE

Dear Sir:

I have a complete set of the *Cavalry Journal, Armored Cavalry Journal* and *ARMOR* dating from July 1940. I would be willing to donate this, freight collect, to a worthy recipient indorsed by your office.

JOHN R. LANE
LTC, USA-Retired (Armor)

We shall be happy to forward requests for this collection to Colonel Lane for his final decision. EDITOR.

A TRUST
AND
A CHALLENGE

By

GENERAL JOHN K. WATERS, UNITED STATES ARMY – RETIRED

22d President of the United States Armor Association

In May the 78th Annual Meeting of the United States Armor Association was held at Fort Myer. From that meeting came a new group of officers and a new Executive Council.

You have elected me to be President of the Association. For this honor I am most grateful. I trust that we, the governing body of your professional association, will carry forward your wishes and the fine efforts of our predecessors.

As armor plays its ever-increasing role in combat today – as part of the combined arms team – in Vietnam – in the Middle East – and as it stands ready elsewhere around the world, in Free World, bloc and non-aligned armies, one cannot fail to see how armor will influence sharply the history of the present and future generations.

Our part, as members of The United States Armor Association, is to lead the way in pointing out to the members of our ground forces, and in particular to those of the Armor branch, the professional and military advantages that can and do benefit each individual through membership in the Armor Association and active participation in its affairs to include contributing to its journal, *ARMOR*.

Our Secretary-Treasurer-Editor has taken commendable action to bring to the attention of many the various fields of endeavor wherein each of us can work toward an increasingly more dynamic association which will present mobile warfare – its challenge – its flexibility – its esprit – its decisiveness – its accomplishments – to a wider audience.

I ask that each of you help strengthen your Armor Association. In so doing you will assist our ground forces to be prepared for "Anything – Anytime – Anywhere – Bar Nothing – AAA – O," in the immortal words of the gallant Paddy Flint, a former member of the 2d Armored Division, who was killed in battle leading an infantry regiment in Normandy.

The heritage of the past as it contributes to professional preparation for the future is vitally important to the security of the Nation. On that basis alone the strengthening of our Armor Association merits our continued support.

NEW APPROACHES FOR AN OLD ASSOCIATION

The 78th annual meeting of the United States Armor Association was characterized by a modest but representative attendance, a fine showing of Armor spirit and some very real accomplishments.

The meeting, held at Patton Hall, Fort Myer, Virginia, on 25 May 1967, opened with a stand-up buffet which gave those present an opportunity to exchange greetings and views with the guests and the members present. Those attending also had a chance to share their ideas with the Officers of the Association and the members of the old and new Executive Councils.

In addition to Mr. Richard M. Ogorkiewicz, distinguished British engineer and author, guests of the Association included Brigadier Sir Frederick G. C. Coates, Royal Tank Regiment, the Assistant British Military Attache in Washington, and the cavalry and tank members of his staff.

General Ralph E. Haines, Jr., Vice Chief of Staff of the Army and a Vice President of the Association, headed the list of active duty members in attendance. Lieutenant General Willis D. Crittenberger, USA-Retired, represented the former presidents of the Armor Association.

The nearly 100 members gathered included several Marines and a handful of ROTC cadet members.

Following the buffet, Lieutenant General Frederick J. Brown, 21st President, called the business meeting to order.

After the usual opening formalities, Brigadier General Albin F. Irzyk, Assistant Commandant of The Armor School, presented the First Oak Leaf Cluster for the Army Commendation Medal to Lieutenant Colonel Eugene M. Dutchak in recognition of his outstanding service as Editor of ARMOR from October 1963 until his retirement in March 1967

Brigadier General Henry C. Newton, USA-Retired, Honorary Vice President and member of the Investment Committee established in December 1966, presented a report on the Association's investments. General Newton pointed out that reserve funds were withdrawn from low-yield government bonds and savings accounts and invested in high-grade, legal for trusts common stocks during the first calendar quarter of 1967. In just a few months these had appreciated considerably. He mentioned that had such an investment program been undertaken years ago the Association would now be in the sort of strong financial position which we can anticipate for the future with continued sound investments.

The Secretary-Treasurer then reported that in 1966, through good management, his predecessor had increased the net worth by some $2400 despite rising costs, the necessity to move to more expensive quarters and the fact that dues have not been raised since 1 June 1950 nor subscriptions since 1 January 1964.

On 16 January 1967, the Auditing Committee found the Association's financial records to be true and correct.

The Secretary-Treasurer then stated that there were, as of 15 May 1967, 3885 active and associate members which represented a loss of 68 since last year at the same time. Only about one-third of the Armor officers on active duty are members. About 1000 Army National Guard officers are members. Less than 50 senior NCOs in grades E8 and E9 are members. The Association lost money on members and more are needed to spread the fixed costs. The Association is operating in the black because of subscribers to its journal ARMOR and book department sales. There was an increase of 975 subscribers, mostly British Commonwealth and U. S. Marine Corps units.

The President announced that the consensus of the Fall 1966 survey of members and ARMOR readers was that the name of the Association should remain the same but that its scope of interest should be widened to include all fields of Army mounted combat and that this was now being done.

Lieutenant General W. H. S. Wright, USA-Retired, Chairman of the Nominating Committee then presented a report on the committee's assignment to study the structure of the Executive Council "to determine the possibility of change in its composition and a policy to ensure the inclusion of young officers on a continuing basis." The committee found that the Executive Council was too large and too widely spread geographically to meet frequently enough to conduct business, that it was not properly representative of the Association's membership of junior field officers, company officers and senior non-commissioned officers, and that some focal points of mobile warfare doctrine, to include Army Aviation activities, were not represented. The committee also found that too much of the work properly pertaining to the Council had devolved on the Secretary-Treasurer and Editor. The Committee concluded that it was not necessary to have the senior Armor commanders as working members of the Council but that it is important that their advice be available to the Executive Council.

The Committee recommended that the necessary changes to the Constitution and By-Laws be undertaken to reduce the Executive Council members (excluding the Association Officers) from 24 to 14 and that an Advisory Council of active duty senior Armor commanders be provided for. It was suggested that the Advisory Council include corps commanders whose commands were preponderantly Armor, mechanized or airmobile, the Active Army and National Guard armored division commanders, the 1st Cavalry Division commander, the armored cavalry regiment commanders and others to be determined.

General Wright stated that, while the Constitution and By-Laws should not include grades and assignments of Council members, all grades of the membership should be represented on the Council as should all components of the Army and each of the key focal points of mobile warfare doctrine. These include the Armor Center, the Aviation Center, Armor Branch OPO, and any conveniently available Armor units such as the 6th Cavalry at Fort Meade. He noted that a governing factor for Council membership is accessibility to Council meeting sites which would usually be in Washington or at Fort Knox.

The Chair was then turned over to General Wright who presented nominations for the new governing body of the Association. Senator J. Caleb Boggs and Lieutenant General W. H. H. Morris were nominated to be honorary vice presidents from the floor. Thereafter, nominations were closed and the amended slate was unanimously voted into office. The new officers and Executive Council of the Association are shown on the inside front cover of this issue. It is significant to note that the new Council includes all grades from master sergeant to general except for lieutenant general, and all components of the Army.

General John K. Waters, USA-Retired, then accepted the office of 22d President of the United States Armor Association.

A motion of appreciation to General Brown for his outstanding leadership of the Association was adopted by unanimous acclamation.

General Waters then introduced Mr. Ogorkiewicz who delivered the annual address which is published in this issue of ARMOR. Upon completion of the address, General Waters thanked Mr. Ogorkiewicz for his many fine contributions to the Association and its journal and presented to him a framed, inscribed print of "Old Bill."

Following the Annual Meeting, the new Executive Council met.

The Council approved in principle the recommendations of General Wright's committee. Major General Edwin H. Burba was appointed to head a committee to evaluate the recommendations and prepare appropriate changes to the Constitution for approval by the membership and changes to the By-Laws for approval by the Executive Council.

It was decided to continue further the Welcome to Armor program through which each newly-commissioned Armor lieutenant is offered a one-year gift membership in the Association. It is hoped that more will take advantage of this opportunity for professional improvement and that many will remain lifelong members of the Association.

The Council authorized a number of management improvements which should lead to increased effectiveness of Association operations.

The 78th Annual Meeting certainly was not one of the biggest the Association has had but, just as certainly, it was one which should be remembered for the many progressive ideas it saw put forth. Given the enthusiastic support of the membership, these ideas should result in great gains for The United States Armor Association as it moves toward its second century.

DEVELOPMENTS IN ARMORED EQUIPMENT

An address before The United States Armor Association

By Richard M. Ogorkiewicz

General Waters, Gentlemen:

It is a privilege and a pleasure to be able to join you at your annual meeting and to have this opportunity of speaking on a subject in which we share a close interest.

The subject is that of armored equipment. This makes armor very largely what it is. Therefore, thoughts inevitably turn to it on occasions such as this. Moreover, it is particularly appropriate to consider armored equipment at the present time because of the progress made in this field during the past few months.

MR. RICHARD M. OGORKIEWICZ was born in Poland in 1926. He received his early education in Warsaw, Paris, and Edinburgh.

From 1943 to 1947 he studied mechanical engineering at London University where he received bachelor's and master's degrees. He then served his *alma mater* in research and teaching positions until 1952. From 1952-1955 Mr. Ogorkiewicz was an engineer with the Ford Motor Co. of England. Then from 1955 to 1957 he was a development engineer with the Rootes Group, Coventry, now a subsidiary of the Chrysler Corporation. Since 1957, he has been a lecturer in mechanical engineering at the Imperial College of Science and Technology in London and a consulting engineer.

Concurrently with his professional career as an engineer, Mr. Ogorkiewicz has established a world-wide reputation as a leading authority on the means of military mobility with emphasis on fighting vehicles. He is the author of the authoritative work *Armour,* published in Great Britain and the United States in 1960 and in Italy in 1964. He is the editor and translator of the definitive *The World's Armoured Fighting Vehicles* and has recently authored a new book entitled *Design and Development of Fighting Vehicles* which is to be published later this year. He has written over 150 articles for professional journals throughout the free world including 41 articles for *ARMOR*.

Mr. Ogorkiewicz has lectured extensively on armor in Great Britain, Sweden, Israel and the United States. He extended his 1967 tour of American engineering research facilities in order to deliver the keynote address to the 78th Annual meeting of The United States Armor Association.

. . . there can be no slackening of the development effort if the relative effectiveness of our armored equipment is to be maintained.

The progress made in the field of armored equipment is particularly evident in the case of battle tanks. Thus, as we look around, we see army after army providing its armored units with new and much improved models of this basic armored vehicle. Of the NATO armies, the British has started reequipping its armored units with the new, 120mm gun *Chieftain* battle tank; the German *Bundeswehr* has already reequipped two of its divisions with the *Leopard* battle tank. Outside NATO, the Swiss Army has completed the procurement of the *Pz 61*, the first tank to be manufactured in Switzerland. In France, the *Arme Blindee* has began to receive the *AMX30* battle tank. In Sweden, the Bofors Company has commenced delivering the turretless *S-Tank* to the Swedish Army.

Farther afield, in India, production of the *Vickers* 37-ton battle tank started last year. This is the first tank ever to be produced on the Indian subcontinent. In Japan, production of the *Type 61* is being completed. This is the first tank to be manufactured in that country since the end of World War II. And I need hardly remind you of the new version of the US *M60* main battle tank, the *M60A1* with its powerful 152mm gun/missile launcher.

The new generation of battle tanks is manifestly superior to its predecessors in many important respects. In particular, the armament has greater effective range and offers a greater chance of defeating hostile tanks. The new generation tanks also have a greater operating range, and in several cases, other characteristics which result in increased mobility. In consequence, the entry into service of this new generation of battle tanks represents another step forward in the development of armor and a significant increase in the defensive strength of the Free World. On several counts, therefore, there are reasons for considerable satisfaction. But, for all this, there is room, and indeed a need, for much further development.

The need for further development is shown by the concurrent progress made on what our great apostle of armored warfare, Liddell Hart, has called "the other side of the hill." What we find there is the *T62*, a much improved battle tank with a 115mm gun with which the Soviet Army has been reequipping its armored formations. We also find that Communist China proved capable last year of delivering *T54* type tanks to Pakistan. In the light of this, there can be no slackening of the development effort if the relative effectiveness of our armored equipment is to be maintained.

Good reasons for further development are also provided by friendly tanks. I am very conscious of this having had the good fortune of seeing for myself the different battle tanks produced in Western Europe. Each of them possesses one or two outstanding features and to the extent that these features are not found in the other tanks they show how much more room there is for further development. These features include the highly effective APDS ammunition of the British *Chieftain*, the compact design and mobility of the French *AMX 30*, and the steering and integrated controls of the Swedish *S-Tank*. They also include the space-saving suspension of the Swiss *Pz 61* and the flotation equipment of the *Vickers* tank.

. . . to avoid being reduced to a limited role, armor clearly needs versatile equipment.

Further development should obviously aim at incorporating these and other similarly desirable features in any future tank. But however hard we might try, we shall never be able to have all the features we desire because many of them are opposed to each other. Therefore, some degree of selection will have to be exercised and I would suggest that whenever a choice has to be made it should aim at making tanks effective over the widest range of conditions instead of meeting occasional extreme requirements.

The ability of tanks to operate effectively over the widest range of conditions is essential to the continued success of armor which has always been closely related to its versatility. That this is so we need only remind ourselves of the superiority at the beginning of World War II of the German armored forces over their less versatile opponents. Or we can remind ourselves of the American cavalry of a hundred years ago which was more effective than its European counterparts because it was more versatile.

To retain its versatility, and to avoid being reduced to a limited role, armor clearly needs versatile equipment. This means tanks which can effectively engage a wide variety of battlefield targets and whose overall mobility is high. In principle there is no reason why such tanks should not be

developed. But they will not be developed if more attention is not given to the problem.

The risk of not getting this type of versatile armored equipment grows particularly acute as we develop progressively more sophisticated armored equipment to meet particular battlefield requirements. An example of what might happen, if one is not careful, is a tank with a highly sophisticated missile system which is very effective against a particular type of target at long ranges but which is less effective than other weapon systems against other targets at more commonly encountered ranges and under less favorable conditions. A tank with a weapon system of the first kind would decrease the overall effectiveness of armor. What should be aimed at, instead, is a balance between achieving a high level of performance in certain specific fields and maintaining a high average level of performance. Only this will give the versatility which armor needs to uphold.

. . . whenever a choice has to be made it should aim at making tanks effective over the widest range of conditions . . .

Another risk attendant on the development of more sophisticated equipment is that of decreased reliability. It is not all that long since the Comptroller General of the United States reported that one particular type of American tank experienced a failure of some kind in every 36 miles of operation. As armored equipment grows progressively more complex the chances of it being usable at any given time will decrease unless something is done about it.

One course which is open is to insist that armored equipment be made as simple and robust as possible. But if we are to take advantage of technological advances we will have to accept complex equipment. This need not, however, mean resigning ourselves to unreliable equipment. We can insist not only on a high degree of reliability for tank components but also on having essential systems or subsystems designed so that a failure of one part of them will not bring about a breakdown of the whole tank. An example of what can be done in this direction is provided by the Swedish *S-Tank* which has fully duplicated driving and gunnery controls and whose twin engine installation is so designed that the failure of one engine will not immobilize the tank.

As armored equipment grows progressively more complex the chances of it being usable . . . will decrease unless something is done about it.

Another field where further development is needed is that of armored personnel carriers. This is not to say that considerable progress has not already been made in this field. Very considerable progress has, in fact, been made. It is all the more remarkable when we bear in mind that the development of full-tracked armored personnel carriers only started toward the end of World War II, when tanks were already 30 years old.

Much of the world-wide progress in the field of armored personnel carriers is due to the pioneering efforts of the United States Army and the skill of American industry, exemplified in this case by the Ordnance Division of the FMC Corporation, which I had the pleasure of visiting last week. In consequence, the *M113* armored personnel carrier is now used throughout the world. It is, in fact, the most widely used armored vehicle outside the Communist bloc. Moreover, as we all know, the *M113* carrier has seen large-scale and successful employment in Vietnam, becoming the first full-tracked armored personnel carrier ever to be used on any scale in warfare.

But, as good as they are, the *M113* and other carriers of this type fall short of the potentialities of armored carriers. They do this because they were designed according to a doctrine that infantry must dismount to close with the enemy and that the infantry should not fight from carriers. In consequence the *M113* and similar carriers have been designed as transport rather than fighting vehicles or, in other words, as mere *battle taxis*.

To be fair, the battle taxi concept facilitated the early development of armored carriers because it involved less exacting requirements. However, it failed to recognize the potentialities of this type of vehicle for fighting on the move, as well as for transporting infantrymen to dismounted action. Any doubts which might have existed about the employment of carriers as fighting vehicles have been dispelled by the experience in Vietnam. But, the employment of the *M113* in Vietnam has also brought out the need for improvements to its design if it is to be used for fighting as well as transport purposes. A good deal has already been done to improve the *M113* by fitting it with shields for

the machine gunners and by modifying it into the *XM734* with firing ports in its sides. Nevertheless, there is no doubt that still better results could be achieved with an armored personnel carrier designed from the start as a fighting vehicle and it is high time that such a vehicle be produced.

Some progress in this direction has already been made, of course, with the *XM701 Mechanized Infantry Combat Vehicle*. Further progress has also been made in the development of armored carriers as fighting vehicles in Germany and Switzerland: The German vehicle is the *Spz (Neu)* and the Swiss is the *Mowag Pirate*. Both of them represent a significant advance on the earlier types of carriers and point clearly to a new generation of armored carriers which would break, once and for all, with the past battle taxi concept.

Further development of armored personnel carriers as fighting vehicles is closely related to that of vehicular light weapon systems which they need to fight other light armored vehicles and to engage other targets. Moves in the direction of such a light weapon system are indicated by the replacement of the 50 caliber machine gun on the *M114* by the 20mm *Hispano Suiza* cannon and the adoption of the same weapon on a number of foreign vehicles. But this is only the beginning of what must be a large scale advance beyond the 50 caliber machine gun—a move which is long overdue.

. . . the M113 and similar carriers have been designed . . . as mere battle taxis.

The need for a light vehicular weapon system is shared by armored personnel carriers with light armored reconnaissance vehicles, which are most urgently in need of further development. Admittedly, some of the traditional roles of light armored vehicles have been taken over by helicopters and other equipment, but there is, nevertheless, a continued need for a modern ground equivalent of the light cavalry of the past.

In trying to meet this requirement it would be very profitable to take another hard look at wheeled armored vehicles. In suggesting this I am well aware of the fact that wheeled armored vehicles are inferior to tracked vehicles in some types of terrain. But I would also like to point out that there are many situations where light wheeled armored vehicles are as good as, or better than, equivalent tracked vehicles. Moreover, these situations are more frequent than the others and I am convinced that wheeled armored vehicles would be a very valuable addition to armor's range of equipment.

. . . there are many situations where light wheeled vehicles are as good as, or better than, equivalent tracked vehicles.

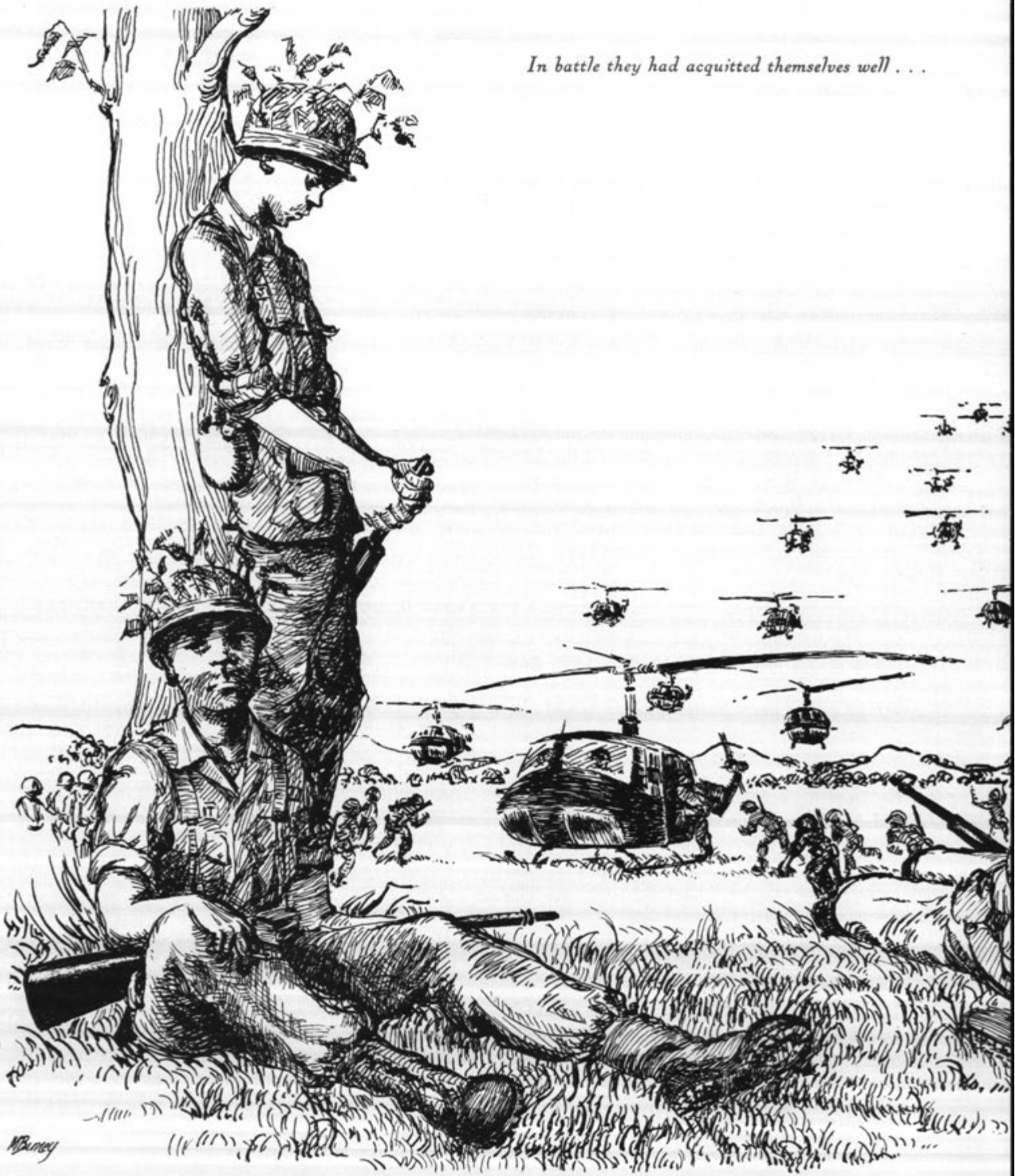
In consequence, I have repeatedly argued the case for wheeled armored vehicles on the pages of *ARMOR* Magazine and I make no apology for bringing the subject up again.

Those who continue to doubt the usefulness of wheeled armored vehicles would be well advised to consider their successful employment by the British and French Armies. Or, if they are still unconvinced, to look at their large-scale development by the Soviet Army.

If we agree that we need wheeled armored vehicles we must take care, however, that they are developed properly. In other words, we must not expect to get them without much effort, on the cheap, by improvising them from existing commercial components. I emphasize this because vehicles of the improvised variety are built from time to time by industrial organizations and are offered for use by the Army. These deserve to be praised as examples of private enterprise but they fall far short of the full capabilities of wheeled armored vehicles. Experience with them can be very misleading and they can not compare with properly developed vehicles, such as the British *Alvis,* French *Panhard* or Soviet *BTR 60* armored cars.

Given properly developed wheeled armored vehicles, armor could play a more effective role in a wide variety of reconnaissance and security operations and it could participate more effectively in small-scale, as well as large-scale, military actions. Wheeled armored vehicles would help armor to be more flexible and versatile. This must continue to be one of the its principal objectives.

To conclude, much has been achieved lately. But, as I have tried to point out, much more remains to be done. You gentlemen have a major role to play in this.



In battle they had acquitted themselves well . . .

2d Place

COMPANY B

By

MAJOR WALTER B. TULLY, JR.

Much has been written about units undergoing their first hours of combat; however, each war has been characterized by a different generation and new innovations in tactics, weapons, and techniques. The war in Vietnam has been no different. The purpose of this article is to tell the story of one company of American infantrymen and the lessons they learned while undergoing the agony and horror of their first forty-eight hours of heavy combat against North Vietnamese regular units.

Company B, 1st Battalion, 5th Cavalry received the bulk of its rifle strength at Fort Benning, Georgia during the months of March and April 1964 when a full complement of basic trainees arrived for advanced individual training. These new soldiers were retained by the company to bring it up to assigned strength prior to its joining the newly activated 11th Air Assault Division (Test). Thus, by the time they landed in Vietnam in September 1965, these men were *short-timers* by any standards.

The noncommissioned officers who trained and deployed with the company were excellent and experienced soldiers. The first sergeant, all platoon sergeants, and a good portion of the squad leaders were Korean War veterans.

The platoon officers were all new, having joined the battalion only one month prior to deployment. Two of the platoon leaders were recent OCS graduates and the other two were ROTC graduates just out of the basic course. On 1 November 1965, I replaced the company commander who had taken the unit overseas. However, the company was no stranger since I had been in the same battalion since its activation and had commanded a sister company for more than a year in the United States.

The company had undergone the normal peacetime training cycle, to include a three-month air-mobility test, *Air Assault II,* conducted in late 1964. Now, we were going to war.

Company B debarked at Qui Nhon on 19 September 1965 and then moved to the An Khe base area where it stayed until 14 November 1965. During this time the company was getting its feet on the ground and acclimating to its new environment. Carving a home out of the jungle, routine patrolling, local search and clear operations, defense of the base area, and pacification projects were the order of the day. Except for an occasional probe along the An Khe base camp perimeter, there were only two other small actions against the Viet Cong. In these the enemy withdrew as soon as they were fired upon.

Representative of the comments of the troops as they sweated and hacked away at the jungle to build the An Khe base camp and its defensive positions was: "I came here to fight, not to be a laborer", "Let us at 'em and the war will be over in no time", and, "I'll kill a hundred myself." They had not been blooded yet.

Now, to set the stage tactically. Following a North Vietnamese strike at the American Special Forces camp at Plei Me, some 40 kilometers southwest of the key central highlands city of Pleiku, the 1st Air Cavalry Division was committed in a major offensive role on 19 October 1965. A month-long series of airmobile moves was culminated, on 14 November 1965, at Landing Zone (LZ) *X-Ray* located at the foot of the Chu-Phong Mountain near the Cambodian border. Two North Vietnamese regiments had been cornered and trapped.

Part of the build-up of combat power was the opening of an artillery base at LZ *Columbus* to support the committed units at *X-Ray*. This is where our story really begins.

Moved from An Khe on 15 November to reinforce the units in the battle area, the 1st Battalion, 5th Cavalry (minus Company A, which had been attached to the 2d Battalion, 7th Cavalry at *X-Ray*) landed in the early morning of 16 November at LZ *Columbus*. Its mission, and that of Company B, was to secure the two artillery batteries.

No contact was made on the 16th and except for the noise of the artillery firing in support of the units at *X-Ray*, the night was quiet.

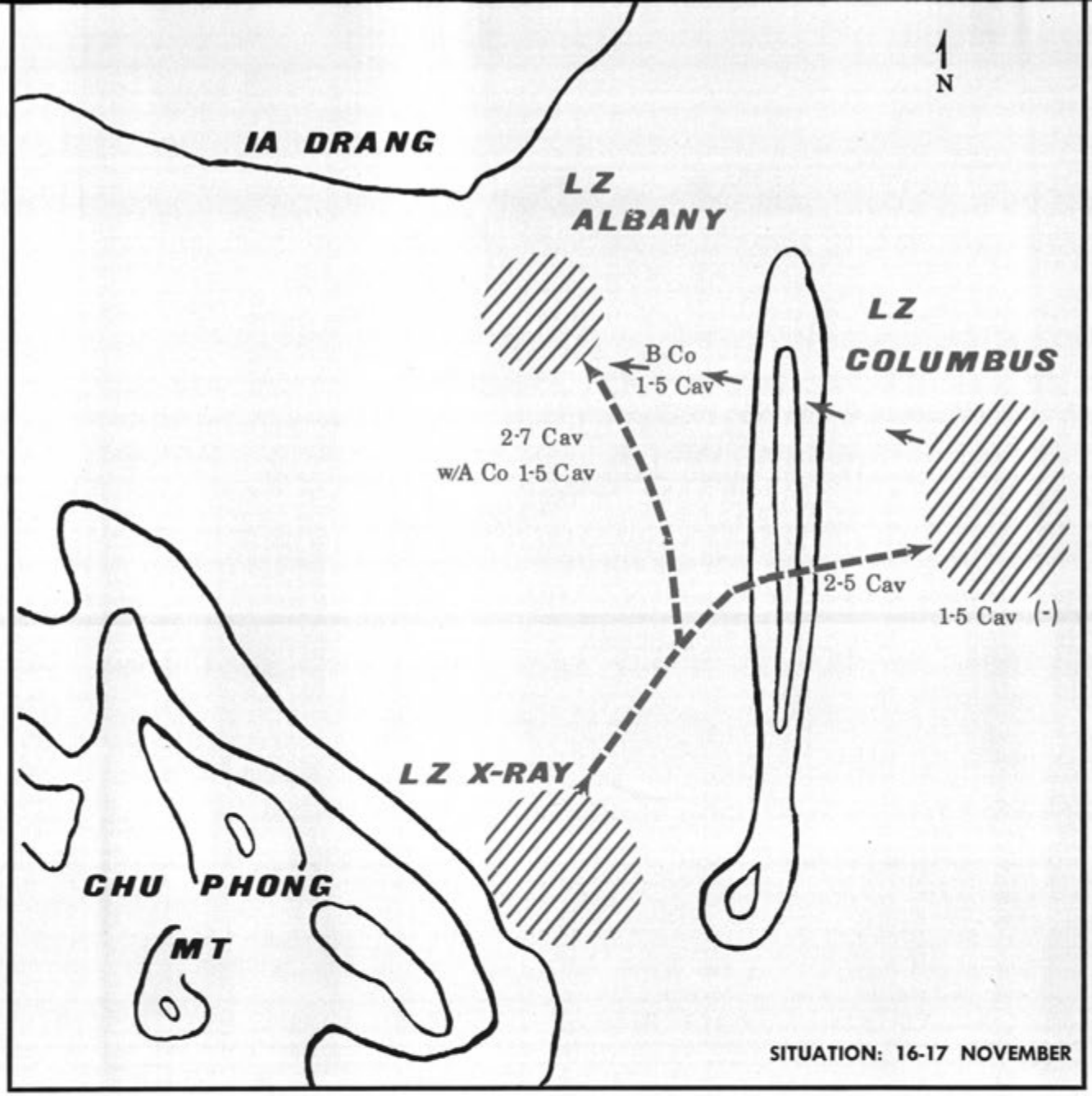
Early on the morning of the 17th a squad-size patrol, led by SSG Isidoro Leon, a veteran of both World War II and Korea, made contact with five North Vietnamese due east of LZ *Columbus*. One North Vietnamese was killed. The others disappeared into the jungle. The khaki uniform and good equipment of the dead soldier created quite a stir among the Americans. This was not the black pajama type enemy we were used to seeing.

At about the same time, the 2d Battalion, 5th Cavalry and the 2d Battalion, 7th Cavalry were beginning to pull out of LZ *X-Ray*. The former was to march overland to LZ *Columbus* and the latter was to sweep north to a map location named *Albany*, which appeared as though it would make a good landing zone. The 2d Battalion, 5th Cavalry closed at LZ *Columbus* at 1140, just as the 2d Battalion, 7th Cavalry was about to undergo its ordeal by fire.[1]

Shortly after noon, as they were entering the clearing at *Albany*, the lead elements of the 2d of the 7th came under fire from their left and right front and from the right flank. Initial surprise had gone to the enemy, the North Vietnamese 8th Battalion, 66th Regiment. The enemy was attempting to fix the cavalry and cut the column in the center.[2]

MAJOR WALTER B. TULLY, JR. *was commissioned in 1959 from the United States Military Academy. He graduated from the Infantry Officers Basic, Ranger, and Airborne courses in the latter part of 1959. His first assignment with with the 1st Battle Group, 18th Infantry in Germany where he led both a rifle and a mortar platoon. Following assignment as the aide-de-camp to the Assistant Division Commander of the 8th Infantry Division, he served with the 1st Airborne Battle Group, 505th Infantry as a platoon leader and company executive officer. In January 1963, he returned to the United States for a 17 month assignment as an instructor in company tactics at the Infantry School. On 1 July 1964, he joined the 1st Battalion, 38th Infantry, then part of the 11th Air Assault Division (Test), and commanded a combat support company for the next year. The 11th Air Assault Division (Test) was redesignated the 1st Air Cavalry Division and sent to Vietnam in August 1965. Major Tully went overseas with the division and served as a battalion S-3 Air, a rifle company commander, and a battalion S-4. Major Tully was graduated from the Armor Officers Advanced Course in June. He is now on duty as an Assistant Professor of Military Science at Ohio State University.*

The illustrations for "Company B" are by **Mary Burney,** *wife of LTC John C. Burney, Jr., a frequent contributor to ARMOR. Following her training at Pratt Institute, Mrs. Burney was a professional artist in the advertising field. She is now very active in the Washington area Army Community Services program. This, her first contribution to ARMOR, is further evidence of her generosity and dedication.*



Specialist Four Jack P. Smith, a supply clerk with Company C, described the battle this way:

> There were over 100 North Vietnamese snipers tied in the trees above us—so we learned later—way above us in the top branches. . . . The firing kept increasing. . . . We crouched and ran to the right toward what we thought was the landing zone. . . . All of a sudden, all the snipers opened up with automatic weapons. There were PAVN[3] with machineguns hidden behind every anthill. The noise was deafening. Then the men started dropping. It was unbelievable. I knelt there staring as at least 20 men dropped within a few seconds.[4]

At about 1400, word was received that the 2d Battalion, 7th Cavalry was sustaining heavy casualties. Thereupon, the 1st Battalion, 5th Cavalry was ordered to send one company to attack to relieve the pressure and to attempt to link up with the beleagured battalion. Company B, my company, was assigned that mission.

I remember the moment well. I was with Lieutenant Colonel Frederick Ackerson, the Battalion Commander, and Major Willys E. Davis, the S-3, making an aerial reconnaissance of possible landing zones for an assault landing scheduled for the next day. Immediately, we flew to the scene of the action. Below, we could see puffs of exploding shells. One of many tactical air strikes was just beginning to come in. It was apparent that the 2d Battalion, 7th Cavalry was fighting for its life.

After landing, I assembled Company B and issued a quick frag order. At 1442 we began moving overland toward the site of contact.[5] As we advanced, we received only scattered sniper fire. When we were about 4000 meters from LZ *Columbus,* we spotted troops moving perpendicularly to our axis of advance. These turned out to be remnants of our Company A who had broken out of the death trap.

Along with them were elements of Headquarters and Headquarters Company and Company C, 2d Battalion, 7th Cavalry.

Company A had taken many casualties and was missing one whole platoon. You cannot imagine how happy Captain George Forrest, commanding Company A, was to see friendly faces. I got a great big bear hug from him.

The wounded had to be evacuated. Therefore, Company B deployed to secure the one-ship landing zone while med-evac ships were called in. The time was about 1700.

When the majority of the wounded had been evacuated, I gave the order to move out toward where I thought the remainder of the 2d Battalion, 7th Cavalry was located. Our Company A was to follow in column as soon as the remaining wounded were evacuated. We had not moved 400 meters when the very earth seemed to erupt with mortar and small arms fire.

The company was deployed in a company wedge and had just passed over a small ridge line. To our front was a densely thicketed woodline. All three platoons came under fire simultaneously. The PAVN were in the woodline. We could not see them at first because they were very well hidden in the trees and along the woodline. Two men were killed and three were wounded in the initial volley. One of the wounded was my 3d Platoon Leader, Lt. Emil Satkowsky, who caught a mortar fragment in his jaw. Another was PFC Martin, who had only 14 days left in the Army and who the night before had burned his hands so badly on a trip flare that he had been medically evacuated. Before leaving though, he swore to his buddies he would be back the next day. Sure enough, on the first supply ship into LZ *Columbus* on the 17th, there he was. He had talked the doctor into just bandaging his hands and letting him come back to his unit where he was needed. He was the point man in the first platoon when we got hit and had his hip torn open.

At this point, there was no alternative except to press the attack and hope that by taking the woodline the fire could be stopped. By now, our people were beginning to spot the enemy soldiers. The M79 grenade launchers proved extremely effective for blowing a man out of a tree. By the time we reached the woodline, we had killed enough enemy and driven the remainder far enough into the jungle that the firing subsided to an occasional sniper round.

At about the same time, Captain Forrest radioed that more wounded had come into the clearing from the west and requested that I hold up so he could med-evac them. This process repeated itself as stragglers continued to filter in. Battalion headquarters had been advised of our situation and at 1825, orders were received to wrap up in a two-company perimeter and prepare to sweep north to link up with the 2d Battalion, 7th Cavalry at daybreak.[6] At nightfall, we still had 22 wounded, who required evacuating, in our perimeter. They were made as comfortable as possible for the long wait until morning. Holes were dug and artillery registered to within 100 meters of our positions. The night passed with the sounds of occasional small arms fire and artillery barrages landing in the surrounding woods.

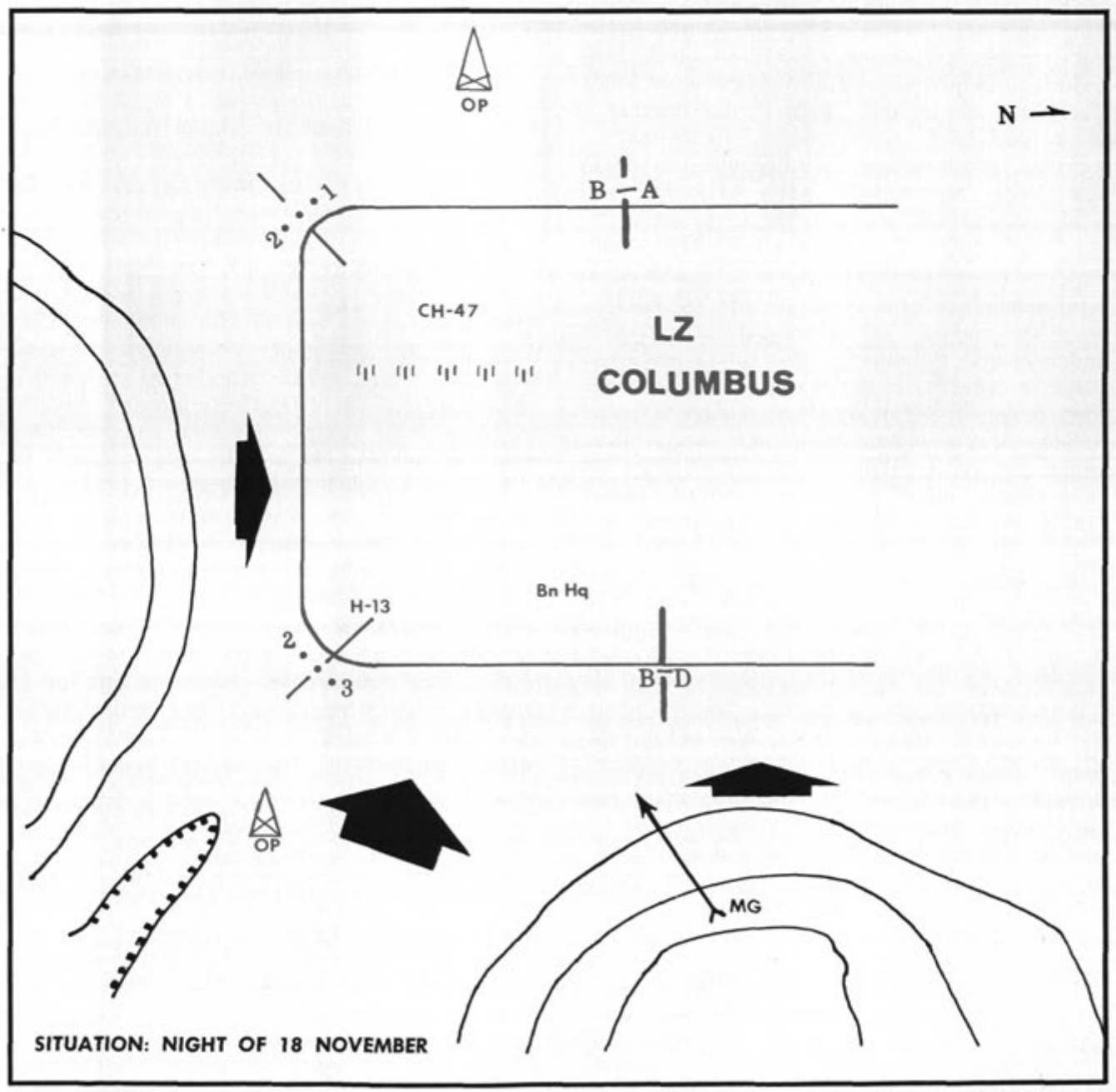
It was sometime after midnight when an unidentified station, *Ghost 46,* came on the battalion net requesting aid. The voice sounded as though its owner was going into shock. He stated that he, along with 15 others who were wounded, was cut off from his unit. Captain Forrest tried to calm him and determine his position. Shortly thereafter it

was decided to send a patrol. Since they were already familiar with the terrain, Platoon Sergeant Fred S. Kluge of Company A volunteered to lead his platoon back into the ambush site. At 0310 the artillery fire was stopped and the platoon departed. Contact with *Ghost 46* again was made at 0350 hours. The platoon patrol was directed in by having *Ghost 46* fire his pistol as a directional aid on request. Sergeant Kluge and his men found close to 30 wounded huddled together. Taking all they could of the wounded, the patrol left promising the others they would return at daybreak.

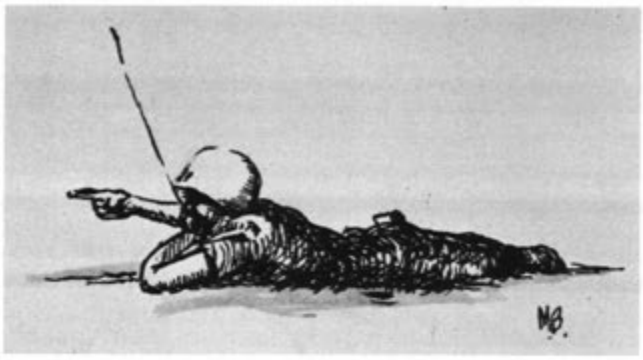
Specialist Five Daniel Torres, the senior aidman of Company A, was with the patrol and volunteered to stay. It was not long after he had started caring for his charges that he heard North Vietnamese shooting American wounded nearby. Grabbing an M60 machinegun, he sought them out, killed three and drove the rest from the area. For his gallantry, Specialist Torres was awarded the Silver Star.[7]

With daylight, resupply and med-evac ships arrived and we moved out toward the 2d Battalion, 7th Cavalry position. When we arrived, the battle area was a scene of carnage. Everywhere were dead and wounded. American and North Vietnamese soldiers lay within a couple of feet of each other. One of the few North Vietnamese found alive, when offered assistance, attempted to throw a hand grenade. He was shot. We also found some GI's who obviously had been given the *coup de grace*. They had their hands tied behind their backs and bullet holes in the backs of their heads.

The link-up had been made at 0900. From then until 1400 we patrolled out of LZ *Albany*, picking



SITUATION: NIGHT OF 18 NOVEMBER



up dead and wounded personnel and enemy and friendly weapons and equipment. The job was not finished at 1400 when we had to leave in order to make it back to LZ *Columbus* and our parent battalion's control by nightfall.

During the preceding day and night, the Americans had lost 151 killed, 121 wounded, and 4 missing. The North Vietnamese lost 403 killed by body count and an additional 100 were estimated killed. There was no estimate made of the number of enemy wounded.[8]

As bad as this had been, it still could not compare with what the company would face that night.

No contact was made on the move back. We closed at 1700 and went into our old defensive positions on the southeast corner of LZ *Columbus*. I immediately put out observation posts. At 1745 while the majority of the company was relaxing and eating C Ration, the observation posts took the lead elements of an estimated battalion-sized force under fire. This was the warning we needed because most of us were taking what we considered a well deserved breather. It enabled us to get into our positions and get set. Two of the three observation posts made it back in. The observation post covering the draw on the east did not.

In the 2d Platoon sector, Staff Sergeants Scofi and Lara and a few other men went to assist the observation post to their front as soon as the firing broke out. Sergeant Scofi, in his haste, grabbed only his M16 with the one magazine in it. It was not long before he was out of ammunition and was cursing his carelessness for both he and Sergeant Lara, a Korean War veteran, had discussed just such a thing happening many times in the past. He breathed much easier once the observation post had been successfully withdrawn and he was back at his position. He had learned a lesson that he would never forget and often told the tale on himself to impress new men when they arrived in the company.

Within ten minutes, the landing zone was being raked with machinegun and mortar fire. There was an especially effective machinegun located on a small knob just in front of the tie-in point between Companies B and D. It was firing right down our throats, raking our front lines and pouring bullets into the weapons platoon and the battalion CP. It was not until sometime later when the Air Force put napalm on the hill that the gun was finally silenced.

It is strange, but I recall that I was not scared except during the mortar barrage that preceded the first assault. I could see the rounds creeping toward my hole. I half expected one to land in there with me and my radio operators. I can remember thinking that never again would I put the Company CP in line with the Battalion CP and their damningly conspicious 292 antennas. When the rounds crept past my hole and on down toward battalion and the artillery FDC tents, I breathed a sign of relief. Within seconds though, my 2d and 3d Platoons were firing everything they had to stop the massed assault.

One OH-13 light helicopter, on the southeast corner of the landing zone was burning now and a CH-47 Chinook helicopter which had brought in artillery and small arms ammunition was shot down attempting to take off.

The 3d Platoon had its hands full. Although the initial assault had been beaten off, the enemy had only fallen back to regroup and try again. There was no let up in the fire and it was now dark.

Smokey the Bear, the Air Force flare ship, had been called and was now on station dropping flares. We had no artillery support because there were no batteries in range. The batteries located within the landing zone were unable to fire due to a tree line within the friendly position and the close proximity of enemy and friendly troops. Of necessity, sole reliance was placed on TAC Air for fire support.

About this time, the enemy attacked again in the 3d Platoon sector. It was a vicious attack with the enemy closing to within 10 meters of the Platoon's positions before they were repulsed. I now had a wounded man in each of six successive foxholes in their area and a gallant private running the 3d Squad. He did a magnificent job. In the heat of the assault, he stood there shooting and shouting encouragement to his comrades in adjacent positions. One hollered at him to get down before he got shot and he answered, "I can see them better to kill this way."

Although I did not know it at the time, Specialist Four Smedecker, a machine gunner with the 3d Platoon, had his gun jam in the midst of the assault. In spite of the commotion. he calmly pulled the gun down into his hole, and while his assistant machine gunner took up the slack with his M16 rifle, stripped the machinegun, corrected the malfunction, and put the gun back in action.

The situation was critical now. I had not held a reserve at company level and I needed to reinforce the 3d Platoon. The 1st Platoon was not heavily engaged so I thinned their lines and brought the equivalent of a squad over. If they had been heavily engaged also, I would have had to rely on battalion which had one platoon plus some men from headquarters. In retrospect, I think that at least a squad size reserve is needed in this type of defense. Ammunition resupply quickly became a real problem as did the evacuation of the wounded to the battalion aid station. A reserve would have helped with both of these. As it was, the members of the company headquarters were hard pressed and had to rely on help from platoon carrying parties during the occasional lulls.

The medics without doubt were some of the bravest men on the battlefield. They dashed through the midst of the firefight to help, as soon as they heard the cry "medic." As a result, a higher percentage of them were wounded than any other group.

TAC Air was the decisive element although the firing and minor assaults did not die out until after midnight. The pilots did a tremendous job. Still, we were not without some anxious moments. They could not see the "T" we had lit in the center of the landing zone due to the flares being dropped by the flare ship. Thus they could not identify our lines. Conversely, when the flares were shut off, the firing would increase and we would be assaluted.

To solve the dilemma, before the aircraft would make their run, we would throw trip flares and smoke grenades to mark our front line trace. This was a poor substitute because they burned out too quickly, but it was enough to get the job done. Most of my time during this period was spent sensing corrections for the Forward Air Controller at the battalion. Thereafter, anytime we went into defensive positions for the night, mortar canisters filled with gasoline and dirt and rigged with a trip flare were placed in front of our positions. This insured that, if needed, a tug on a wire would produce a ring of fire to mark our front line trace.

Of all the ordnance dropped by the Air Force, I believe the napalm was the most effective. One run in particular caught quite a few of the enemy. Those who were not on fire were forced to move to escape the heat. Thus they became silhouetted and were sitting ducks for our marksmen.

By midnight, all had quieted down. Five and a half hours had elapsed since the fight began. The next morning, 23 dead PAVN were found within 30 meters of the 3d Platoon position alone.

Company B's casualties were three killed, 13 wounded and evacuated, and five others wounded but not evacuated.

The company that was airlifted out of LZ *Columbus* late that afternoon was far different from the one which had landed four days earlier. Gone were the wisecracks about fatigue details at base camp instead of fighting the VC. No one any longer had to say "Dig in" or "Clean your weapons." On the contrary, it was "Where do we dig?" and "I need some oil."

Whereas on the morning of the 16th we stood out like clanking mess kits in an administrative bivouac, the company now looked like 150 odd bushes moving through the jungle. Silent bushes, I might add, that quickly caught and responded to hand and arm signals.

We also had gained a healthy respect for the North Vietnamese soldier, his weapons, his fighting ability and his camouflage techniques. But, more importantly, we learned that the American fighting man, equipped and trained as he is today, was the superior of this vaunted enemy.

In short, this was a company of combat veterans who had learned much in a few short days. In battle they had acquitted themselves well while meeting the best the North Vietnamese had to offer. They were good and they knew it.

FOOTNOTES

[1]MG Harry W. O. Kinnard, Combat Operations *After Action Report—Pleiku Campaign, (1st Cavalry Division (Airmobile), 4 March, 1966)*, p. 93.

[2]*Ibid.*

[3]Peoples Army of North Vietnam (PAVN) was the term used by American soldiers in referring to the North Vietnamese soldiers.

[4]Jack P. Smith, "Death in the Ia Drang Valley." *The Saturday Evening Post*, 28 January 1967, pp. 81-82.

[5]William B. Ray, *History of the First Battalion, Fifth Cavalry Regiment, 1 July, 1965–31 December, 1965 (1st Battalion 5th Cavalry)*, p. 11.

[6]*Ibid.*

[7]*Ibid.*, p. 12.

[8]Kinnard, *op. cit.*, p. 94.

HANOI'S UNDERESTIMATED WEAPON

4th Place

By CAPTAIN JAMES P. CARGILE, JR.

Late in December 1966, Harrison E. Salisbury released the first of a series of dispatches from Hanoi, North Vietnam, highlighted by this statement:

> Contrary to the impression given by the United States communiques, on-the-spot inspection indicates that American bombing has been inflicting considerable civilian casualties in Hanoi and its environs for some time past . . .[1]

The interpretation and presentation of Mr. Salisbury's statement by many of the Free World news media can be characterized by the following examples.

> OFFICIAL STATED OBJECTIVES OF THE U. S. AIR FORCE BEAR LITTLE RESEMBLANCE TO THE ATTACKS DIRECTED AGAINST CIVILIAN CENTERS.[2]

> He has reported in a calm, factual way, what appears to be irrefutable evidences of deliberate attacks on urban residential areas.[3]
>
> Even a decision now to keep clear of all civilian areas altogether simply would not be believed by our own people or by the rest of the world.[4]

CAPTAIN JAMES P. CARGILE, JR. *was commissioned from the United States Military Academy in June 1961. Following attendance at the Armor Officers Basic Course and the Airborne School, Fort Benning, Georgia, he was assigned to the 1st Armored Division at Fort Hood, Texas. There he served as Platoon Leader, Executive Officer, and Company Commander of Company C, 1st Battalion, 13th Armor. In September 1963, Captain Cargile attended the Defense Language Institute at Monterey, California. In September 1964, he was assigned to the 7th Psychological Operations Group, Okinawa. While assigned to the 7th PSYOP Group, he served as S-5, Psychological Operations, Detachment C-1, 5th Special Forces Group, 1st Special Forces in Vietnam and as Company Commander, 18th Psychological Operations Company (Airborne). Upon return to CONUS, Captain Cargile attended the Armored Officers Advanced Course at Fort Knox. He is presently stationed at Fort Hood, Texas.*

> . . . nor is it news outside of the United States that the bombing has not interdicted the passage of men and supplies.[5]

Walter Cronkite, in an evening news telecast, commented on Mr. Salisbury's first dispatch by saying that here was more proof that our government was not telling the people the truth about the war in Vietnam; that the credibility gap was widening; and that doubt was cast on all other programs begun by President Johnson's administration.

The controversy over Mr. Salisbury's dispatches raged publicly for almost a month. Some Americans termed the whole episode a Hanoi propoganda plot to halt the bombing in North Vietnam.[6] Walter Lippmann called it the truth, not propaganda.[7] My purpose is not to discredit Mr. Salisbury's dispatches, but is to point out that North Vietnam has the capability to conceal propaganda themes in such dispatches.

As military men, we have been taught that to underestimate an enemy capability is to invite defeat. I wonder if we have recognized Hanoi's capabilities in the employment of a very powerful weapon of war—psychological operations. Many of us will serve, or have served, in the Republic of South Vietnam where Communist propaganda assaults American and Vietnamese minds daily. Some of us may serve in the field of psychological operations in South Vietnam and will meet the Communist psychological operations machine face to face.

Half the battle of meeting the Communist psychological operations threat lies in understanding its capabilities, its objectives, and the means at its disposal. Does Hanoi employ skilled psychological operations specialists? How good is Hanoi's psychological operations intelligence? What are Hanoi's psychological objectives? How successful has Hanoi been in employing this weapon? I hope to answer these questions by examining Hanoi's psychological operations on the strategic scale. I believe Hanoi's major effort, at present, is in the strategic employment of this weapon. Therefore, Hanoi's strategic propaganda should be the area of our concern.

Many years before the advent of Communism, and Mao's *People's Army*, the Vietnamese were aware of the importance of support of the people in military operations. In 1284, Tran Hung Dao, a famous Vietnamese general, made the following observation as he looked back on a thousand years of war against the Chinese and the Mongols.

> The Army must have a soul like the father and son in the family. It is vital to treat the people with humanity, to achieve deep roots, and a lasting base.[8]

Later, the truth in this statement was to be

proven in a very tragic manner. In 1406, the powerful Chinese armies under the Ming Dynasty began a massive propaganda campaign designed to undermine Vietnamese resistance to their planned military invasion. The Chinese correctly recognized that the Vietnamese ruler, Ho Qui Ly, a capable administrator and soldier, would not be able to hold the support of his people because he was not from royal lineage. The Chinese devised a propaganda theme saying, "We are coming to restore the legitimate dynasty to power in Vietnam." The theme was communicated on posters spread about the land and on wooden billets floated down the rivers. When the Chinese armies arrived in 1408, they were supported by many Vietnamese soldiers and officials. Ho Qui Ly was quickly disposed of and the Chinese won their only victory over the Vietnamese in four attempts from 936 to the present.[9] The Vietnamese have never forgotten.

The fact that North Vietnam today is a Communist nation only increases her experience in the field of psychological operations. The Communists have added several techniques including terrorism, mass propaganda, censorship of all news, reorientation of history, and the sealing-off of the outside world. Mr. Salisbury's fifth dispatch from Hanoi, "Vitality and Cockiness Spark Hanoi's Fight," gives excellent examples of these techniques. Mr. Salisbury observed that terriorists in the South are martyred in North Vietnam; that movie and concert hall fare is about 50 percent patriotic propaganda; and that American *atrocities* are recited to the people daily.[10] Mr. Salisbury also points out that skillfully manipulated government propaganda draws a line between *the American aggressors* and the mass of the American citizenry, which is depicted either as friendly to North Vietnam or as kept in ignorance of the true state of affairs.[11]

Significantly, government propaganda has blurred the distinction between the French and the Americans so that the picture presented to the people is that the Americans took over the war against the Vietnamese from the French in 1954.[12]

Two factors concerning Hanoi's psychological operations capabilities are apparent. First, the North Vietnamese are at least historically and ideologically inclined toward the use of propaganda. Second, internal psychological operations in North Vietnam are highly successful because of exact knowledge of the target audience and complete control of news and communications media.

At this point we should also concede that North Vietnam can easily influence the peoples of other Communist countries. Communist news agencies tend to be mutually supporting except for those in the Soviet Union and Red China. These two have turned their propaganda guns on each other. Even so, both countries still faithfully support the North Vietnamese in their *struggle against the American aggressors.*

If we could poll the people of Communist controlled nations concerning the war in Vietnam, I doubt that we would find anyone who supports the American position. We might find a few people who are neutral about the war, but most would echo Hanoi's propaganda themes that the war in the South is a war of liberation, and that the Americans are aggressors against the Vietnamese. We must grant Hanoi a reasonable capability of influencing Communist audiences.

What is Hanoi's capability to influence members of Free World audiences, particularly Americans?

The answer to this question is that Hanoi must assemble the necessary ingredients for successful psychological operations and apply them correctly. If Hanoi does this, she can expect some success. The necessary ingredients are —

- Good psychological operations intelligence concerning target audiences, vulnerabilities, and the situation.
- Sound psychological operations objectives that support or enhance national objectives.
- Communications media capable of reaching the target audiences.

Hanoi's psychological operations intelligence capability is as good as any that exists in collecting and analyzing information about American target audiences, vulnerabilities, and situations. Almost everything valuable to a psychological operations intelligence analyst appears in our news media. We must assume that the Vietnamese read the results of our public opinion pools; that they are aware of our civil rights, student, and draft avoider problems; and that they are aware of the rumored credibility gap. Any enemy propagandist would consider our freedom of the press as a psychological vulnerability just from the intelligence aspect alone. Needless to say, Hanoi's propagandists can easily familarize themselves with American governmental organizations and functions.

Hanoi's psychological objectives are not as easily understood as her intelligence capability. The process of determining enemy psychological objectives involves detailed analysis of propaganda output in the light of the overall situation. The following are some of the themes currently expressed by the North Vietnamese in public statements or to visitors in Hanoi —

- The bombing in North Vietnam is immoral.
- The bombing in North Vietnam is ineffective.
- North Vietnam is independent of Communist China and the Soviet Union.
- The North Vietnamese will fight forever to win their *sacred* war against the *American aggressors.*

▶ Hanoi does not direct the National Liberation Front in South Vietnam.

▶ The United States Government does not tell the truth about the war in South Vietnam.

▶ The National Liberation Front represents the majority of people in South Vietnam.

▶ The United States is involved in a long war that it cannot win.

▶ Reunification is the goal of the National Liberation Front and North Vietnam.

▶ Americans are *imperialists* and *aggressors.*

▶ The war conducted by the Americans in South Vietnam is an unjust war.[13]

One of the major factors in the general situation today was pointed out by former Ambassador Henry Cabot Lodge during a recent television interview. The Ambassador stated that the Communists in South Vietnam are no longer capable of overthrowing the South Vietnamese government by military force. However, Ambassador Lodge did note that the possibility of political overthrow by the Communists still exists and will exist until the South Vietnamese government becomes effective enough to hold the support of the people. It appears that Hanoi also recognizes that the American presence in South Vietnam is the major force blocking victory for the Communists.

It is common knowledge that North Vietnam's national objectives are oriented toward victory for the National Liberation Front in the South. Hanoi, therefore, is deeply concerned with removing American forces from South Vietnam. The North Vietnamese might state one of their national objectives as —

To remove or seriously hinder the American capability to block victory for the National Liberation Front in South Vietnam.

Some psychological objectives in support of this national objective, *the applicable target audience,* and supporting propaganda themes are—

▶ Convince the *South Vietnamese people* that America's true purpose in South Vietnam is imperialism.

THEMES:

a. The American imperialists . . .

b. The South Vietnamese government is a stooge of American imperialism.

c. The Americans are no different from the French colonialists.

▶ Create confusion and lower morale among the *American people* so that the American government will find it politically difficult to prosecute the war in South Vietnam.

THEMES:

a. The war in South Vietnam is unjust.

b. The bombing in the North is immoral.

c. The bombing in the North is ineffective.

d. The American government does not tell the truth about the war in Vietnam.

e. The United States is involved in a long war that it cannot win.

▶ Create *world opinion* so adverse to the American position in South Vietnam that the United States may someday find it expedient to withdraw her forces.

THEMES:

a. The war in South Vietnam is truly a war of liberation.

b. Americans are imperialists and aggressors.

c. The American government does not tell the truth about the war in Vietnam.

d. American bombing in the North is immoral.

e. The Vietnamese peoples will fight forever against American aggression.

The North Vietnamese are not limited to the psychological objectives described above. Other objectives, such as the psychological creation of the National Liberation Front in South Vietnam and in the world, are now history. Some of the psychological advantages enjoyed by the North Vietnamese as a result of past successes are—

▶ Psychologically, North Vietnam remains relatively uninvolved in the struggle in South Vietnam.

▶ Psychologically, the National Liberation Front is a viable government-in-waiting and represents the majority of the South Vietnamese.

▶ The stigma of Communist subversion in South Vietnam has been minimized.

So far, we have noted that the North Vietnamese are inclined toward the use of psychological operations, that their psychological operations intelligence is adequate, and that their propaganda themes indicated a planned program in support of national objectives. The remaining ingredient necessary for successful psychological operations is communications media capable of reaching the desired target audience.

Do the North Vietnamese have communications media capable of reaching target audiences around the world? The answer is obviously no in the sense of our Voice of America or Radio Free Europe. However, with careful planning and execution, the North Vietnamese propagandists can enter the Free World communication system which does reach into almost every American home as well as the homes of other Free World peoples. From the propagandist's viewpoint, the utilization of the enemy's news media for the dissemination of propaganda themes is a distinct advantage rather than a disadvantage. The advantage lies in the credibility of the news source, and therefore in the increased credibility of the propaganda concealed within. The best examples of this type of campaign are the re-

"The American aggressors are massacring the civilian population without regard to women, children, or the elderly."—Ho Chi Minh

ports of the newsmen and visitors who visited Hanoi at the invitation of the North Vietnamese government. Their stated purpose was to view the bomb damage, but the effect may have been just as North Vietnamese President Ho Chi Minh observed:

> The responsible world press is helping show the truth about the Vietnam war, distinguishing between the true aggressors and victims. . . . The American aggressors are using the most outrageous materials and weapons to level cities and villages, and are massacring the civilian population without regard to women, children, or the elderly.[14]

If there is confusion about the war in Vietnam, doubt about the United States objectives in Vietnam, or adverse world opinion to the American position in Vietnam, then we must attribute part of it to Hanoi's psychological operations capabilities. Half the battle of meeting this threat lies in the understanding and recognition of these capabilities. Perhaps the old saying, "Don't believe everything you see or hear," could be applied.

In any case, the responsibility for recognizing North Vietnamese propaganda does not belong solely to our government, our military, or to our press and radio. Part of the responsibility belongs to the individual American citizen, the target of Hanoi's propaganda.

FOOTNOTES

[1]"Behind Enemy Lines," *Newsweek*, 9 January 1967, p. 61.
[2]*Ibid.*
[3]"Our Bombing Doesn't Make Good Morals or Good Sense", *Louisville Courier Journal*, 11 January 1967.
[4]*Ibid.*
[5]Walter Lippmann, "Self Deceiving Nonsense About Propaganda Versus Truth", *Louisville Courier Journal*, 11 January 1967.
[6]Murray Marder, "Hanoi To Admit More Writers From The U.S.", *Louisville Courier Journal*, 28 December 1966.
[7]Lippmann, *op. loc.*
[8]Ellen Hammer, *Vietnam Yesterday and Today*, p. 73.
[9]Joseph Buttinger, *The Smaller Dragon*, p. 153.
[10]Harrison E. Salisbury, "Vitality and Cockiness Spark Hanoi's Fight," *Louisville Courier Journal*, 15 January 1967, pp. 1, 10.
[11]*Ibid.*
[12]*Ibid.*
[13]Propaganda themes compiled from Harrison Salisbury's Hanoi dispatches; statements of Miss Barbara Leming, Grace Newman, and Mrs. Joseph Griffith from the Peace Movement; and, from statements by President Ho Chi Minh, Premier Pham Van Long, and Diplomat Nai Van Bo of North Vietnam.
[14]"Ho Declares US Can't Win War in Vietnam", *Louisville Courier Journal*, 3 January 1967

CHU PHONG Revisited

A Combat Example of Armor-Airmobile Teamwork

By LIEUTENANT COLONEL JOHN C. BURNEY, JR.

Elsewhere in this issue, in the article "Company B," Major Walter B. Tully, Jr. describes the 1965 battle at Chu-Phong from the viewpoint of a company commander in a force which had no armor available. Herein, the author examines a quite different subsequent operation in the same area. EDITOR

LIEUTENANT COLONEL BURNEY, *Armor, was the Deputy Commander of the 3d Brigade, 1st Cavalry Division, during the operation described in this article. A graduate of the National War College, he has served in several Armor units including the 44th Tank Battalion of the 82d Airborne Division, the 14th Armored Cavalry Regiment and the 4th Armored Division, where he commanded the 1/67 Armor and served as the Division G3. LTC Burney is presently assigned to the Combat Vehicles Office, OACSFOR, Department of the Army.*

The unconventional war in Vietnam offers exceptional opportunities for commanders to develop novel tactics and techniques. New, imaginative uses of armor in this challenging type of warfare were particularly well illustrated during one 1st Air Cavalry Division action—Operation *Lincoln*.

In March 1966, intelligence reports indicated that there was a large build-up of North Vietnamese Army forces in the vicinity of Chu Phong Mountain, overlooking the Ia Drang valley. This area, in the central plateau west of Pleiku, was the site of the famous Ia Drang Valley Battle of November 1965. In that battle, which some have labelled the turning point of the war, one battalion of the 1st Air Cavalry Division, the 1st of the 7th Cavalry, had borne the brunt of the enemy attack and in doing so had killed more than 600 soldiers of a North Vietnamese Army regiment. This was the first large scale engagement of American and North Vietnamese forces.

The same unit that had fought in the first Ia Drang Valley Battle, the 3rd Brigade, again including the 1st Battalion, 7th Cavalry, was once more ordered into the area. Considerably more experienced than in the earlier Ia Drang Valley Battle, the brigade was confident and eager for another crack at the enemy. Its mission was to reconnoiter in force, interdict infiltration routes, and destroy any enemy contacted in the area.

On 31 March, less than two and a half hours after receiving the movement order, the brigade began its movement by ground and air to Plei Me, south of Pleiku. The final objective area was approximately 30 kilometers to the west along the Cambodian border. The terrain between Plei Me and Chu Phong was a trackless expanse of jungle. There was not one road or village in the area. It was the dry season, and even in the jungle, trafficability was fair.

For this operation, the 3rd Brigade had two air mobile infantry battalions (1st and 2d Battalions, 7th Cavalry), elements of an air cavalry squadron (1st Squadron, 9th Cavalry) and from the 24th Division, Troop C, 3d Squadron, 4th Cavalry, which was equipped with M48A3 tanks and M113 Armored Personnel Carriers. Supporting artillery consisted of an air mobile 105mm howitzer battalion, a self-propelled 8-inch howitzer battery, and a self-propelled 175mm howitzer battery.

The operational plan included an air assault into landing zones near Chu Phong Mountain. The 1/7th Cavalry was to use the same landing zone, LZ *X-Ray,* as it had in that bloody day in November when the enemy regiment had charged down on *X-Ray* from Chu Phong Mountain. The difficult problem was how to get the self-propelled artillery close enough to provide the heavy fire support so important to a successful air assault.

Colonel Harold G. Moore, Jr. the Brigade Commander, did this in a manner that prompted "it can't be done" comments. With the air cavalry troop, the ground cavalry troop, and the self-propelled artillery, he formed Task Force *Spur* and ordered it to strike out twenty kilometers through the jungle to firing positions within range of LZ *X-Ray*. In the true Cavalry style, only a terse mission-type order was given.

On 30 April, Task Force *Spur,* commanded by Lieutenant Colonel Robert M. Shoemaker, squadron commander of the 1/9th Cavalry, boldly plunged westward. As the last vehicle was swallowed by the jungle, fears for the security of the task force were allayed by the surprise that the move would certainly achieve.

In an unprecedented move, the tanks actually crushed a road through the jungle—a road that enabled the artillery, personnel carriers, and even wheeled cargo trucks to follow in their path.

In skillful coordination, the scouts and gun ships roamed ahead and on the flanks of the ground column, selected the most trafficable routes and stream crossings, and provided security. In this manner, the task force reached Position *Blue,* 25 kilometers away, in seven hours. Once in *Blue,* the artillery assumed firing positions immediately. The tanks then methodically crushed down landing zones, and helicopters delivered fuel and infantry for night-time security.

The next day, 4 April, at 0950 the two infantry battalions, with full artillery support successfully assaulted into the objective area. There was no opposition, and all landing zones were quickly secured.

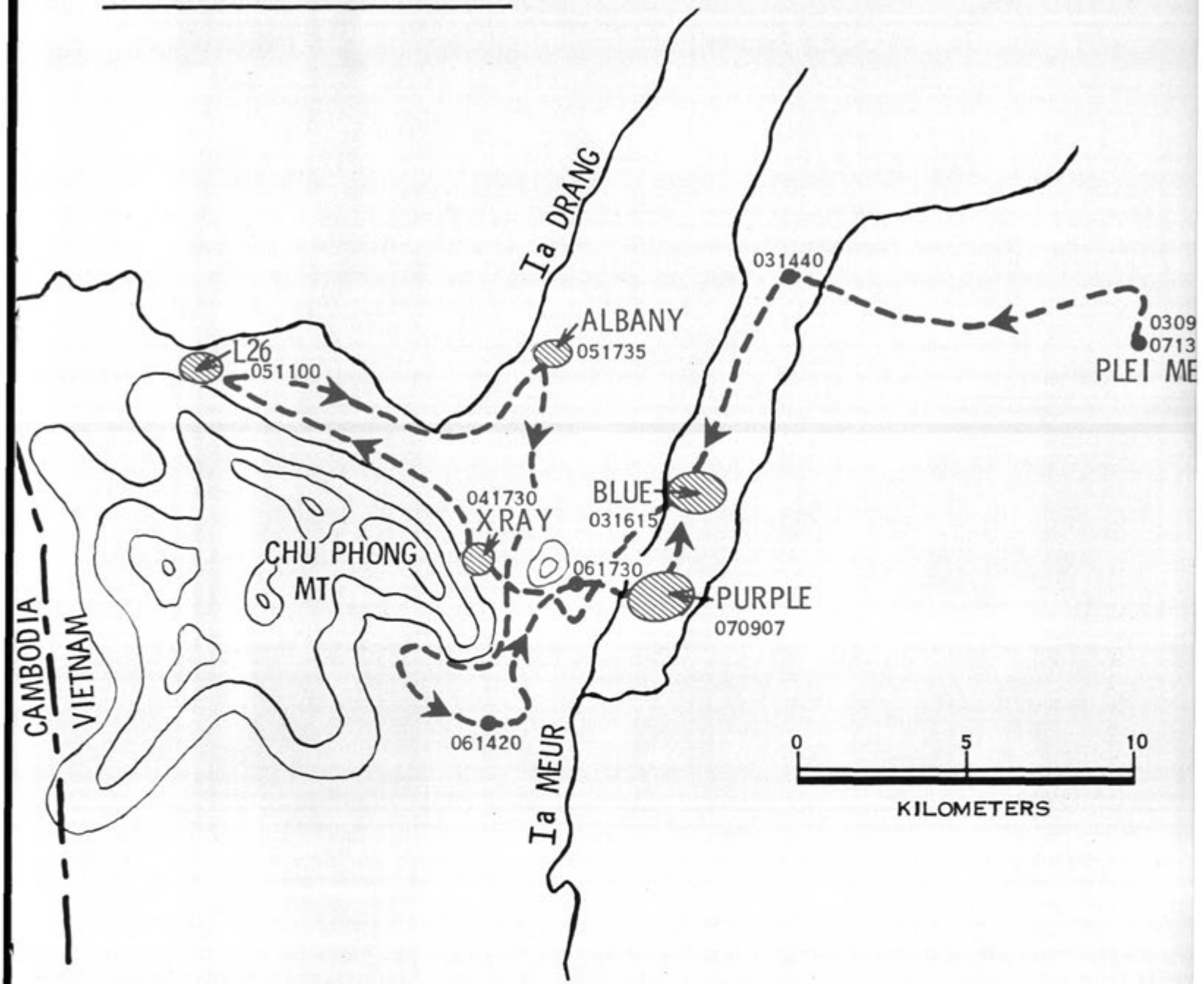
But the armor task was not complete. It was needed at Chu Phong Mountain to support the infantry if the North Vietnamese attacked in strength as they had in November and to provide mobile ground reconnaissance throughout the operational area. Leaving the artillery with security behind, the tanks and personnel carriers drove westward to link up with the infantry which had landed in the vicinity of Chu Phong. They linked up at LZ *X-Ray* at 1730 on 4 April. They then continued on reconnoitering as they moved through the valley.

During this reconnaissance the armor was resupplied completely by helicopter, using tank-crushed landing zones. Because this technique is not described in any field manual, a measure of this capability might be appropriate. On one occasion six M48 tanks made a landing zone that accommodated six HU-1D helicopters in only 15 minutes.

On 7 April, after completing its mission, the armor returned to Position *Blue,* and escorted the artillery back to Plei Me, having impressively covered 108 kilometers through completely trailless jungle. The return was much faster, for engineers had improved the tank-made road. While most of the enemy had apparently withdrawn across the Cambodian border without offering significant resistance, the brigade with its air/armored cavalry task force, accomplished its assigned tasks swiftly and efficiently. Having reconnoitered the entire area, it had ascertained that no enemy remained in the vicinity of Chu Phong Mountain. It had established American presence in the area and there were indications that the operation had thwarted an enemy operation.

One result was obviously lasting. Where previously the Plei Me to Chu Phong expanse was trackless, today a genuine road leads through the heart of this desolate area.

Although pilots traversing the area today may wonder at the origin of a road which seems to

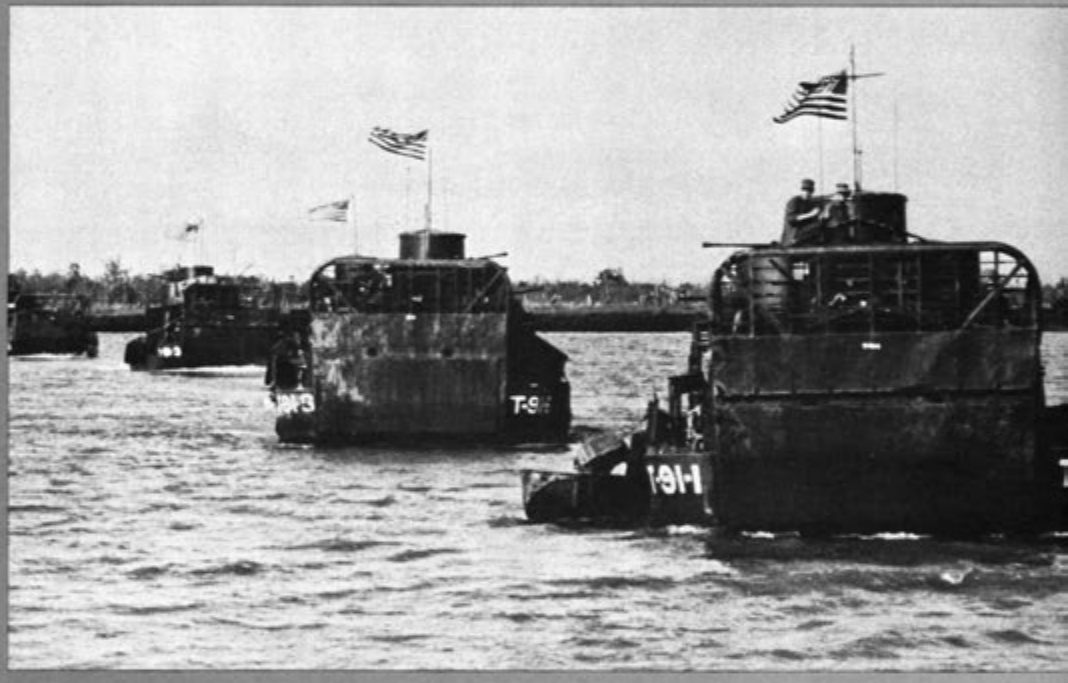


lead nowhere, it did lead to a successful operation and proof of the compatibility of armor and air mobile forces. Both have capabilities that balance the limitations of the other. And the tactics of each are similar, for both emphasize flexibility and speed and excel in a fluid, fast moving environment. The air cavalry proved that it could reconnoiter, provide security for, and resupply the armor. The armor proved that even in trackless jungle it could link up with air mobile forces, provide the mobile ground reconnaissance that the air cavalrymen lack, and make itself available to provide firepower and shock action should the need arise.

Imagine the result if those tanks had been in LZ *X-Ray* during the first Chu Phong operations. Against the lightly equipped North Vietnamese infantry, the victory could have been even more decisive than it was—and the cost in American lives would have been considerably less.

The air cavalry concept is still new and developing; the potential of this fast, flexible, far-ranging air mobile team has not yet been fully tested. Add to this team another member, armor, that is also fast, flexible, and far-ranging and the result should be a versatile combination that truly challenges imaginative leadership.

"I have never known a real red-blooded
challenge once he knew w



American who backed down from a
hat it was all about."

General Harold K. Johnson
Chief of Staff
United States Army

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!!

ARMOR OR CAVALRY?

By MAJOR NICHOLAS S. H. KRAWCIW, Armor

Armor or *Cavalry?* This is the question that I am placing before you in the hope that you will react to it with either "pros" or "cons."

Initially, you may think: "Why in the world are you rocking the boat in an attempt to sway us against a battle-proven name of a modern branch?" or "What is really wrong with the word *armor?*"

Armor came into being during an age when Hitler's *Panzer* divisions were preparing to devour Europe and when the tank returned mobility to the battlefield. *Armor* became our branch of mobility and helped to defeat Nazi Germany. But, because of the tank's success, the word *armor* became synonymous with heavy armored units. As a result it has become difficult to convince those around us that *Armor* is not hardware, but a branch of mobile warfare. The whole question, then, is one of semantics that do not properly represent our concepts.

For that reason, we should go back to the word *cavalry* to represent our branch. *Cavalry* simply means mounted warriors and does not tie us down to a horse or to a tank or to any new vehicle of the future. This word historically stands for mobile elements of any army.

It should be in the interest of all professional soldiers to have a strong mobile arm which attracts young men with visions, just as it is important to have a solid infantry, artillery, corps of engineers, and other branches. But to attract bold and daring young leaders, the branch of mobility should have a name which more imaginatively represents its missions.

The re-adoption of the name *cavalry* by our branch would give us a more descriptive name.

Many units would again have to be re-designated. Tank battalions could become tank squadrons, armored cavalry battalions could be called reconnaissance squadrons, battalions using helicopters would be helicopter or air assault squadrons. Each squadron would belong to a historical cavalry regiment. Divisions, of course, would continue to consist of a mixture of battalions from many branches. However, any division which consists of a majority of cavalry squadrons should then be a cavalry division. Thus, instead of the 1st Battalion, 81th Armor, 1st Armored Division, we would have 1st Tank Squadron, 81st Cavalry, 1st Cavalry Division, and so on. If a new vehicle is adopted by the Army for mounted warfare in place of a tank or a helicopter, then we would simply substitute its name before the word squadron. Note that the word tank should be retained in all tank battalion designations.

Together with this proposal for a name change I recommend a return to the traditional insignia of cavalry, the crossed sabers *without a tank*.

There is no doubt that most of us in *Armor* realize that our current branch name stands for a mobile warfare concept, but the word *cavalry* would more universally represent this concept. It would give us greater flexibility in embracing new developments in mobility and in equipment under a historical name that is really ageless and which should have never been abandoned by our branch.

NEW DIRECTIONS FOR ARMOR

By MASON P. RUMNEY, LTC, USA-Retired

The following thoughts were prepared in response to ARMOR's 1966 reader survey on potential reorientation for the Armor Association and its journal. However, they were not forwarded at that time. Subsequent conversations with various people prompted this submission. The views expressed are, however, entirely my own.
—M.P.R.

Armor—both the branch, and the Association —has spent the last 40 years successfully persuading the Army that there are better ways to organize, equip and fight. Meanwhile, we have failed to realize our position in and responsibility for continued analysis of tactical operations in high intensity conflicts away from the European land mass, and the need for incorporation and support of

new weapons and new tactics. In short, we have been so busy with our own crusade (a great one) that we have closed our minds in many areas. It is human nature for crusaders to rebuff competitive crusaders—and we have been very human.

In seeking corrective action, it is appropriate to remember that Armor has historically been the arm of the "big ground fight" and of the combined arms team. I think it is appropriate for ARMOR to play a leading role in support of other developments, other arms, other concepts that may be most involved in "big ground fights" and in analysis of those geographical regions where mobile, mechanized, heavily armored formations may be critical. Adequate geopolitical, geographical and strategic analyses of these areas, and of the types of weapons and tactics needed for use therein are lacking.

In general, there is a current need for increased emphasis on dialogues on potential wars that lie somewhere between the jungle counterinsurgency hunter-killer type operation now in progress in Viet Nam, and the inter-continental thermonuclear exchange of primary concern to the air defense and the air forces. The first preempts our attention because it is with us today, and must be solved now; the second demands continuing attention out of sheer massive importance; neither can be truly identified as the problems most suitable for major emphasis by ARMOR. If, however, ARMOR were to direct its efforts toward the comparatively neglected mid-intensity conflict, there would be ample material for many years of searching articles, a gap would be filled, and some of the natural current preoccupation with Vietnam neutralized.

In order to accomplish this reorientation, it would appear appropriate to include some or all of the following steps:

a. Sponsor a dialogue that would include papers on potential operations in North Africa, the Middle East, South Asia and China to include discussions of tactical nuclear, chemical, and biological warfare in these areas. Invite papers from Hudson Institute, Rand Corporation, Institute for Nuclear Studies, Herman Kahn, Murray, Hanson Baldwin, BGen. S.L.A. Marshall, Gen. Taylor, Gen. Gavin and others. Include some classified sessions, if possible. Invite associated papers from knowledgeable persons in the fields of massive ground combat, to include airborne, foot, mechanized, reconnaissance and armored operations. Consider methods for extending the dialogue into separate classified avenues.

b. Orient the dialogue around a series of probing questions such as:

(1) *As new leaders, coalitions and power blocks emerge in the developing portions of the world, what weapons and tactics would be best suited for dealing with situations beyond the capability of U. S. conventional (non-nuclear, non-CB) forces?*

(2) *What weapons and operational capabilities are needed for dealing with new countries which develop comparatively minor nuclear, chemical or biological capabilities?*

(3) *When intercontinental strike capabilities reach a point of true mutual deterrence, what deters tactical nuclear warfare?*

(4) *When U. S. conventional capabilities become thoroughly committed in one area, what should be the composition of forces to deal with emergency situations in other areas?*

(5) *What are realistically attainable requirements for modification of conventional forces and equipment to adapt them to the nuclear and CB requirement?*

(6) *How does the non-conventional environment influence mounted, mechanized and armor tactics and techniques and equipment requirements?*

(7) *Can the area of operations and the objectives be limited in non-conventional warfare?*

c. Publish unclassified versions of the papers presented in a special issue of ARMOR or over a series of issues, and use them as a basis for a continuing dialogue on associated subjects. Publish classified papers separately.

d. In general, sponsor a crusade for continued realization that mid-intensity conflicts with a variety of weapons remain a real threat, and must be prepared for.

Such a crusade would conflict with many widely held conclusions on the nature of future wars. Many of these conclusions appear to be based on the tacit assumption that political leaders, coalitions, and philosophies will remain unchanged indefinitely. Such an assumption is hard to support. For instance, the recent events in the Middle East could well result in the emergence of a new, more effective, Arab leader capable of creating a truly hostile and dangerous Arab coalition. In the coming decades, other leaders and coalitions in the Afro-Asian arena are also possible although generally unpredictable at this time. To assume otherwise is to deny the history of the sudden emergence of the empires of Cyrus, Alexander, Tamerlane, Genghis Khan, Charlemagne and even Hitler.

Needless to say, these matters have not been totally ignored in the past. However, it is apparent that the lack of a sponsor for evaluation of them has resulted in inadequate emphasis. ARMOR could well restore the balance.

If the U. S. ARMOR Association isn't the right outfit for this job—Who is? If this isn't a worthy endeavor for the U. S. ARMOR Association—What's better?

ARMOR MAXIMS + APPLICATION = VICTORY

FOREWORD

If the Israeli victory over the Arab forces in June of this year was expected, its completeness and the speed with which it was accomplished did surprise many observers. It may be helpful to an understanding of the nature of the Israeli military victory to read again the "Principles Of Employment of Armor" by General Bruce C. Clarke which first appeared in the July-August 1948 issue of the ARMORED CAVALRY JOURNAL, the predecessor of ARMOR. General Clarke, in addition to having been one of the leading practitioners of these principles in Western Europe 23 years ago, has continued to be their most articulate advocate in our Army in the years since the defeat of Nazi Germany.

Press accounts of the fighting and reports of the casualties in personnel and equipment sustained by the Israelis as well as the Arabs testify to the savagery of the combat and the fighting spirit of the opposing forces. The superior employment by the Israelis of the air-ground team and full utilization of the characteristics of armor appear to have made the difference—decisively so! To quote General Clarke, "Armor brings within reach of the field army commander decisive objectives,"—in this case El Arish, Sharm el Sheikh, Mitla Pass, and the banks of the Suez Canal. And, "It provides on the modern battlefield the means by which the army commander can achieve the ultimate objective—destruction of the enemy's will to fight." In this case the Arab's ability to resist was crushed in less than six days. Careful planning and violent execution by well-trained troops under good leaders paid off in victory for a force outnumbered in both men and equipment.

It is often said by its proponents that "Armor is largely a state of mind." The Israelis showed the flexibility of mind and concept inherent in that statement. They organized, equipped, trained, and planned in accordance with the conditions under which they were likely to have a fight and showed the resourcefulness and willingness to take the coldly calculated risks demanded by the situation facing them. The example of the Israeli forces in the Sinai is in no way contradictory to the solution our own forces have found to the problem of mobility in Vietnam—the helicopter. It simply emphasizes the importance of the state of mind which enables the commander to utilize experience, judgment, and imagination to find the solution to the problem of applying mobile firepower at the decisive point at the decisive time in the climate of conditions under which he must operate.

—Brigadier General Hal C. Pattison
Chief of Military History

Israeli Embassy, Washington

THE PRINCIPLES OF THE EMPLOYMENT OF ARMOR

By GENERAL BRUCE C. CLARKE

Armor is the arm of mobility, armor-protected fire power, and decisive shock action. Armor is a vital and regular member in the ground team. Armor brings within reach of the field army commander decisive objectives. It provides on the modern battlefield the means by which the army commander can achieve the ultimate objective—*destruction of the enemy's will to fight.*

There are certain basic principles which govern the employment of armor—but they are no more than guides. As in the rules of bridge, there is no place in the principles of employment of armor for the words *always* and *never.* The successful application of the principles of armor employment is entirely dependent upon commanders and staffs being flexible in mind, progressive in thought, and liberal in imagination.

Armor Plays the Historic Cavalry Role

Armor fulfills the role in modern warfare that Napoleonic cavalry fulfilled in the 19th Century. It combines great mobility with overwhelming fire power. Cavalry of the later 19th Century and the 20th Century relied primarily on mobility. The fire power of armor must not be overlooked in a consideration of its characteristic of mobility.

For many years armies have sought light, fast-moving units that could upset the time-space factors of the opponents. They were willing to sacrifice some power in order to attain the mobility desired. The cavalry was developed into such a force. With the wide use of the automatic small arms and other effective weapons, and of automotive vehicles, the horse no longer was an effective weapon on the battlefield. Armor, which combines both high mobility and great fire power, has assumed the historic cavalry role in modern war.

Armor Is a Strategic and Tactical Threat

Armor is a strategic and tactical weapon. Not only is the presence of armor locally a threat to any force, but its capabilities of long movements and prompt commitment make the presence of distant armored units a threat to any operation.

Armor Uses Its Mobility

Armor has been described as "mobile, armor-protected fire power." Armor gains its ends through its ability to move and shoot, but above all, to move. An armored formation many miles away has the ability to intercede in a battle in from 100 to 200 percent less time than a formation geared to the foot sholdier. Armor moves in a fighting formation. To its speed of movement, then, must be added its ability to be committed promptly from march formation. Mobility in armor is derived not only from tanks, armored personnel carriers, and self-propelled artillery, but also from extensive organization of mobile service support at all echelons from company to division.

Armor Uses Its Firepower to Close With the Enemy

Armor concentrates its power at the decisive point of action. Armored formations contain an overwhelming superiority of armor-protected machine guns and cannon. The tank cannon is essentially a weapon used against enemy tanks. It is not artillery. In the application of armor's fire and shock power, artillery and other supporting weapons provide the covering fires which enable the tank machine guns and armored (*now mechanized*—Ed.) infantry to close with and destroy the enemy.

Armor in Strength Produces Decisive Shock Effect

The shock or psychological effect which comes to troops on the receiving end of a massed armor assault is terrific. This effect radiates from the point of attack in concentric semicircles as do the waves from a stone dropped in the water near the edge of a millpond. If the attack is in strength, these shock waves reach to the enemy division, corps, and army headquarters. Shock effect gives armor part of its protection and hastens the disintegration of the enemy force attacked. The shock effect of the mass employment of armor varies as the square or cube of the number of tanks used. Attacking with armored strength too small to produce decisive shock effect often results in great losses and inconclusive results.

Armor Formations Must Be Flexible

It is not given to many to be able to visualize all that can happen during a full day of armored action. Unforseen contingencies occur. Situations as to terrain, weather, footing, obstacles, and enemy cannot be accurately predicted far into the future. A set formation for all situations is a dangerous oversimplification in armored tactics.

Armor Is a Thrusting Weapon

Armor is a weapon which should be thrust quickly through enemy opposition on a relatively narrow front. It is strong as long as it remains in depth. It should not fan out until the opposition has been reduced and powerful enemy counterraction is no longer probable.

Armor Stays in Column for Strength

This does not mean that it necessarily moves on a narrow front or on only one road. It may advance on a broad front, but so long as the tactical formations of the division and combat commands are in column, the commanders are ready for any contingency and prompt action can be taken without waiting for higher staff reaction and direction. Breaking through and out of an enemy defensive zone in a column of combat commands gives as much or even more effective power in the breakthrough, and at the same time saves an uncommitted tactical command to handle contingencies and to push on promptly in exploitation. Armor formations are organized in anticipation of success.

Armor Drives Deep, Assembles, and Destroys

An armored unit commander must observe the principle of the objective. An engineer who wishes to blow down the face of a rock wall bores deep, assembles his charge, and blasts back. He does not place his charge on the face of the wall. Armored action is similar. What protects Armor during this process? The answer is speed, mobility, flexibility, enemy command and staff inertia, and the time and space factors which control the ability to react to such a force. The shock effect of Armor reaches even to commanders and staffs and adds to the inertia and the time it takes to react.

Armor Needs Mission-Type Orders

Armor should be given a mission and the minimum essential restraining and coordinating directions. It should be given the ultimate and decisive objective of the next higher commander so it can take prompt advantage of breaks in order to make great gains.

Armor Action Calls for Combined Arms Teamwork in Lower Echelons

Armored formations contain, in intimate association tank, infantry, engineer, and artillery elements. This may, and often does, extend down to the company level, where the tank company may have infantry and engineers as well as the ever-present artillery forward observers. Such a situation on the battalion level is usual. It should not be assumed that the tank unit commander is always in command. Often the armored infantry unit is the basic force to which tanks and engineers are attached, and artillery closely supports.

Once the Momentum of an Armor Attack Is Attained It Should Be Allowed to Run Its Course

An armored division has enormous momentum when it gets rolling. To dampen this by phase lines, limited objectives, and other factors that require high-level decisions in order to continue to advance, dissipates that momentum—often faster than does the enemy. Any restriction on movement may provide the enemy with time to react and will frequently result in loss of the initiative.

Successful Armor Action Is Characterized by Deliberate Planning Followed by Violent Execution

Armored action involves large road space, close timing, elaborate supply plans, and extensive plans for maintenance. It involves careful coordination and teamwork with all arms. Artillery, mortar, and air support must be tied in. Communications must be coordinated and perfectly established. To do all these requires thorough and deliberate planning.

Once the planning is done, the execution is the payoff. It must be violent if the mobility, firepower, and shock effect desired are to be attained. *Half-hearted execution is fatal to the results expected from armored action.*

"An Armor commander . . . must be willing to take coldly calculated risks."

Israeli Embassy, Washington

Brigadier General Israel Tal, Commander of Israel's Armor Corps during the Sinai campaign of June 1967

Armor Action Requires Supply and Maintenance

Adequate plans and facilities for supply and maintenance are essential. An armored unit out of fuel is easily destroyed. Fire power means consumption of large quantities of ammunition. Food is necessary. In the typical armored action, supply routes may be cut by enemy action for several days. These contingencies must be forseen and means provided to assure success. The combat command (*now brigade—Ed*) should carry with it the supplies necessary to reach the final objective and hold effectively.

Tanks and other armored vehicles require frequent and complicated maintenance. The means are available in the armored division; the time must be provided if a favorable balance of combat vehicles is to be kept in action against the enemy for sustained operations. The rotation of combat units through the reserve command and the infrequent employment of the reserve command as a combat command will provide the necessary time for maintenance.

Armor Defensive Action Is Elastic

Armor can conduct and has conducted very effective defenses. It does this by being elastic, by rolling with the punches, by counterattacks, and by anticipatory thrusts to upset an enemy attack forming up. It does not establish a brittle line. It disposes itself in considerable depth. While defense has not been the role normally associated with armor, its capabilities on defense in future warfare must not be overlooked.

Armor and Tactical Air Are Partners

It is literally true that armor and tactical air when working close together form a team with enormous power. This partnership does not happen by chance. It takes close association, careful air-ground training, and an intimate understanding of each other's capabilities, limitations, and methods to attain the desired relationship. Armor is the one that needs the support. It must go far more than halfway, if necessary, to effect the partnership.

An Analogy of Football to Armor Action

A football play executed from *T* formation well illustrates a typical action of a corps of two or more infantry and one or more armored divisions. The infantry divisions are the line; the armored divisions the backfield. Let us now note the many principles of armored action which are well illustrated.

- Before the point of attack is disclosed there is a threat all along the line.
- There is deception.
- Teamwork is highly developed.
- The support is carefully organized.
- The ultimate objective is known and is decisive.
- The attack thrusts quickly through the defense line on a narrow front.
- The attack goes through the defensive line in column for power and for flexibility to take care of contingencies.
- The attack drives deep. It does not mop up those that are by-passed.
- The defense is disposed in depth, is elastic, and is highly mobile.

Violent Execution Pays Off

The proper application of the principles of the employment of armor will produce outstanding results. They should be considered not as rules, but as guides to be used after carefully estimating the situation. Deliberate planning is needed. Violent execution then pays the dividends. Flexibility of mind, concept, and formations is required of an armor commander and his staff. He must be willing to take coldly calculated risks. When he holds the cards he must back them up with all his chips, and often he must be willing to put in all his chips when he is not sure that he holds the winning hand.

Honorable Mention

WINSTON CHURCHILL'S FOLLY

By CAPTAIN ROBERT A. VOGEL

To many, Sir Winston Spencer Churchill was a renowned statesman and politician. To others, he was also a soldier, a historian, and even a journalist. But Churchill was also a pioneer in the field of armor and played a leading role in the development of the tank.

In August 1914, England found itself involved in a war against Germany. Winston Churchill was at this time the First Lord of the Admirality. A section of the Admirality, the Royal Naval Air Service, was assigned the responsibility for the air defense of Great Britain.[1] In order to fulfill this mission, the Royal Naval Air Service based air squadrons in France and Belgium. To protect these air bases, and to rescue pilots who were downed behind enemy lines, armored car squadrons were formed.[2] In the early days of World War I, the amored cars were used with some success. The onset of trench warfare, however, severely restricted the use of the armored cars, as they had no trench-crossing capability whatsoever.[3] Churchill and others in the Admiralty thus began a search for an armored vehicle which could cross trenches.

During October 1914, Churchill became interested in an armored caterpillar tractor designed by the general manager of the Coventry Ordnance Works, Rear Admiral R.H.S. Bacon.[4] In November, Churchill ordered Bacon to produce a prototype of his armored tractor for testing.[5] Unfortunately, the "War Office subjected the prototype of this caterpillar to a test of achievement so exacting that it was never to be attained by any tank throughout the Kaiser's war. Understandably, Bacon's caterpillar failed."[6] This was to be the first of several failures.

In December, Churchill became interested in a project suggested by Colonel E. D. Swinton. Independently of Admiral Bacon, Colonel Swinton proposed that an armored caterpillar vehicle be used to cross trenches and to crush barbed wire fortifica-

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tions.[7] On 5 January 1915, Churchill wrote a letter, based on Swinton's proposal, to Prime Minister Herbert Asquith. In his letter, Churchill stated:

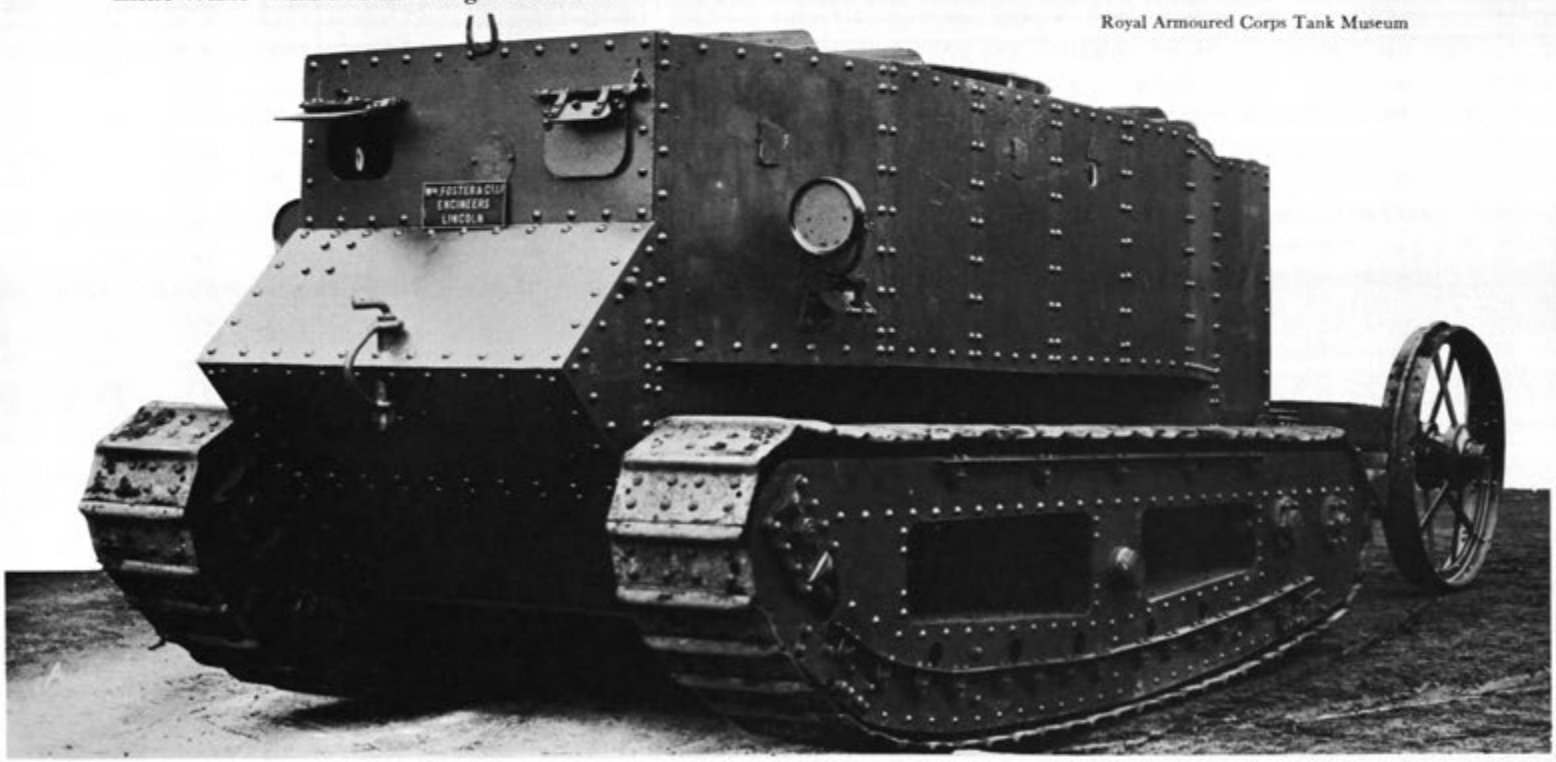
> The present war has revolutionized all military theories about the field of fire. The power of the rifle is so great that 100 yards is held sufficient to stop any rush, and in order to avoid the severity of the artillery fire, trenches are often dug on the reverse slope of positions. . . . The consequence is that the war has become a short range instead of a long range war as was expected, and opposing trenches get even closer together for mutual safety from each other's artillery fire.
>
> The question to be solved is not, therefore, the long attack over a carefully prepared glacis of former times, but the actual getting across of 100 or 200 yards of open space and wire entanglements. All this was apparent more than two months ago, but no steps have been taken and no preparation made.
>
> It would be quite easy in a short time to fit up a number of steam tractors with small armoured shelters, in which men and machine guns could be placed, which would be bullet-proof. . . . The caterpillar system would enable trenches to be crossed quite easily, and the weight of the machine would destroy all wire entanglements.
>
> Forty or fifty of these engines, prepared secretly and brought into position at nightfall, could advance quite certainly into the enemy's trenches, smashing away all the obstructions and sweeping the trenches with their machine-gun fire. They would make so many *points d'appui* for the British supporting infantry to rush forward and rally on them. They can then move forward to attack the second line of trenches.
>
> The cost would be small. If the experiment did not answer, what harm would be done? An obvious measure of prudence would have been to have started something like this two months ago. It should certainly be done now.[8]

Prime Minister Asquith approved the proposal contained in the letter. Unfortunately, Churchill's letter was eventually forwarded to the Master General of the Ordnance, the man in charge of research and development, who promptly pigeonholed it.[9] This action, in Churchill's words, "was mortal to the second attempt to make a tank, and the project was decently interred in the archives of the War Office." [10]

By January 1915, Churchill became interested in the idea of using an armored steam-roller to crush trenches. He ordered Commodore Murray Sueter, the Director of the Air Division of the Royal Navy, to carry out several tests in this regard. Commodore Sueter "did not quite see what trench warfare had to do with either the Royal Navy or the Air Service." [11] Nonetheless, at Churchill's urging he carried out the steam-roller tests. The idea proved to be impractical, as "the rollers could not climb any slope and dug themselves into the ground." [12]

"Little Willie" with 105 HP weighed 18 tons

Royal Armoured Corps Tank Museum



These initial failures put heavy pressure upon Churchill to abandon the entire project. In addition, they reinforced the doubts and skepticism expressed by many officials in the British government. The Engineer-in-Chief of the War Council did not believe that it was possible to construct a machine capable of crossing trenches and barbed wire fortifications. "I think," he stated, "that before considering this proposal we should descend from the realm of imagination to solid facts." [13] The British War Office also felt that the project should be abandoned. "Military officialdom in Great Britain had not received the suggestion of the war tank with acclaim or understanding. It was new, and powered with an internal combustion engine, and Whitehall . . . still calculated in terms of sabers, lances, cavalry charges, and the heroic movement of horse artillery." [14] Discouragement even appeared among several members of the Royal Naval Air Service working on the project. These officers were becoming "weary of cracking hard nuts which were the proper concern of the Army." In the face of such criticism and lack of success, "there is no doubt that but for the insistence of the First Lord, the experiments would have been abandoned." [15] Churchill refused to become discouraged or dismayed. Indeed, early failures and official obstructions only seemed to make him all the more determined to carry the project through in some form or another." [16] "His very self-will was an asset and for the time he willed above all else the tanks." [17]

On 20 February 1915, Churchill established an Admiralty committee to further study the problem of developing an armored vehicle capable of crossing trenches.[18] This committee, the Landships Committee, was headed by the Chief Constructor of the Navy, Mr. Tennyson d'Eyncourt, who was urged by Churchill to "labor to the very utmost to secure a solution of the problem." [19] The title Landships Committee reflects the fact that it was the Navy, and not the Army, which was working at solving the problem of overcoming the trench and the machinegun. Indeed, the work of the Landships Committee "excited suspicion in military quarters, where the intrusion of the Navy into the field of land warfare was not appreciated." [20]

On 20 March 1915, d'Eyncourt reported to Churchill that two types of armored vehicles, one moved by large wheels and the other by caterpillar action, were worthy of further study and development. Based on this report, Churchill, on 26 March, authorized the construction of 12 tracked and six wheeled prototypes.[21] Churchill acted completely on his own and did not consult with the Admiralty Board, the Army Council, the War Office, or the Treasury! This bold, almost unprecedented and certainly unconstitutional action was prompted by Churchill's fear that the landships' construction would be disapproved by the *conventional minds* in the government.[22] In Churchill's own words:

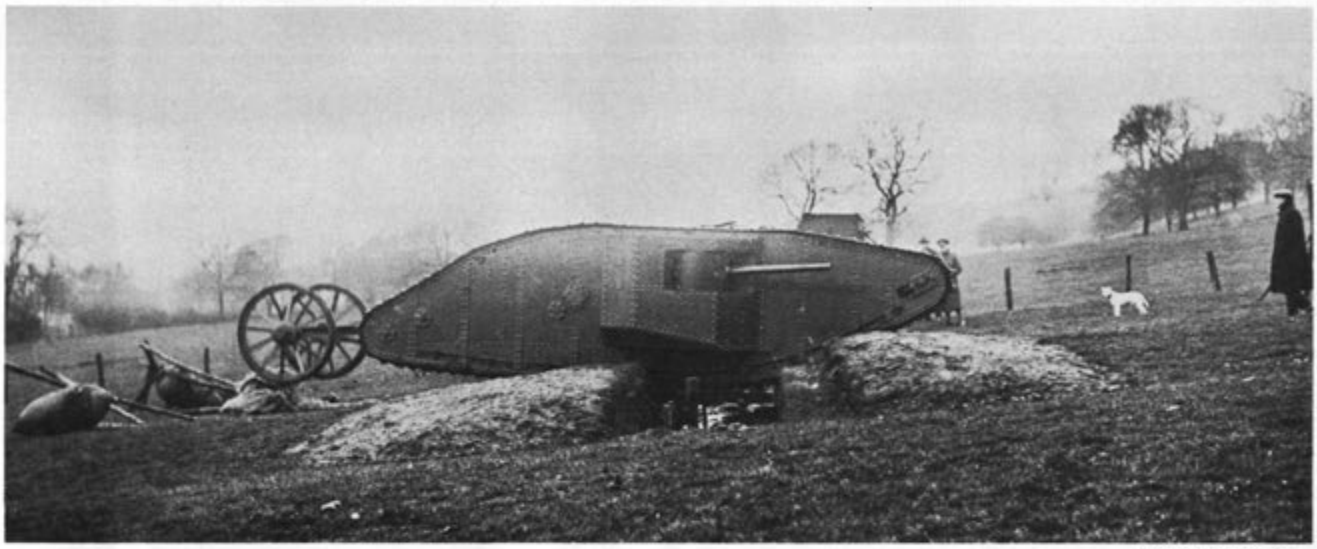
> I thus took personal responsibility for the expenditure of the public money involved. . . . It was a serious decision to spend this large sum of money on a project so speculative, about the merits of which no high expert military or naval authority had been convinced. The matter, moreover, was entirely outside the scope of my own Department or of any normal powers which I possessed. Had the tanks proved wholly abortive or never been accepted or never used in war by the military authorities, and had I been subsequently summoned before a Parliamentary Committee, I could have offered no effective defence to the charge that I had wasted public money on a matter which was not in any way my business and in regard to which I had not received expert advice in any responsible military quarter. The extremely grave situation of the war, and my conviction of the need of breaking down the deadlock which blocked the production of these engines, are my defence; but that defence is only valid in view of their enormous subsequent success.[23]

Churchill certainly received little support for his project outside the small group of enthusiasts actually working with the Landships Committee. Military authorities were particularly lacking in their encouragement of the project, and they contemptuously referred to the new machines as *"Winston's Folly."* [24] Indeed, one of Churchill's principal subordinates, the Fourth Sea Lord of the Admiralty, stated:

> Caterpillar landships are idiotic and useless. Nobody has asked for them and nobody wants them. Those officers and men working with the Landships Committee are wasting their time and are not pulling their proper weight in the war. If I had my way I would disband the whole lot of them. Anyhow, I am going to do my best to see that it is done and stop this . . . caterpillar landship nonsense.[25]

Such criticism, however, was unable to halt the developmental work on the landship. Due largely to Churchill's initiative, drive, and persistence, the Landships Committee was firmly established and its progress would not be halted.

The work of the Landships Committee eventually produced *Little Willie,* an armored tractor, and *Mother,* the first true tank, which mounted two six-pounder guns and three automatic rifles.[26] On 15 September 1916, the British introduced the tank into combat during the Battle of the Somme.[27] "From the formation of this [Landships] Com-



Imperial War Museum

"Mother" during trials January 1914 at Burton Park, England. Production versions of this machine were issued as Heavy Tank Mark I.

mittee on February 20, 1915, till the appearance of tanks in action . . . during the Battle of the Somme, there is an unbroken chain of causation."[28]

Winston Churchill left the Admiralty before the first battle tank was produced. The importance of his efforts, however, did not go unrecognized. At the end of World War I, the British government appointed a Royal Commission to judge the claims of various inventors in regard to the tank. The Commission's report stated: "In the first place, the Commission desire to record their view that it was primarily due to the receptivity, courage, and driving force of the Right Honorable Winston Spencer Churchill that the general idea of the use of such an instrument of warfare as the tank was converted into a practical shape."[29] Churchill has been called both the *father of the tank*[30] and the *godparent of the tank*[31] There were, however, too many people involved in the evolution of the tank for any one man to be so designated.[32] Churchill placed his own role in the tanks' development in true prespective when he stated: "There never was a moment when it was possible to say that a tank had been *invented*. There never was a person about whom it could be said *this man invented the tank*. But there was a moment when the actual manufacture of the first tanks was definitely ordered, and there was a moment when an effective machine was designed as the direct outcome of this authorization."[33]

Several men share the credit for overcoming the mechanical and technical problems involved in the tank's development. However, "without the original perception and patronage of Winston [Churchill], the vision of the inventor might never have resulted in any practical achievement."[34] It was due to Churchill's initiative and foresight that the search for a vehicle able to cross trenches was vigorously pressed forward, and it was due to Churchill's encouragement and persistence that the disheartening process of experiment was carried on until the tank came into being.[34] It has been said that "without Churchill, the tank might not have been born at all, certainly not in 1915."[35]

FOOTNOTES

[1]*Churchill By His Contemporaries,* ed. Charles Eade (New York, 1954), p. 21.
[2]Lewis Broad, *Winston Churchill, 1874-1951* (New York, 1952), p. 5.
[3]B. H. Liddell Hart, *The Tanks, Volume One, 1914-1939* (New York, 1959), p. 20.
[4]*Ibid.*, p. 20.
[5]*Ibid.*, p. 21.
[6]*Churchill By His Contemporaries,* p. 22.
[7]Hart, *op. cit.*, p. 24.
[8]Sir Albert G. Stern, *Tanks, 1914-1918* (London, 1919) pp. 11-12.
[9]*Churchill By His Contemporaries,* p. 22.
[10]*The World Crisis* (New York, 1931), p. 314.
[11]Broad, *op. cit.*, pp. 163-164.
[12]Hart, *op. cit.*, p. 26.
[13]Arch Whitehouse, *Tank* (New York, 1960), p. 30.
[14]*Ibid.*, p. 20.
[15]Broad, *op. cit.*, p. 164.
[16]*Churchill By His Contemporaries,* p. 22.
[17]Sir George Arthur, *Concerning Winston Spencer Churchill* (New York, 1951), p. 153.
[18]*Churchill By His Contemporaries,* p. 22.
[19]Hart, *op. cit.*, p. 31.
[20]*Ibid.*, p. 33.
[21]*Ibid.*, pp. 31-32.
[22]Sir Winston S. Churchill, *A Churchill Reader* (Boston, 1954), p. 235.
[23]*The World Crisis,* pp. 316-317.
[24]Broad, *op. cit.*, p. 165.
[25]Hart, *op. cit.*, p. 35.
[26]Stern, *op. cit.*, p. 51.
[27]Hart, *op. cit.*, p. 71.
[28]Hart, *op. cit.*, p. 31.
[29]Broad, *op. cit.*, p. 161.
[30]*Churchill By His Contemporaries,* p. 381.
[31]Hart, *op. cit.*, p. 257.
[32]Broad, *op. cit.*, p. 161.
[33]*The World Crisis,* p. 317.
[34]Broad, *op. cit.*, p. 161.
[35]*Churchill By His Contemporaries,* p. 23.

HINTS FOR THE JUNIOR STAFF OFFICER

By CAPTAIN JOHN B. ROSAMOND

If you have over three years commissioned service and have attended The Advanced Course or The Command and General Staff College, you could be wasting your time by reading this article.

CAPTAIN JOHN B. ROSAMOND *was commissioned in 1958 from Mississippi State University. He graduated from the Finance Officers Basic Course in 1959, the Infantry Officers Basic Course and the Airborne Course in 1960, and the Ranger Course in 1961. He was then assigned to the 1st Battalion, 6th Infantry, 1st Armored Division at Fort Hood, Texas, where he served as a rifle platoon leader, scout platoon leader, company executive officer, S3-Air, and company commander. In April 1963, he was assigned to the 1st Battalion, 509th Infantry (Abn/Mech), Germany, where he served as a company commander and battalion S3. He then served as Assistant G3, (Plans) in Headquarters, 8th Infantry Division. Captain Rosamond is a 1967 graduate of the Armor Officers Advanced Course.*

If you have less than three years commissioned service this article should be of interest and of value to you.

Today we find junior officers being assigned to battalion, brigade and, in some cases, division staffs. It is not my intent to discuss the merits of these junior officers being assigned to staff positions. Rather, it is to give the junior officer who is assigned to a staff job a few observations on what makes a good staff officer and a few hints on staff procedure which may help him.

THE MILITARY STAFF

First, what is a military staff and how is it organized? Webster defines the staff as: "An establishment of officers not having administrative and

executive duties." This definition is general and applies mainly to 18th and 19th century concepts of the staff officer. At that time staff functions were quite similar to those of a present-day general's aide-de-camp. A more comprehensive definition of a staff, found in the Dictionary of United States Army Terms (Army Regulations 320-5) is: "Officers who are specifically ordered or detailed to assist the commander in his exercise of command. The staff provides information for the commander, makes a continuing study of the situation for anticipated planning, submits recommendations as to plans and orders on its own initiative or in response to directives, translates decisions of the commander into orders, and provides for dissemination thereof, and supervises as directed, the execution of orders to insure adherence to and successful execution of the intentions and policies of the commander."

A simpler definition of the staff is: "A group of officers to assist the commander by studying, coordinating, recommending, supervising and directing the efforts of the command."

The latter definition applies to all staff levels. It is important that a new staff officer understand these definitions and how they govern him in the performance of his duties. To better understand the definitions and the five staff functions outlined therein, we should address each function separately.

GET THE FACTS

Just how does *study* fit into the life of a staff officer? When we study a problem or situation, we are normally seeking an answer or a solution to a particular problem.

An example of a lack of study is the brigade adjutant (S1) who informed his commander that the award of the US Army parachutist badge was the decision of the senior airborne commander. After this briefing, the commander decided to issue this badge to a group of Allied officers who made military parachute jumps with his unit. He then directed his adjutant to request orders awarding the badge from division headquarters. The adjutant submitted the request for orders. When the request arrived at division, its validity was questioned and the request was disapproved. The adjutant informed the brigade commander that the request for orders was disapproved and further stated he did not understand why. The commander's actions normally would be to instruct the adjutant to find out the reasons for the disapproval or he might call the division G1 on the matter himself.

Regardless of the commander's action, the adjutant is in trouble simply because he briefed the commander without proper study of the problem. He misled the commander by giving him false information. This caused embarrassment to the commander as well as showing his own lack of professional ability. The point to remember is to *assemble the facts* concerning any given situation before proceeding further. The only way to obtain these facts is by studying the pertinent regulations, directives, and standing operating procedures governing the problem or situation.

THE STAFF IS A TEAM

Next, the staff officer must *coordinate* all his efforts with the appropriate staff officers in his own headquarters, lower headquarters, higher headquarters and, in some cases, adjacent headquarters. The staff officer coordinates only with those staff members who have an interest in the matter on which he is working and who must concur or nonconcur with his proposed action. However, it is well to *inform* all principal and special staff sections of the proposed action.

The specific areas for which each staff section is responsible are not addressed herein, nor is it necessary. However, the newly assigned staff officer should realize that a special staff exists. The complexity of this staff depends on the level of the command. Special staff officers include the chemical officer, aviation officer, engineer officer, signal officer, inspector general, provost marshal, adjutant general, civil affairs officer, and information officer. The area of staff interest of the special staff officer is usually identified by his title.

When you have been notified that you are being assigned to a staff position, you should then learn the detailed responsibilities of each principal and special staff section of the staff you are to join. This information can be found in a number of publications. The best source of information is FM 101-5. This FM is excellent and is often referred to as *The Staff Officer's Bible.* In addition, larger headquarters will have an organization and functions manual.

Staff coordination can be accomplished by a phone call, a written communication, or a visit with the staff officer with whom coordination is necessary. The latter is the most effective method and it is recommended.

Lack of staff coordination can cause a unit to fail in the accomplishment of its mission. Proper coordination insures that the staff accomplishes the desires of the commander.

A striking example of failure in staff coordination occurred when a Brigade S4 failed to notify

the Brigade S3 that he was changing the assigned location of the brigade trains for a field training exercise. Yes, you guessed correctly, the Brigade S3 planned to use the same area for a unit assembly area. The lack of staff coordination in this case caused a major change in the conduct of the exercise and the relief of the Brigade S4.

The point is that *coordination is a must* and that it is a staff officer's lifeline. Remember, a two minute conversation with another staff officer could save hours of work straightening out an uncoordinated action. It is better to over-coordinate than to under-coordinate.

RECOMMENDING ACTION

Let us assume that a staff officer has properly studied and coordinated an action. The next thing he must do is to *recommend* to the commander. This can be done orally by briefing the commander or in writing by use of the staff study. Usually the briefing is the most effective and practical.

First, the staff officer should present his recommendations to the executive officer or the chief of the staff. Frequently, this is done at a briefing with other members of the staff present. This gives the staff coordinator the opportunity to approve, disapprove or modify the recommendations prior to their being presented to the commander. The presentation to the executive officer or chief of staff is critical, because coordination of a staff action is his responsibility. This also serves to keep him informed. Additionally, this first briefing is a rehearsal for the command briefing.

The important things, when using the briefing as a means of presentation, are: complete knowledge of the subject, logical development of the subject matter and a strong conclusive recommendation that reflects a sound solution to the problem.

If possible, arrange to have the entire staff present for the commander's briefing. This is a technique which will cause the commander to realize that proper staffing of the action has taken place. In addition, the staff is available to answer detailed questions as they arise.

The second method of presenting recommendations is the staff study. This method is normally used when a relatively complex action is submitted to the commander for approval or disapproval. The thing to remember here is that the staff study is normally used when time is not a critical factor. The proper staff study format together with examples can be found in FM 101-5.

STAFF SUPERVISION

The staff officer must *supervise* the execution of directives and orders published by his headquarters. The purpose of this supervision is to insure that the commander's desires and intentions are being carried out by those executing his orders and directives.

Staff supervision usually takes the form of a visit by the staff officer to a subordinate command. There are certain requirements for the staff officer making a staff visit. He should visit the subordinate unit commander or his headquarters and state the purpose of his visit and offer his assistance if the commander has problems related to his staff area of interest. Prior to departing the unit, he should inform the commander of the results of the visit. These requirements are a must for every staff visit and are no more than common courtesy. Omitting any of them will reflect unfavorably on you as a staff officer, and more importantly, on your commander and his entire headquarters.

STAFF AUTHORITY

Often, as a staff officer, you find yourself in a position of *directing,* or *making a decision,* on behalf of the commander. The guidelines for directing or making a decision are very simple.

You can enforce approved directives and orders for the commander unless he has specifically retained this authority.

Directing or making decisions on matters that do not have command approval is not a staff officer's responsibility or function. If such a case arises, inform the person requesting a command decision that you cannot make a decision because of its nature, but that you will get a decision on the matter and let him know the commander's desires. Once you have committed yourself to obtain a command decision for a subordinate commander, it is imperative that you do so. Also, remember that a staff officer usually can say *Yes,* but rarely can he say *No* for his commander.

YOU AND THE CHIEF

The executive officer or chief of staff—the staff coordinator—often coordinates the staff by holding weekly conferences. The techniques used by the staff coordinator are not too important to the junior staff officer, but his policies are. Staff coordinators normally lay the ground rules for their relationships

with staff officers. The policies and ground rules vary with each staff coordinator. Therefore, guidance from an experienced member of the staff serves as the best source of advice for developing a satisfactory relationship with the staff coordinator. Remember, no two staff coordinators will supervise the staff in the same manner.

SOME TRICKS OF THE TRADE

As with any job assignment in the army, there are certain tricks of the trade which apply to the staff officer. These could be referred to as the *Do's* and *Don'ts* for the staff officer.

First the DO'S:

Always keep your commander informed. Remember it is better for him to get distasteful news from within his own headquarters rather than from an outside agency.

Solve problems for the commander. Do not create them.

Prior to recommending an action to the commander ask yourself, *"How would I react to this advice?"*

Maintain a positive attitude.

Now, the DON'TS:

Do not belittle the subordinate commands.

Do not avoid unpleasant issues related to a subordinate command when they affect the accomplishment of your commander's mission.

Do not show favoritism to certain subordinate commands or commanders.

Do not commit your commander through staff channels unless he is aware of the commitment.

STAFF DUTY — SENTENCE OR REWARD

Officers who serve as staff officers are normally selected personally by the commander or by his staff coordinator. The criteria used normally encompass intelligence, ability to write, ability to speak, professional knowledge and experience.

Being assigned to a staff position is a step forward in an officer's career. Your tour as a staff officer can be enjoyable and professionally rewarding or it can be a professional disaster. The decision is yours.

LIEUTENANT GENERAL GORDON B. ROGERS

Lieutenant General Gordon B. Rogers, U. S. Army —Retired, an Honorary Vice President of The United States Armor Association since 1962, died 2 July 1967 in Washington. General Rogers was graduated from the United States Military Academy in 1924 and was commissioned in the cavalry. During World War II, he served as G2 of I Corps in Australia and New Guinea and later as G2 of Army Ground Forces. In the Korean War he commanded the 40th Infantry Division and served as Chief, Korean Military Advisory Group. General Rogers was promoted to Lieutenant General in 1958 and assumed command of VII Corps in Europe. Later, he returned to the United States to become Deputy Commanding General of the United States Continental Army Command. Following his retirement in 1961 he served in Paris as chief of a NATO weapons development team. General Rogers was the holder of many decorations to include the Distinguished Service Cross with Oak Leaf Cluster, the Distinguished Service Medal, the Legion of Merit with two Oak Leaf Clusters and the Purple Heart.

Sketch by Robert Martin

ARMOR CAN BE STOPPED

BY BILL HERMAN

As the result of some mighty strange happenings, this article appeared in INFANTRY *some years ago. From time to time we have received queries asking when it would appear in ARMOR or requests that we print it. In response to these, and with the kind permission of the Editor of* INFANTRY, *here it is. We are assured that this is a true tale which can be vouched for by the participants whose careers have progressed nicely notwithstanding the events herein reported on. In view of the many new items of equipment being issued to Armor units, this item appears timely. The moral of the story seems to be that there is no place in Armor for preconceptions or unwarranted assumptions.*—EDITOR

The trip of the M48 from the drawing board to the Line of Departure is well known. What happened after it crossed the LD on its first major maneuver in Europe is another story—a story that has been cherished by those few who were tuned in on a certain radio net or were able to get a "relay" during the ensuing years.

The event took place in a forward armored cavalry regiment, during a full-scale NATO maneuver in central Germany. One tank company in one of the recon battalions received first delivery of the long-promised M48s. That battalion took to the field in full-cry: "We've got the tanks—just say 'Go!' and we'll drive Aggressor right into the North

Sea!" or "We'll wash our tracks in the Zuider Zee!"

As the maneuver progressed, each day was one of tense excitement and anticipation of the moment Tank Company would be committed with its fearsome new weapon. And *everybody* waited. Troopers never showed more curiosity in the hourly progress of the play. Truck drivers flagged down liaison officers and mechanics flagged down scout sections (or any vehicle with a radio set). Always the same terse conversation:

"Yet?"

"No, not yet!"

Each time Tank Company moved—carefully and majestically—from one assembly area to another, every tactical and administrative net in the regiment carried the news: "Tank Company is moving forward!" Or the rumor: "Tank Company is being sent in!"

But by the third day it was still "No, not yet!" The moment was never right to let the awe-stricken enemy know what real shock-action meant. (The enemy was awe-stricken because he was on the regiment's net, too, wondering when the Big Weapon would be committed.)

The opportunities to commit came and went as the battalion commander and the S3 agreed and disagreed. The entire staff took violent sides around the most pawed-over situation map in the Blue Army, while regimental and corps radio nets carried thinly-veiled transmissions ending with "No, not yet."

Then suddenly over the net came The Word:

"Heedless Six, this is Hot Trot Six . . . Phaseline Bravo is your Line of Departure—Go! And exploit! Exploit!"

Before Heedless Six could acknowledge, the net was hopelessly jammed, in both the Blue and Red Armies.

"They're in!"

"The Big Horses are loose!"

The radio nets went miraculously quiet a few moments after the electrifying news was passed. All nets were tuned in on the "Heedless" channel, listening for the voice of Captain Handrail, commander of the M48 assault. The rest of the story can only be told in the radio transmissions of the next few memorable moments:

"Hot Trot Six . . . this is Heedless Six. I have crossed the LD at 0946."

"This is Hot Trot Six. Roger. Where are you."

"This is Heedless Six. I'm in the lead tank."

"This is Hot Trot Six. Excellent. Disregard phaselines. Exploit—exploit . . . Have a big day!"

A pause followed. The pause stretched to a wait. Somewhere a mike switch opened and closed. The switch opened again.

"This is Heedless Six. I am stopped."

"This is Hot Trot Six. Say again after 'I am.' "

"This is Heedless Six. I say again—'stopped!' 'Stopped!' "

"To Hell with radio procedure—what do you mean *stopped?"*

"I said stopped! Dammit—stopped!"

"Where?"

"About half a 'K' from the LD."

"Stopped by what?"

Pause—getting longer.

"Get that? What stopped you?"

Another pause, then: "A ox!"

"Did you say 'ox'?"

"Affirmative—a ox!"

"You mean *an* ox?"

" 'An'—'A'—it's still a damn ox and if I ever . . ."

"Wait! Please! In slow, simple words: what's going on?"

"It's simple. I just crossed the LD on this narrow farm road an' there comes this German burgher with his cart and ox."

"Well, tell him to move!"

"He won't!"

"Why not?"

"It's his road!"

"Well what's he doing?"

"Just sitting there hollering 'Nein, Nein'!"

"Reason with him. Get somebody to talk to him. You're holding up the assault."

"I'm not holding it up! My troopers have unhitched the ox, and they're trying to push him over with their shoulders, but this is the biggest damn ox—I'm going to fire a blank round over his head!"

"No! Stop! You will NOT fire a round, Y'hear? Acknowledge!"

Pause. Dead silence (except for flight leader complaining he's running out of fuel waiting in rendezvous over objective).

"Heedless Six! Acknowledge that you will *not* fire a round at the ox!"

"This is Heedless Six. (Sigh) I will not fire a round at any ox."

"Or *over* any ox."

"Or over any ox."

"How are you doing? What's going on? The ox still there?"

"(Sigh) The ox is still here."

"Well . . . well, what about him? What's he doing?"

The dead pause again.

"Heedless Six—Sam! Where is the ox now?"

"Right in front of my tank."

"What's he doing?"

Mike switch opens—closes.

"Sam!—what-is-the-ox-doing?"

One more pause, then:

"He's . . . he's . . . Oh, Hell—he's licking the front of my tank!"

General Haines Presents

West Point Awards

West Point's Battle Monument provided an historic setting as General Ralph E. Haines, Jr., Vice Chief of Staff of the Army and Vice President of The United States Armor Association, presented the engraved sabers awarded by the association to the two top USMA graduates commissioned in Armor. Receiving the sabers were 2d Lieutenants Roger J. Arango Jr. and Michael A. Heyne. General Haines gave a short address to those attending and welcomed the graduates to Armor in the name of the Armor Association. The ceremony was followed by a luncheon hosted for the association by Major John Mason, Senior Armor Instructor at the Military Academy and member of the Association Executive Council. Attending were General Haines, the two honorees and their families. Sabers will also be presented at a later date to the outstanding ROTC Distinguished Military Graduates being commissioned in Armor.

U. S. Armor Association

2d LIEUTENANT MICHAEL A. HEYNE

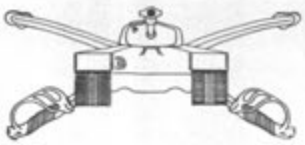
Lieutenant Heyne stood 19th in the USMA Class of 1967. Following airborne and ranger training and the Armor Officers Basic Course, Lieutenant Heyne is scheduled to join the 2d Squadron, 4th Cavalry of the 4th Armored Division in Germany. He entered the service from Cleveland, Ohio.

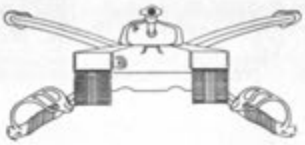
2d LIEUTENANT ROGER J. ARANGO, JR.

Lieutenant Arango stood 11th in the USMA Class of 1967. Prior to entering West Point he served as an enlisted man in the Ordnance Corps. Following ranger training and the Armor Officers Basic Course, Lieutenant Arango is scheduled to join the 2d Armored Cavalry Regiment in Germany. He entered the service from Miami, Florida.

U. S. Armor Association

ARMOR BRANCH DIRECTORY





CHIEF
COLONEL JOHN R. BARCLAY
OXford 6-8502

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Section Chief/Deputy Branch Chief
LTC JACK W. NIELSEN
OXford 6-8502

Personnel Actions
MAJ JACK M. BERINGER
MAJ WILLIAM J. MORAN
OXford 6-8529/8730

Military And Civil Education
LTC ROBERT H. LUCK
OXford 7-1210
LTC JAMES H. PATTERSON
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Programs and Plans
LTC JAMES A. DAMON, JR.
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CONUS Field Grade Assignments
MAJ ADAM JIMENEZ
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Overseas Company Grade Assignments
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CONUS Company Grade Assignments
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Aviation Program
LTC WILLIAM C. ROUSSE
OXford 6-8507/8508/8509

ADMINISTRATION SECTION

MRS. LILLIAN WESLEY
OXford 6-8756

The branch is located in Wing 3, Tempo A, on the corner of 2d Street S.W. and "V" Street. Tempo A flanks Fort McNair on the east. It can be reached readily from the Pentagon by shuttle bus. If you're driving your own car, Main 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.**

NEWS NOTES

OUTSTANDING ADVANCED COURSE GRADUATE

Captain Travis W. White receives the Armor Association award as Distinguished Honor Graduate of the Armor Officer's Advanced Course. Presenting the award is Major General John M. Wright, Jr., newly appointed Commandant of the U. S. Army Infantry School, who delivered the graduation address.

TOP GRADUATE OF LAST ARMOR ASSOCIATE CAREER COURSE

Captain Patrick J. Kelley, Jr., Corps of Engineers, won the Armor Association sterling silver Revere bowl, together with the Draper Memorial presentation pistol, as the Distinguished Honor Graduate of the last Armor Associate Career Course. Sharing the happy moment with Captain Kelley are his parents and his sister Sheila of New Canaan, Connecticut. Beginning 1 July 1967, the Associate Career Course was discontinued and the Armor Officers Advanced Courses were increased to three each year.

NEW 1ST ARMORED DIVISION COMMANDER

Major General Richard G. Stilwell has assumed command of the 1st Armored Division (Old Ironsides). General Stilwell was graduated from the United States Military Academy in 1938 and was commissioned a second lieutenant in the Corps of Engineers. During World War II he served with the 90th Division and as G-3 of the XXII Corps in Europe. Later, he commanded the 15th Infantry Regiment of the 3d Infantry Division in Korea. Following assignments as an instructor at the Army War College, with SHAPE in Europe and as Commandant of Cadets at West Point, General Stilwell became J3 MACV. From Vietnam he was transferred to Thailand where he became Commander of the Joint U. S. Military Advisory Group.

100% HELL ON WHEELS

Brigadier General Willis D. Crittenberger, Jr., is the new 2d Armored Division Assistant Division Commander for Support.

"I am the latest of the Crittenbergers to join the 2d Armored Division," the general said during the formal honor guard ceremony which welcomed him to *Hell on Wheels.*

His father, Lieutenant General Willis D. Crittenberger, U. S. Army—Retired, commanded the 2d Armored Division early in World War II. His brother, Lieutenant Colonel Dale J. Crittenberger, has also served with the division.

General Crittenberger was an armored field artilleryman with the 10th Armored Division during World War II and later served with Division Artillery of the 4th Armored Division in Germany. He recently returned from Vietnam where he served as Artillery Commander of Field Force II.

★ ★ ★

"QUARTER HORSE" WINS PRESIDENTIAL CITATION

The Presidental Unit Citation has been awarded to the 1st Squadron, 4th Cavalry for conspicuous gallantry and extraordinary heroism against hostile forces in Vietnam from 8 June to 9 July 1966. During this period the squadron was commanded by Lieutenant Colonel Leonard L. Lewane.

The 1st Division squadron was cited for three engagements that crippled a Viet Cong division and prevented it from closing National Highway 13 and overrunning Binh Long Province.

In the initial engagement Troop A was struck by three Viet Cong battalions in a marshy area affording little maneuver room. The cavalrymen, after a six-hour fight, routed the VC from their defensive emplacements.

The second engagement involved Troops B and C, which were attacked by a VC regiment. The troops were cited for a "gallant stand" resulting in "total defeat of the hostile force, whose scattered survivors fled from the battlefield."

Again attacked by a reinforced enemy regiment, Troops B and C, together with Troop D, "heroically stood their ground and broke the Viet Cong attack."

In its 112 years, the 1st Squadron, 4th Cavalry and its predecessors have earned 33 campaign streamers, omitting those for Vietnam which have not yet been officially announced. These include five for the Indian Wars, 13 for the Civil War and seven for the Philippines Insurrection.

During World War II the squadron earned another eight streamers, three with arrowheads, for campaigns in North Africa, Sicily, France and Germany. Its standard carries three streamers of the French Croix de Guerre and the fourrageres of the French Croix de Guerre and of Belgium.

No newcomer to the ranks of those units proudly displaying the Presidential Unit Citation, the 1st of the 4th won its first for World War II actions at Bogheim, Germany.

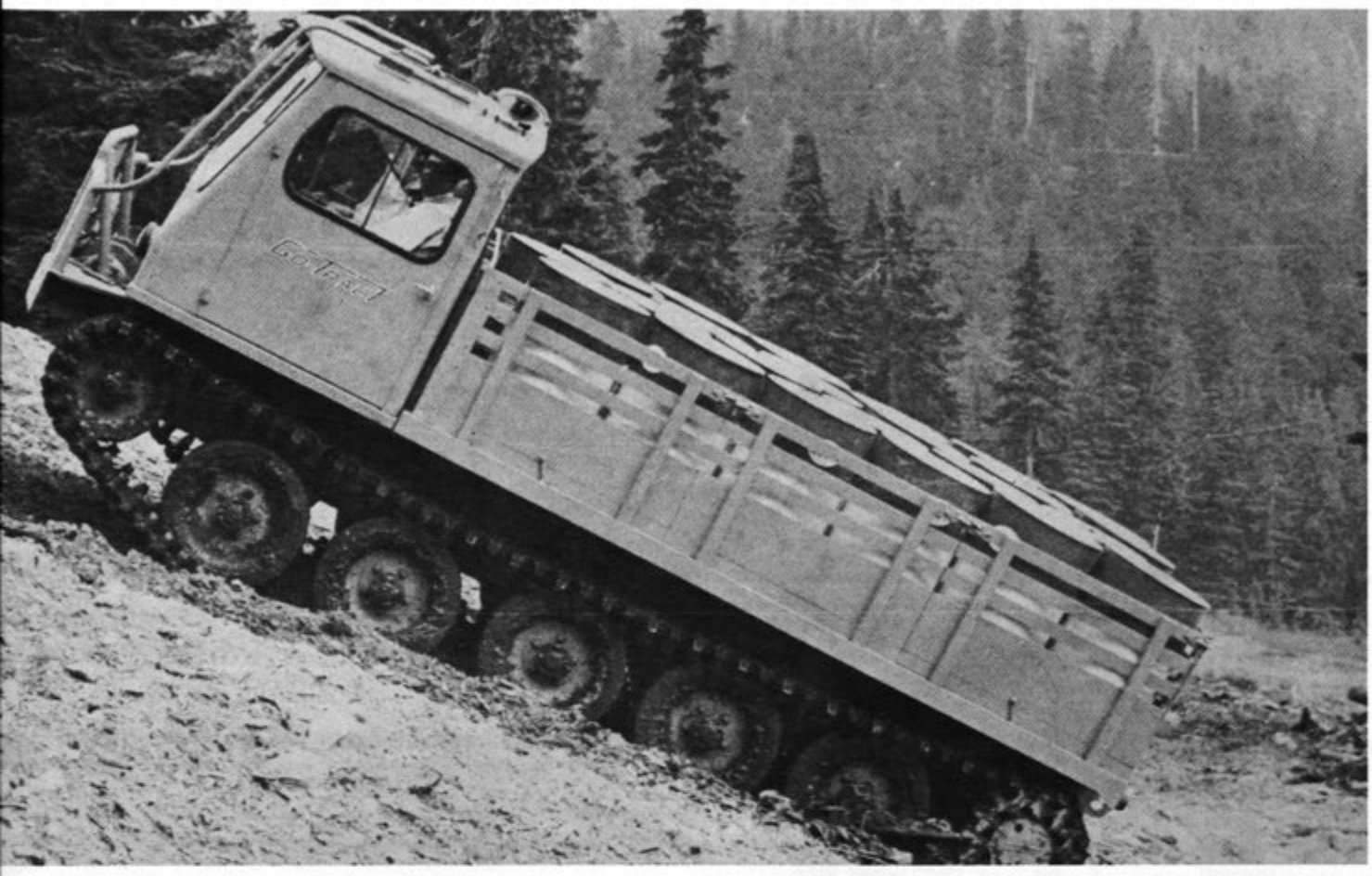
For a previous action at Ap Bau Bang, Vietnam, Troop A received the Valorous Unit Award.

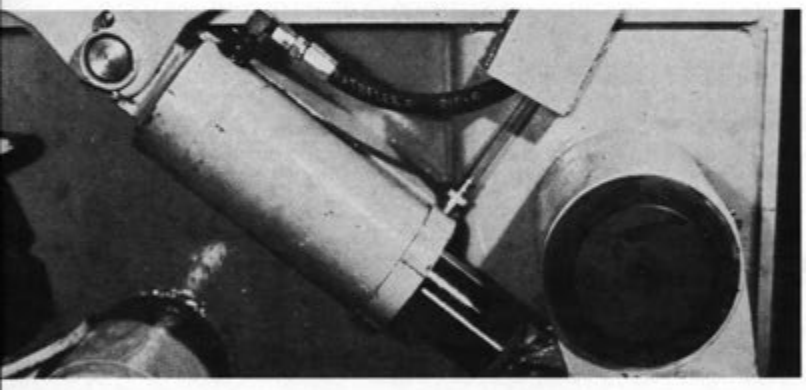
FORT KNOX, INDIANA

Indeed there was a Fort Knox, Indiana. Established in August 1787 near Vincennes, this post was garrisoned until 1816 when it was permanently abandoned.

Now a new non-profit educational and scientific organization has been formed to identify, locate, and memorialize military installations which are no longer active. The Council on Abandoned Military Posts (CAMP) will also seek to have historic former posts preserved as a means to acquaint the public with military history.

Although CAMP is headquartered in the West, its interests extend to old military stations throughout the country. Its governing body and membership includes a number of active, reserve and retired military persons. Further information is available by writing PO Box 7284, Phoenix, Arizona 85011.





Go-Tract Ltd.

A NOVEL SUSPENSION

A new commercial tracked vehicle designed to move men and material into areas with either primitive or non-existent roads is being produced by Go-Tract Limited of Les Cedres, Quebec, a subsidiary of Rolls-Royce of Canada. Called the Go-Tract Demon, this new general-purpose vehicle will roll over rock, muskeg, and stumpland as well as through mud, sand and deep snow. It handles both 60 percent grades and 40 percent side slopes with ease.

The vehicle is fitted with an automatic track tensioner to adjust for slack due to pin wear, cable stretch, or suspension flexure caused by load variations. The track tensioner also self-adjusts for a track that is too taut.

A pump driven by the engine supplies pressure to the hydraulic rams mounted behind each idler-tensioner assembly. Held under constant pressure, each track is tensioned to the optimum regardless of load variations or articulation of the suspensions. Both sides have independent systems. As soon as reverse gear is selected, the pressure in the two rams is increased to tighten the tracks in order to take up the slack between the sprocket and the last road-wheel.

A unique suspension system uses "Aeon Hollow Rubber Springs" in place of springs, torsion bars or shock absorbers. The hollow rubber springs are located at each roadarm station sandwiched between a spring seat attached to the chassis and another seat attached to the roadarm.

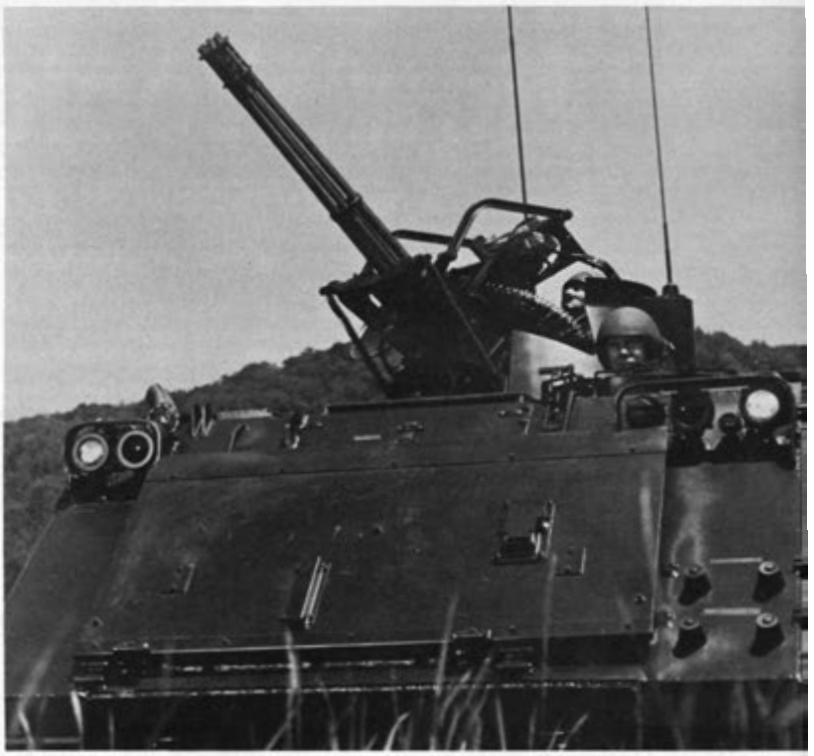
The Demons are equipped with a Ford 330 cu. in. V-8 gasoline engine and an Allison torque converter automatic transmission with six forward gears.

LONE STAR AT HOOD

Members of the 49th Armored Division, Texas Army National Guard, check armored vehicles at North Fort Hood during the annual field training period this year. The 2d Armored Division's 1st Battalion, 78th Artillery supported the Guardsmen as they sharpened skills vital to the Nation's defense.

KNOW ANY GOOD STORIES?

Many of the professional journals published throughout the world print short and factual humorous anecdotes sent in by their readers. We believe our readers have as good a sense of humor as any. We also believe that they have a lot of good material to offer. Share the wealth. Send in your tales.—Editor



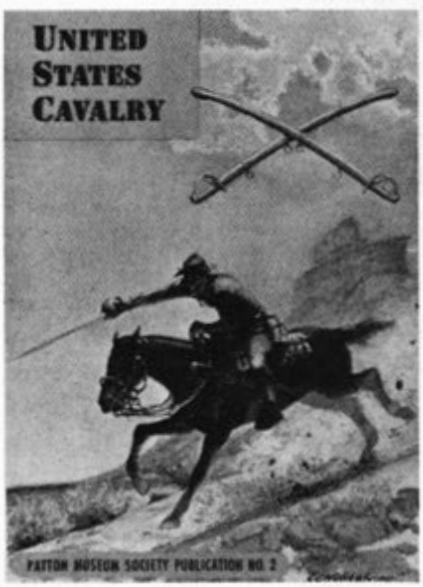
General Electric

MORE GATLING GUNS

The U. S. Army has authorized continued production of the XM-163, 20mm Vulcan Gun Air Defense System, General Electric announced.

The 6,000 shot-per-minute Vulcan aircraft gun has been redesigned as an air defense gun with a lower shot rate of 3,000 rounds-per-minute. The new six-barrel linkless ammunition Vulcan—mounted in an M-113 Armored Personnel Carrier—gives air defense capability to forward defense areas. The Vulcan turret employs a newly developed lead-computing fire control system.

A smaller version derived from the Vulcan, the 7.62mm Minigun, arms many of the Army's helicopters.



UNITED STATES CAVALRY
Patton Museum Publication No. 2

A collection of articles by W. D. Smithers, Dick Spencer III, and Randy Steffen which originally appeared in the pages of **Western Horseman** during 1960-1962.

Here the reader is offered a compendium of "horse soldier" information that treats of the Civil War years and the dying decades of the U. S. Cavalry.

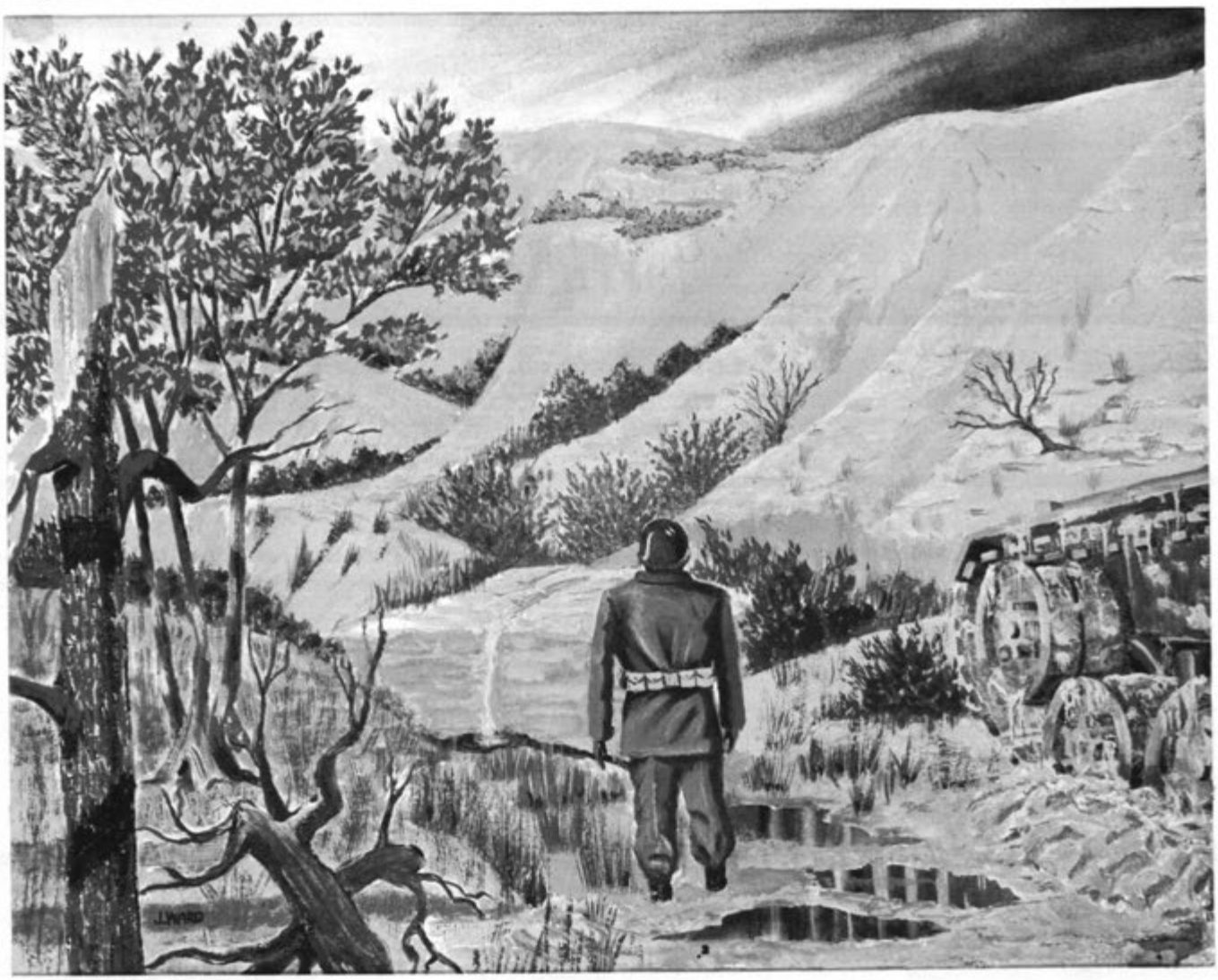
W. D. Smithers, himself an ex-trooper, writes of everyday life within the cavalry regiments patrolling the border during the hectic days of Pancho Villa. His writing is spiced with some eighty photographs, most of which he shot himself. Dick Spencer III, Editor of **Western Horseman,** provides the conclusion to these reminiscenses.

Randy Steffen, a Fellow of the Company of Military Historians and a researcher of renown, contributes a series of articles dealing with the Federal and Confederate Cavalry. His line drawings furnish details of equipment, arms, horse furniture, rank insignia, etc.; illustrations which represent years of painstaking inquiry.

This volume sells for $1.00 and proceeds from the sale of the booklet go to the Patton Museum Society. It may be obtained by writing the Patton Museum, Fort Knox, Kentucky 40121.

How Would You Do It?

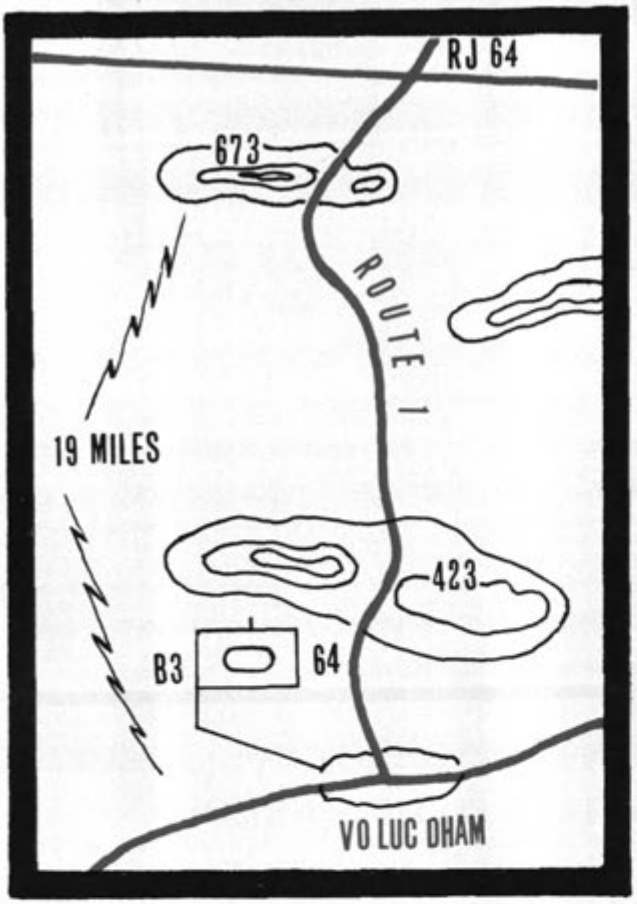
A PRESENTATION OF THE US ARMY ARMOR SCHOOL



SITUATION You are a platoon leader in Company B, 3d Battalion, 64th Armor in Vietnam and your platoon is in position outside the village of Vo Luc Dham on Hill 423. You have been directed to establish an OP on Hill 673 and report the size and disposition of enemy forces reported approaching RJ 64 on Route 1. After considering the mission you decide to send a section of two tanks, including your platoon sergeant, to the OP site. Your tank and the other two tanks of the platoon will remain at Hill 423.

When the platoon sergeant arrives at Hill 673, he finds the slope untrafficable due to the recent rains and decides to remotely operate his AN/VRC-12 radio set by using an AN/GRA-39 control group. This will enable him to leave his tank at the base of the hill—from which point he has satisfactory communication both with you and with the company CP—and physically establish the OP on the crest of the hill.

AUTHOR: CPT R W ANSLINGER **ILLUSTRATOR: JOE WARD**



PROBLEM

As the AN/GRA-39 is being installed, the loader on the platoon sergeant's tank accidentally damages the audio connectors on the front panel of his Receiver-Transmitter RT-246/VRC and the radio cable of the AN/GRA-39 local unit will no longer fit over either connector. The platoon sergeant calls you over the platoon command net and explains the nature of the problem. You immediately realize that:

(1) The distance between Hill 673 and Vo Luc Dham is too great for the AN/VRC-53 radio set in the other tank of the platoon sergeant's OP.

(2) There is not enough time for you to exchange radios with him or secure a replacement.

(3) It is imperative that the OP be established immediately to give the company advance warning of the approaching enemy forces.

HOW WOULD YOU DO IT?

SOLUTIONS

POOR—Direct the platoon sergeant to establish the OP and and use hand and arm signals to communicate from the OP to his tank. A crew member could then relay the warning to the company via radio.

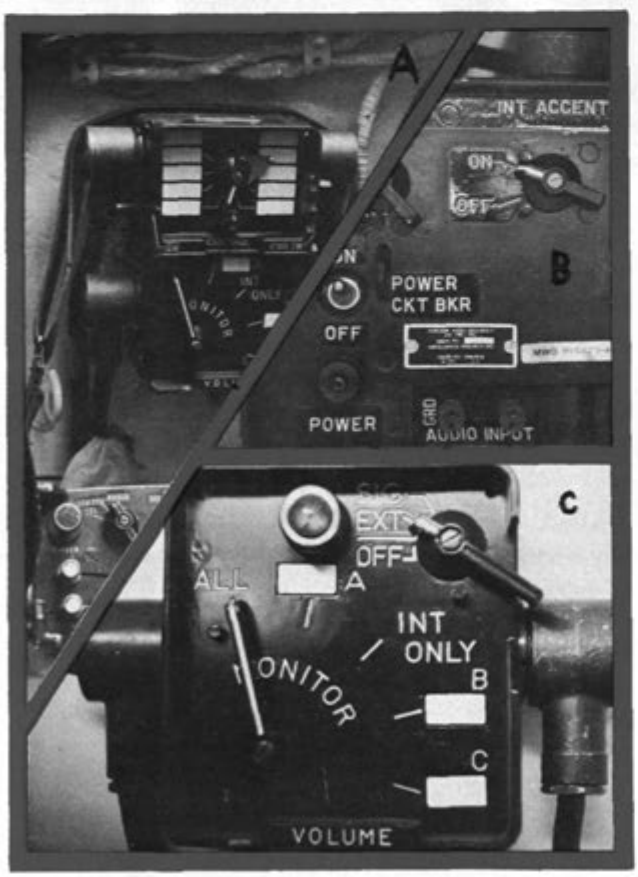
DISCUSSION: Simple visual signals could possibly be used to indicate the mere presence of enemy troops, but are not considered reliable in this instance because confusion could result over the improvised signals and thus erroneous information be transmitted to the company. Further, visual signals would prove unsatisfactory during inclement weather.

GOOD—Instruct the platoon sergeant to disregard the use of the AN/GRA-39 as a radio set control device. Instead, he can place the local and remote units into operation and use them as telephones between the OP and his tank. Information could then be relayed by a crew member to the company CP via the tank's radio set.

DISCUSSION: The use of telephone communication between the OP and the tank increases the reliability of messages passed between the two. This method, while not as advantageous as direct remote control of the radio set from the OP location, will nonetheless serve the purpose of notifying the company of approaching enemy troops.

BEST—Have the platoon sergeant connect the radio cable of the local control unit to the J802 connector on one of the C-2298/VRC control boxes; i.e., the bottom-right connector on the control box of the tank commander, loader, or gunner. This will complete the radio control circuit between the AN/GRC-39 and the AN/VRC-12 radio set.

DISCUSSION: Making the connection as described above (fig. A) will provide remote radio control of the RT-246/VRC from the OP site and eliminate the requirement for a middleman – a radio operator at the tank's location. The result is faster, more reliable communication between OP and company command post. It is essential, however, that the controls of the interphone system be positioned correctly. The amplifier RADIO TRANS switch must be in the COMDR + CREW position (unless the TC's control box is used, in which case the COMDR ONLY position could also be selected) (fig. B); the control box MONITOR switch must be placed in the ALL or the A position (fig. A); and the SIG-EXT-OFF switch on the driver's control box must be placed in the EXT position (fig. C). The wire connections remain the same as for normal installation; i.e., wire connected from LINE BINDING POSTS of the remote unit to the LINE BINDING POSTS on the TANK EXTERNAL PHONE; and a second wire joining the LINE BINDING POSTS of the Amplifier AM-1730/VRC and those of the local unit.



FIRE AND MOVEMENT
The Bargain Basement War

By Jac Weller **$6.95**

Jac Weller, one of the foremost authorities on small arms and a frequent contributor to this journal, has written a meaningful, fact-filled and well-illustrated book on the role of individual weapons in current and future military operations.

He points out that the low cost of insurgency makes it a tempting and practical form of warfare for those who seek to achieve their aims by force but with limited means. Small arms are the mainstay of this type of conflict. Its battles, like football on a muddy day, are dirty, grimy, no-holds-barred slugfests.

Victory depends for the most part on the guts of the individual contestants and the effectiveness of their personal weapons. These weapons are in effect their very lives.

Based on his extensive travels in Southeast Asia and lifelong study, Mr. Weller concludes that the key to success in counter-insurgency operations is to regain the art of our Indian-fighting forbearers to travel light, to search thoroughly missing nothing, to destroy opposition whenever found, to pursue constantly without let-up and thus, finally to conquer the elusive enemy. He makes a strong case for the need for we Americans to learn patience and to profit from the lessons of history.

This book is the best we have seen for a candid analysis of the comparative merits of the various small arms being used in Vietnam today. The author pulls no punches, but he states his position with objectivity and he recommends solutions to the problems he poses. His blunt style should appeal to military readers and others who grow tired of prose more noted for its polish than for its content.—J.G.P.

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By S. L. A. Marshall **$6.95**

"Battles in the Monsoon" is destined to become one of the most authoritative and literate accounts on the controversial war in Vietnam. Long recognized as one of the most qualified military writers in the world today, S. L. A. Marshall has forged the details of three major operations of the war into a singularly impressive combat journal. It is highly reminiscent of his classic books on the Korean War.

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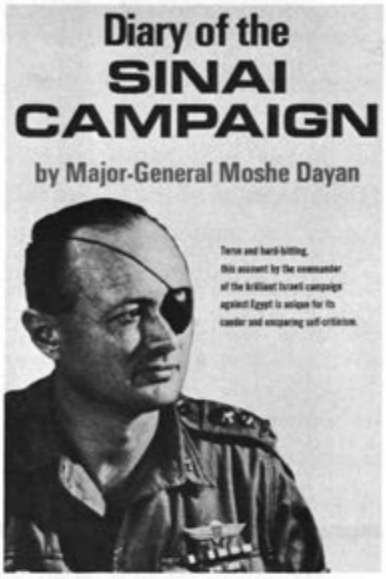
Photographs of the participants taken against the backdrop of steaming jungles and rice paddies graphically bring to life the ugly and strained face of war and the telling marks of battle.

Marshall has that rare knack of capturing with the written word the true feeling of what occurred. He knows that a hero will describe the battle and what he did as though he were no different at all from the next man. Such accounts are often missed by the less experienced author and reporter.

Marshall gives the American soldier the admiration and credit he deserves. In so doing, he has written a tough, heart-breaking and yet strangely optimistic book. He places firmly in American military history such names as "Austin 6," "Hawthorne II", and "Crazy Horse." *Battles in the Monsoon* is must reading for those who want a full and accurate understanding of the American combat soldier in Vietnam.



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AT EASE—Stories I Tell To Friends

By Dwight D. Eisenhower **$6.95**

In an early chapter of his latest book, General Eisenhower reflects upon the events which took place near his home at Gettysburg in July 1863. About some of the less famous who fought at Gettysburg he writes: "Men such as these are worthy of every American's study. They should not be lost to memory under the tags and labels that for most of us capsule our history into a few names and a few events."

Thus, unwittingly perhaps, does General Eisenhower announce the apparent purpose of his book. Thus does he reveal to the reader what he may expect to find within its pages—very warmly told stories of very real human beings. Some of the figures in his tales are well-known and others obscure. None are insignificant.

This fine volume entertains as it informs. The description of the occasional antics of some famous people should serve to convince the unbelieving that it is hardly necessary to be a stuffed shirt to achieve fame. There is nothing mean in any of the anecdotes, but their candor adds much to the history of the twentieth century in many of the major events of which Dwight David Eisenhower was either an active participant or a privileged observer.

AT EASE does not actually plead any cause. But it does make clear the author's belief in what he obviously considers the true American virtues—good homes, sound education, hard work, honesty and, above all, fair play.

Though technology has changed, and with it many customs, this fine book causes one to wonder if military careers and those pursuing them are really radically different from what they were when General Eisenhower was climbing the ladder rung by rung. AT EASE provides many perceptive insights into the lives of American soldiers, professional and citizen. Reading it is a rewarding experience. And, it is the sort of book to which one will return from time to time.—O.W.M., Jr.

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ARMOR

The Magazine of Mobile Warfare

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FEATURES

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

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Letters to the Editor

"THE CHANGING BALANCE" CONTINUED

Dear Sir:

I refer to an article in your May-June 1967 edition written by Colonel Albert Merglen, French Army, on the balance between battle tanks and tank destroyers/assault guns. Reading the article one got the impression that the author meant it was the change from strategic offense to strategic defense which was the main reason why the Germans increased the production of turretless AFVs more than they increased the production of battle tanks.

I should near believe that it was mainly economic reasons that led the Germans to trade assault guns for battle tanks.

The turretless AFV is supposed to be less expensive than the tank, but there is hardly any other reason for giving the assault gun priority, since there is no job the assault gun can do which the tank cannot do, while there are several jobs the tank can do which will be far more difficult to do with an assault gun. And, even in strategic defense, there is great need for offensive weapons.

K. A. DAHLE
Rittmester, Norwegian Army
Oslo, Norway

Dear Sir:

Referring to Colonel Merglen's article "The Changing Balance" in your May-June 1967 issue, and at the risk of further muddying the Battle Tank/Assault Gun/Tank Destroyer issue, let me offer the following thoughts and observations.

In the early years of World War II, the Germans built up considerable production of *Pz III, Pz IV,* and the Czech designed *Pz 38* vehicles. All were highly effective tanks during the 1939-41 time frame. But, these designs could not be modified to mount the very much more powerful guns required in the later years of the war and still retain the turreted configuration. Thus, in 1943, the Germans were confronted with the following situation: (1) Barely adequate production capacities for *Pz III, Pz IV,* and *Pz 38* machines existed, but as turreted tanks up-gunned to the limit of their automotives, they were no match for the very large numbers of *T 34s* being used by the Russians, (2) Production rates of their *Panther* and *Tiger* tanks, which could match the *T 34* were wholly inadequate and (3) there was a desperate need for large numbers of tracked fighting vehicles mounting ordnance heavy enough to stop the *T 34* and other opposing tanks. Under these circumstances the decision was made to convert most of the existing *Pz III, Pz IV* and *Pz 38* production capabilities to making assault guns combining much heavier tank-killing weapons with existing "off the shelf" automotive production at the sacrifice of all-around traverse. All of this is made fairly clear in General Guderian's book.

Thus at least one major reason for the shift in ratio of turreted to non-turreted combat vehicles in the German forces in World War II was a typical wartime high-level improvisation to try to match the needs of the forces in the field with existing production and had nothing to do with the change-over from the strategic offensive to the strategic defensive. It is also of note that very few non-turreted vehicles were built on *Panther* or *Tiger* automotives, and that also in the Soviet Army the ratio of non-turreted to turreted combat vehicles was very much higher in 1945 than in 1941. Here, again, the main reason seems to have been the desire to put heavier weapons on existing automotives than could be turret-mounted.

ALEXANDER M. S. McCOLL
Major, Armor
APO San Francisco

FROM A NEW MEMBER

Dear Sir:

Any publication that comes highly recommended from AFV NEWS must be exceptional. Please enter my subscription.

CHRISTOPHER WAGNER
SSG, U. S. Army
APO San Francisco

In the September issue of the Canadian AFV NEWS, George Bradford, the Editor, commented:
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FROM A FORMER EDITOR

Dear Sir:

The July-August issue of ARMOR is, in my opinion, the best issue in the entire history of the magazine. Not only are the contents first rate and to the point, but also the make-up is outstanding.

I was particularly struck by the article on battle drill written by Captain Boice. In a recent survey of Seventh Army, conducted by General I. D. White and myself for a research organization, one of the many questions asked, relating to command and control, concerned the frequency of conducting battle drill.

I think most armored divisions in World War II used battle drill techniques, especially in the pursuit where advance guard action was common. I trained my command at every opportunity during halts and it paid off. Then, during the period 1956-59, when I was an advisor at the Combat Developments Evaluation Command, I was astounded to see how few seemed to know about battle drill. So Boice's article is not only good but timely. And, his reference to Appendix VI of Field Manual 17-36 is reassuring.

WESLEY W. YALE
Colonel, U. S. Army-Retired

11th CAVALRY HISTORY

Dear Sir:

We have undertaken the task of writing a definitive history of the 11th Armored Cavalry Regiment.

Published regimental histories give only a sketchy overview of the regiment's 66 year record. There are many gaps which could be filled by the donation or loan of material from personal collections.

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JAMES T. McWAIN
Captain, Armor

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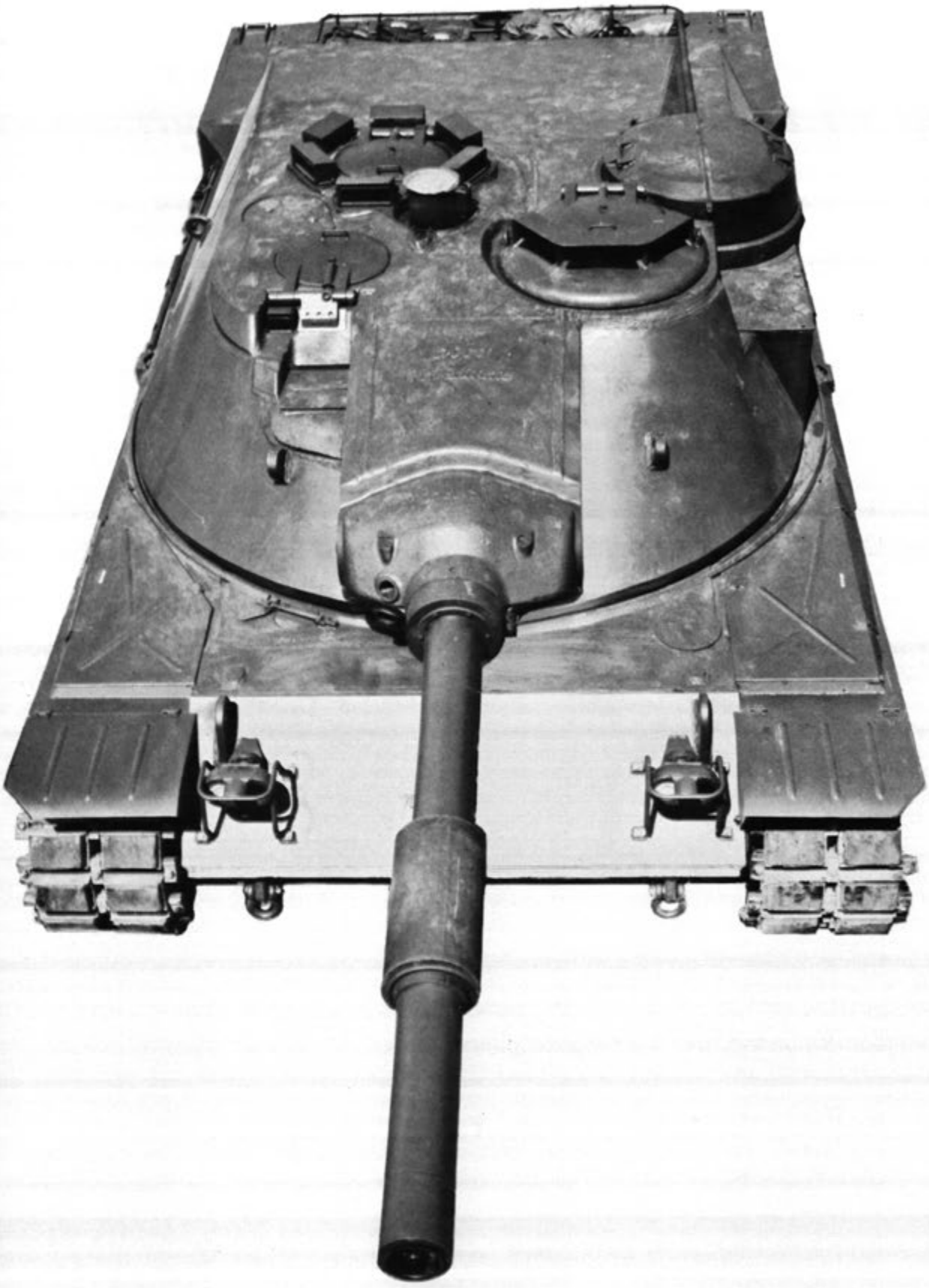


MBT 70

ARMOR'S EQUALIZER FOR FUTURE TANK WARFARE

by Lieutenant Colonel
Joseph A. DeAngelis

"For the first time in the history of modern tank design, the designers of the Main Battle Tank were given carte blanche . . . "—MG Edwin H. Burba, United States Project Manager

Mobility, firepower and shock action has long been the motto, creed and guiding star of Armor. Enhancement of these vital characteristics increases the overall effectiveness of an already highly efficient combat force.

The primary tool of Armor's trade is the "iron horse"—the tank.

Conceived in World War I and nourished by forward-thinking cavalrymen during the thirties, Armor achieved full maturity by the end of World War II, starting with the **M3** tank and progressing through the many models of the **M4** to the **M26.** From World War II to the present, Armor has advanced through the **M46,** the **M47,** and the **M48**—to the **M60** tank. Close examination reveals that, since 1950, our main battle tank has evolved through a series of design improvements of one basic tank.

Until recently, the United States Army has not had the opportunity to exploit all the major technological advances in designing a totally new tank based on current and foreseeable future requirements. On 1 August 1963, a joint agreement started a novel program which envisaged the design of a tank from the drawing board up—a tank which would incorporate all possible technological advances contributing to mobility, firepower and shock effect. It was on this date that American Secretary of Defense McNamara and Federal Republic of Germany Minister of Defense von Hassel signed a Main Battle Tank Joint Development Agreement. The objective of the agreed upon program was to design and develop a single main battle bank, producible in both countries, meeting the basic NATO military requirements to the maximum extent possible.

Costs of the program, as well as technical data generated and proprietary rights, would be shared equally. But more important, the talents and industrial know-how of the world's major tank designers would be combined in one design. Provisions were made to allow other NATO countries to participate either completely or partially in the program after the development phase was completed. The advantages of a NATO standard Main Battle Tank (MBT) were fully appreciated.

WHERE DO WE STAND NOW?

What has been the progress to date? What will be the effect on Armor of the future? To keep the men of Armor abreast of developments in their professional field of interest, these two questions must be answered.

Until now both countries have been controlling the information on MBT development for both military and political reasons. Control is still necessary. But delivery of the first United States prototype on 17 July 1967 allows an easing of this control so that these questions can now be answered in more detail.

The management structure of the MBT program has not changed since its inception. The basic agreement established a Program Management Board (PMB) of two members. These are the Program Manager for the Federal Republic of Germany, Brigadier General Doctor Helmut Schoenefeld, and the Program Manager for the United States, Major General Edwin H. Burba. The PMB has overall responsibility for the management of the program. It manages by unanimous decision.

Technically the American program project manager wears two hats. Internationally, he is the program manager responsible directly to the Secretary of Defense. Unilaterally, as project manager, he reports to the Commanding General, U. S. Army Materiel Command. In practice, he reports through the Chief of Research & Development, the Vice Chief of Staff and the Assistant Secretary of the Army for Research and Development to the Deputy

A hydropneumatic suspension allows the height of the MBT to be varied while the tank is moving.

Secretary of Defense. Throughout, he keeps the Commanding General, Army Materiel Command informed. Although seemingly complicated, this arrangement functions well. Its nature is indicative of the high national and international interest in the MBT program.

Working directly for the Program Management Board is the Joint Engineering Agency (JEA) staffed by American and German military and civil service people. The JEA executes the directives of the PMB. It is responsible for the overall design and specifications. Under the JEA is the Joint Design Team (JDT) composed of United States and Federal Republic of Germany contractor personnel. The JDT is responsible for designing joint concept items, making the engineering drawings, and proper mating of all components.

The JEA and the JDT have dual staffing with each position having both an American and a German member. The prime contractor for the United States is the General Motors Corporation. The German Development Corporation (DEG), a consortium of firms, represents the Federal Republic.

A TANK FOR ENGINEERS, OR FOR SOLDIERS?

A unique departure from any previous design effort is the Joint Users Group which has helped the program managers with many decisions. This group represents the major users in the United States and in Germany—Department of the Army, Combat Developments Command, Continental Army Command, the Armor Center and their counterparts. These users participated actively from the concept stage through the actual development by keeping continually before the PMB desirable performance characteristics for the new tank. Their recommendations have influenced the design strongly.

As General Burba has stated on numerous occasions, he is only building what the Army user wants. At times this is a problem. It is sometimes overwhelming to find out how many tank designers there are in the Army. Unilaterally, the varied user views had to be consolidated into a United States view. Internationally, this then had to be reconciled with the Federal Republic of Germany view—a sizable task indeed.

TWO HEADS ARE BETTER

Some of the problems associated with an international program are immediately apparent. Others develop as the program progresses. Two obvious difficulties were the physical separation of the two countries and the difference in language. During the concept and design the JEA/JDT was located in Augsburg, Germany. For the fabrication phase they moved to Detroit, Michigan. The PMB meets at approximately six week intervals and alternates its meeting sites between the United States and Germany. All meetings use interpreters with UN type simultaneous translation facilities.

It was determined at the start that, especially in the technical field, English and German do not adapt to literal translation. This led to a massive glossary of agreed-upon terms and definitions. Not only did words have to be translated but also engineering drawings. In drafting, the Germans use a projection different from the Americans. This compounded the communication

problem. Of deeper consequence was national pride and different economic, social and military concepts. The industry of each country was justifiably proud of its methods. But these were not always compatible in areas such as proprietary rights and data exchange, security classification and contracting practices. Through patience, understanding and day-to-day contact these difficulties were overcome and remarkable teamwork developed.

One of the first problems to be resolved was the determination of whether metric or inch threaded fasteners (screw thread) should be used. In June 1965, this was finally resolved at ministerial level with a compromise which called for iso-metric (International Standardization Organization) threads at all interfaces where components met, and the system of the developing country (inch or metric) internal to each component.

Militarily, the Federal Republic of Germany wanted a tank for Central Europe while the United States required a tank for world-wide deployment. The Federal Republic favored a high-velocity long-range gun, while the United States felt a missile was also needed for long-range accuracy and lethality. These and many other large and small differences of opinion had to be resolved, and in a relatively short time span.

First a set of jointly agreed military characteristics had to be established. These Joint Military Characteristics (JMCs) had to be consistent with each country's requirements and to the maximum extent possible with NATO requirements.

To aid in this definition of concepts, Lockheed Missile and Space Company made a parametric design/cost effectiveness study in which various concepts, and missile and conventional weapons systems, including the **M60,** the German **Leopard,** Swedish **S-tank** and others were pitted against known and potential enemy capabilities in a series of computerized battle simulations. The goal was to evolve a concept with the characteristics necessary for a tank to survive and win in the 1970 time frame. With this concept as a guide, joint working groups, in conjunction with the joint users, established the JMCs. This was a most difficult, and, at times, frustrating exercise replete with trade-offs and compromises.

The JMCs evolved were the basis for a design concept approved by both countries, in March 1965. How good is this design concept? General Burba said, "For the first time in the history of modern tank design, the designers of the MBT were given carte blanche to optimize basic design configurations into which they put an entirely new set of components developed by the best scientific and engineering know-how of the United States and Germany."

Early this year, General Creighton W. Abrams, at the time Army Vice Chief of Staff, gave Congress a progress report on the MBT. Among other things, he said, "It is a personal conviction of mine, having attended several meetings with the Germans, as well as staying on the periphery of this program from the outset, that we will have a better design and a better tank than we would have

Control of the suspension is from two separate stations in the turret. Here the MBT is in the DOWN position.

had if we had done it alone."

Between the concept and the final design drawings for the first prototype came the complicated negotiations which assigned research and development tasks to each country. During the research and development phase each country had responsibility for certain major component development and prototype build. Thus, after design data was exchanged, each country would have the capability of building a complete tank. Details had to be worked out and schedules had to be responsive to delivery dates for each component in order to permit assembly of each country's eight prototypes—a massive international jigsaw type undertaking with critical attention to specifications and standards. On 17 July 1967, as scheduled, the first of eight American prototypes was assembled and automotively functional at the Cleveland Army Tank Automotive Plant (CATAP).

A visitor to CATAP on 3 August 1967 would have joined many top civilian and military officials of the Department of Defense and of the Army who witnessed an impressive demonstration of many of the unique features of the **MBT70.**

The Heavy Equipment

ARMOR'S NEWEST UNVEILED

The new tank looked sleek, fast and powerful. Its performance proved that it was all of these and versatile as well.

Armor's newest mount has a three-man crew. The crewmen are all located in the turret. This allows a lower silhouette and better nuclear and ballistic protection.

A first in American tank design is the placement of the driver in the turret. Located in a counter-rotating capsule to the left of the tank commander, the driver is always facing in the direction of movement regardless of the position of the turret. He may drive buttoned up or with his head out.

Through his electrical driving controls, the driver has at his command the response of a 1475 HP multifuel engine. Much of the preliminary work on this engine was done by the U. S. Army Tank and Automotive Command in Detroit. Built by Continental, it is an air-cooled, 12 cylinder, 120 degree Vee, variable compression ratio engine.

It is capable of fast acceleration and high cross-country speeds.

The variable compression ratio feature operates within the cylinders and permits compression ratios between about 20 to one and 10 to one depending on cylinder pressure and loads. Officially called the **AVCR-1100-3,** this new engine automatically gives peak performance under all operating conditions. It is characterized by a power to weight ratio never before realized even in our light tanks. Hence we will have medium tank armor and armament advantages with improved light tank automotive performance.

Married to the U. S. engine is the German Renk Transmission **HSWL 354.** This is a four speed forward plus reverse hydrokinetic unit providing both automatic and manual shifting, and infinitely variable hydrostatic steering throughout the vehicle speed range.

This power plant gives the **MBT70** a greatly improved horsepower per ton ratio compared to current main battle tanks.

GIRAFFE OR LYNX—OR BOTH

Speed and power are enhanced by the hydropneumatic variable height suspension system which makes possible much increased cross-country mobility. Each road

wheel is equipped with an individual cylinder which gives improved ride characteristics by absorbing shock through the mechanical system. The tank height and clearance can be varied while running to increase mobility over rough or muddy terrain. The system features an automatic compensator idler unit. It allows the tanker the luxury of a stable, variable height gun platform with many still unexplored tactical possibilities. Control of the suspension system is from two separate stations in the turret. Since this was a high risk item, there was parallel United States and Federal Republic of Germany development. Both systems are quite similar and are compatible for production.

Transporter (HET)

MBT70 has an inherent fording capability up to the height of the top of its turret. Fording kits can extend this depth.

FIREPOWER

The MBT weapon system is expected to excel in any competition, tactical or technological, for the next ten years. It provides an increase in firepower and kill power far surpassing the hopes and expectations of present day tankers.

For the main armament **MBT70** has the **XM150** gun/launcher. This is a 152mm dual purpose tube capable of firing all the **Shillelagh** ammunition, both missile and conventional, as well as its own new high velocity conventional round. This modified **Shillelagh** system also gives additional capabilities not found on the **Sheridan** or **M60A1E2.**

The stabilization and control system provide the MBT a fire-on-the-move capability. The stabilization of the main and secondary weapon, the laser range finder and other engineering breakthroughs in the fire control system add up to an incredibly high first round hit/kill probability. "We are reaching way out in range," General Burba said. "As compared with present tanks the **MBT70** has an improved first round hit/kill probability but there is less advancement here than in its vastly improved accuracy at longer ranges."

The secondary armament includes a rapid firing 20mm cannon remotely by the tank commander or gunner at either air or ground targets, a 7.62mm machinegun mounted coaxially to the main gun and grenade launchers for close-in protection.

Replacing the loader of the **M60** tank is an automatic loader which gives the gunner or tank commander the option of selecting any type ammunition he desires, conventional or missile. This loader is a German development which has already passed its preliminary tests.

LONG NEEDED "EXTRAS"

Crew comfort has not been neglected. Extensive human factors engineering has been integrated into the tank. An environmental control/life support system (EC/LSS) provides the three-man crew with temperature and humidity control. Additional crew comforts allow the tank to be operated buttoned up in an NBC environment for long periods of time.

Not really apparent, but designed and built from the beginning, is a quality assurance and reliability never before realized in tank design. The planned module concept of repair parts should reduce tank deadline rates dramatically and bring smiles to the face of the battalion maintenance officer.

Finally, the night fighting capability augments the performance of **MBT70** and completes the picture of a highly advanced fighting machine.

DELIBERATE DESIGN DUPLICATION

The MBT program is not without technical risks, but this is to be expected when so many advanced components are integrated into a system. This explains the parallel developments in the area of weapons, engine and suspension systems. The Germans have a 120mm gun development and plan to use it in some of their tanks. They also have a heavier conventional liquid-cooled Daimler-Benz engine as a back-up, but the prime candidate is the air-cooled Continental VCR engine. Each country has developed a suspension system and both will be tested on various pilot vehicles. The Americans have a transmission which could be used if the Renk transmission does not prove out. In order to follow the directive given to Major General W. G. Dolvin, the first Program Manager, to build a highly advanced tank, it was necessary to provide these back-up and parallel component developments as insurance against failure of high risk items.

In extension of this policy, the present program contemplates advanced product improvement which will allow the incorporation of new and improved components that have been developed. These include such items as turbine engines, improved fire control and better tracks. General Burba said recently, "Every design goal has been met by components that have been developed—and these have been included in a test rig. The final proof will come when all components are tested as integrated systems. Results to date present an optimistic picture."

RELATED NEW EQUIPMENT

In addition to the tank, an associated joint program has developed a heavy equipment transporter (HET). This item is on schedule. The first semi-trailer, which is to be used for contractor tests, was delivered in June 1967. With the arrival of the first cab and frame from Germany ahead of schedule in September, the HET prototype was complete.

Unilaterally, General Burba is responsible for a companion vehicle program consisting of a Recovery Vehicle (RV), Armor Vehicle Launched Bridge (AVLB), and Combat Engineer Vehicle (CEV). These ancillary vehicles may use the MBT chassis and as many MBT components as possible.

NEW TANK—NEW THOUGHTS

This has been the progress to date. Changes in organization and doctrine which might result from the issue of the **MBT70** to units are currently under study. Among the items to be considered is the reduction in the number of crewmen from four to three. Will this affect the crew maintenance of the tank? The tank has been designed for more reliable operation for longer periods of time. With the reduced crew, should the maintenance personnel be increased? Could the practice of a blue and gold crew of the Navy be used? Would the ground crew concept of the Air Force be adaptable to the **MBT70**?

Besides the number of personnel needed for operation, what will be the effect on the size of units and the number of vehicles in a unit? Will tactical doctrine change? With the **MBT70** fire-on-the-move capability should the tank's over-watching fire role in conjunction with a maneuvering force be reexamined?

The increased range and endurance of **MBT70** with respect both to vehicle and gun, together with rapid air resupply, gives greater dimensions to the field of action for Armor. Because of the submergence capability, rivers and streams no longer need be regarded as obstacles and may be used to the advantage of an attacking force. Night vision equipment literally opens new vistas.

What will be the effect of a "Family of Vehicles" concept for combat and support vehicles in terms of maintenance and supply?

Armor has always been a forerunner, an innovator of new ideas and doctrine. The **MBT70** presents a challenge to Armor leaders. It is a sound combat vehicle and versatile beyond present realization. When it is fielded, it will be up to us to exploit fully its mobility, firepower and shock effect.

LIEUTENANT COLONEL JOSEPH A. DeANGELIS has served with the Main Battle Tank Program since his graduation from the Command and General Staff College in 1965. He is presently Chief of the Review and Analysis Branch, Systems Management Division.

Upon graduation from the United States Military Academy in 1952 he was commissioned in Armor. His first four years of service were with tank units in Europe and CONUS. He was a platoon leader, tank company executive officer and twice a tank company commander. In 1958 he was graduated from the Armor Officers Advanced Course. For the next two years he studied physics at the University of Virginia. In 1960 he returned to the Armor School to become an instructor in the Nuclear Weapons Division, Command and Staff Department. While at Fort Knox, Lieutenant Colonel DeAngelis received a Master of Science Degree in Physics from the University of Louisville.

He then served as Advisor to the Vietnamese 4th Armored Calvary Squadron. He returned from Vietnam in 1964 to attend the Command and General Staff College.

FRENCH ARMOR IN INDOCHINA

By MAJOR MICHEL HENRY

Photo E. C. Armees

MAJOR MICHEL HENRY, *French Army Liaison Officer at the U. S. Army Armor School, served in Indochina from 1951 to 1954 as an infantry company commander, as an instructor in the Vietnamese Officer School, and as a tank platoon leader with the 1st Chasseurs a Cheval and Armored Group 2. In 1956-58 he was an instructor of Reserve Officer Candidates at the French Armor School in Saumur. He served in both Morocco and Algeria. From 1961 to 1963, he was G2/G3 officer on the staff of the 1st Armored Brigade in Saarburg, Germany. He was graduated from the Ecole Superieure de Guerre in 1965 and joined the General Staff in Paris serving with the Armor Branch Training and Instruction Department. Major Henry is a Chevalier of the Legion of Honor and holds the Croix de Guerre with seven citations.*

In October 1945, units of the French Expeditionary Force landed in Indochina with a mission to reoccupy the country rapidly. Lieutenant General LeClerc, who had been the commanding general of the 2d French Armored Division in Europe in 1944-45, was in command. He employed his armored vehicles in the same classic way he had previously done in France and Germany.

By 5 February 1946, all of southern Indochina had been reoccupied. Then following the 6 March 1946 agreements with the Viet Minh, the French units landed in the north and rapidly seized control of the Tonkin delta.

Those first easy successes in a country where no armored vehicle had ever moved before, with the minor exception of a platoon of WWI *Renault-FT* tanks which had been stationed in Hanoi prior to World War II, had created a misleading atmosphere of security. This was soon confirmed when hostilities were resumed by the Viet Minh forces after 19 December 1946.

Employed for the most part in routine convoy escorts, initially the road-bound armor units suffered several serious reverses.

However, with the arrival of Marshal de Lattre in 1950, and the creation of armored and amphibious groups, French armor step-by-step regained a suitable role. It is interesting to review this evolution in the light of the classic factors—terrain, equipment, enemy, mission, organization, and tactics—as it took place over nine years of combat.

TERRAIN

In Indochina, where one finds swamps, jungles, cultivated plains, forest-covered plateaus, open hills, and rocky mountains, a large part of the country could not be crossed by any vehicle when the armor units first arrived. Roads and trails had been poorly maintained during World War II and had often been sabotaged by the enemy. Rains made them slippery and frequently impassable during the monsoon season. Those bridges still intact were not suitable for most armored vehicles. For example, to cross the Red River at Hanoi, tanks and half-tracks had to be loaded on flat cars and moved by rail over the Doumer Bridge

Nevertheless, with stubborn energy, armor leaders located the best possible secondary roads and passable cross-country routes. Routes, river and stream crossing points and trafficable areas in all sectors were classified carefully according to seasonal variations. As the result of hard work and determination, the various armored units were able to find areas in which they could maneuver. These units were able to carry the fight even across flooded rice paddies and swamps by employing certain selected vehicles. Soon, only rugged jungle areas remained impenetrable.

EQUIPMENT

French armor landed in 1945 with American vehicles used during WWII to include *M8* armored cars, *M3* scout cars, *M3* half-tracks, *M5* light tanks and *M8* 75mm self-propelled howitzers. The *M8* armored cars and *M5* light tanks had 37mm cannons as their primary weapons.

New regiments were equipped with the WWII British *Coventry* armored cars mounting a 75mm gun and *Humber* scout cars with various main armament. Some even had out-of-date 1939 model French *Panhard* armored cars. The characteristics and the faults of these vehicles were well recognized. But French industry, which had been destroyed during WWII, was at that time still unable to provide anything better. Even with their limitations, these armored vehicles were very useful for road security missions and even in actual combat.

As early as 1948, French armor, seeking eagerly for increased cross-country mobility, organized its first amphibious units and tested them in the Plain of Reeds.

The newly introduced vehicles, the *M29C* Cargo Carrier (nicknamed *Crab* by the French forces and *Weasel* by the American Army) and the *LVT 4* and *4A* (*Alligator*) were not designed for such intensive use in muddy areas. The first of these was an American cargo vehicle, without armor, designed to be employed in icy Alaska. The second was an armored personnel carrier designed for landings in the Pacific.

At first, results were disappointing. However, very soon the armor leaders discovered suitable tactics and the crews became skillful technicians. At the same time, the vehicles were fitted out with more suitable weapons and armored shields for the gunners. Most of the LVTs were equipped with two caliber .50 and two caliber .30 machineguns. Some mounted an automatic *Bofors* 40mm gun.

The dense network of rivers and canals also indicated a possible use for river boats. As early as

GETTING THROUGH IN INDOCHINA

American *Weasels* and *Alligators* of the 1e Regiment de Chasseurs in 1953 operations against the Viet Minh in Tonkin. *Weasels* were renamed *Crabs* by the French when they were introduced into Indochina with the LVT 4A *Alligator* in 1948.

At first, combat results were disappointing, but soon armor leaders became skillful technicians and dealt the Viet Minh telling blows.

Terrain obstacles, many of which were built by the Viet Minh, were overcome through hard work and ingenuity as the French hunters pursued the enemy into his lair.

All Photos E. C. Armees

Photo E. C. Armees

On 25 October 1953 the Viet Minh ambushed the 1e Regiment de Chasseurs on the road to Lai Cae, North Vietnam. The regiment wiped out 180 Viet Minh.

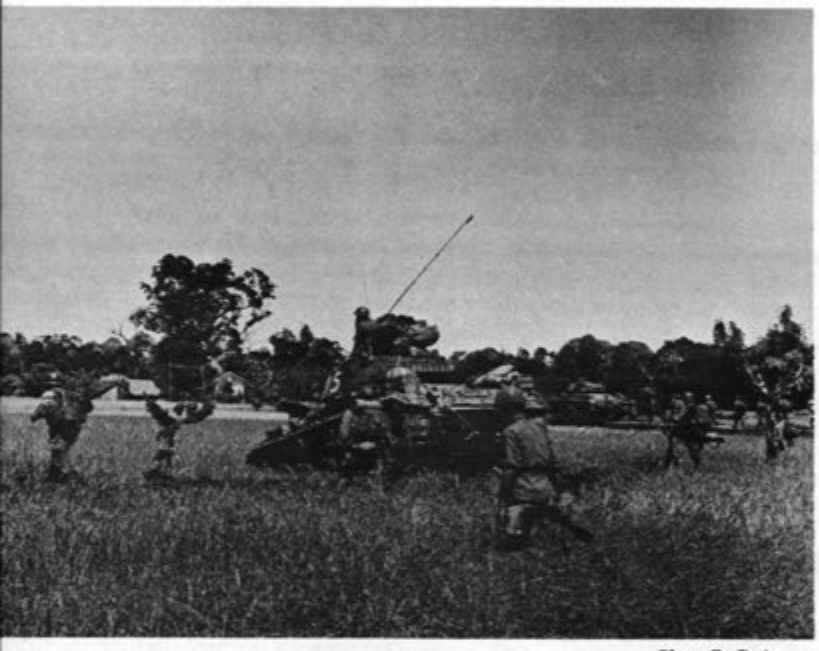


Photo E. C. Armees

French troops participating in Operation *Mouette* (Sea Gull) advance into Phu Nho Quan, North Vietnam, on 3 November 1953. The author, then a lieutenant, appears in the tank turret in the photos above and below.

Photo E. C. Armees

1945, the French Navy organized its *Dinassaut* (Naval Assault Division) composed of *LCIs, LCMs* and *LCVPs.* Concurrently, French armor embarked on lighter boats able to go upstream into the narrow bayous in pursuit of the enemy sampans. These armored motorboats were from eight to ten meters long and capable of proceeding at 10 knots. They were equipped with three machineguns and a grenade launcher. Five crewmen manned each boat.

In 1950 and 1951, the *M5* tanks were replaced by American *M24* tanks. The *M24* could be air transported when disassembled into separate loads. Available aircraft and the size of existing airfields made it necessary to disassemble each tank into as many as 82 pieces. Nonetheless, using *Bristol* and *DC3 Dakota* transports, a company with 10 *M24s* was airlifted to Dien Bien Phu where its tanks were reassembled and employed. Similarly, a platoon of five *M24* tanks was delivered to Luang Prabang, Laos. The low ground pressure (less than 10 psi) of the *M24* was the most appreciated characteristic. Light, fast, reliable and well armed, this tank could be driven everywhere during the dry season and even across flooded rice paddies.

Recognizing the potential threat of intervention by Chinese armor in 1951, Marshal de Lattre ordered the construction of a fortified line around the Tonkin Delta. Then, in 1952, a battalion of *M36* tank destroyers was formed. Actually though, these broad-tracked, 90mm gun armored vehicles were used to support infantry units.

ENEMY

From the very beginning, the Viet Minh developed antitank tactics to oppose the French armored units. Mines were the most widely employed devices. Some 85 percent of the vehicles damaged or destroyed were the victims of mines. The variety of mines was extensive. These ranged from unexploded and locally recovered air bombs to Chinese-built conventional antitank mines. Generally the enemy detonated the mines as armored vehicles passed over them. Fortunately, the tank hulls resisted the blast well. Generally, the maintenance personnel were able to repair damages and restore the vehicles to combat service in a relatively short time.

Since they fought in the manner of guerrillas, the Viet Minh could not burden their units with too heavy antitank armament without taking the risk of reducing the mobility of their battalions. Their portable antitank weapons which included 57 and 75mm recoilless rifles, the *S.K.Z.* (Sung Khong Giat—a Viet Minh recoilless rifle), and bazookas can be credited with but a low percentage

of the armored vehicles destroyed. Often, in fact, after they were immobilized, armored vehicles were actually destroyed only by a direct assault of Viet Minh soldiers carrying explosives or *Molotov Cocktails.*

The Viet Minh, requisitioning local civilian manpower, built obstacles on all routes—ditches, walls, barricades, and so on. Frequently, villages were encircled with a 6-foot high earthen wall. Sometimes, access across rice paddies was prevented by antitank ditches several hundred meters long.

Despite the will and perseverance of the French armor leaders, it was often very difficult to pass and this was done only after excessive and time-consuming efforts. It should be remembered that French armor in Indochina had no tank dozers and no armored vehicle launched bridges (AVLB).

The Viet Minh tactics against armor were based chiefly on ambushes. These always had a similar scenario—stop the column in a narrow passage or in difficult terrain, then after intensive and violent fire launch a quick assault. The best parry obviously was to discover and avoid these ambushes. This was difficult when faced by an enemy who was such a past master in the art of camouflage.

All armor leaders had orders to maintain mobility at any price when they were surprised. An armored vehicle stopped and isolated in an ambush is a blind and harmless prey easy for a daring enemy to destroy. Unfortunately the indispensable route security missions imposed on armor units did not always allow them to evade the inevitable Viet Minh assaults nor to avoid bloody misfortunes.

Major Michel Henry

A 40mm *Bofors* mounted on a *LVT 4* lays on the Viet Minh enemy.

THE MISSIONS

Following the rapid reoccupation of Indochina by mobile columns exploiting along roads, it became necessary to understand that the struggle extended all over the country to areas far from the roads and passable trails. However, these communication lines were vital for contact and for the flow of supplies. A lack of airfield facilities and sufficient aircraft gave the overland transportation network the greatest importance.

Therefore, French armor had to assume the mission of protecting the roads, rivers and even the railroads. On roads, armor units were responsible to check the security of a route before the daily or periodic traffic of vehicles or convoys passed. Then they had to maintain security by patrolling or by escorting convoys.

The mission was similar on rivers, especially on the Saigon River from the port down to the sea. On all important rivers armored motorboats were employed either by separate platoons of six boats or by separate troops with three platoons. The area of operations of these units extended over a wide area and included even the smallest tributaries.

On railroads, the main bridges of which were under the protection of small guard posts, French armor had to provide crews for armored trains escorting the *Rafales* (wind blast) which were composed of two or three trains following each other closely. They operated once a week, on the sections running from Saigon to Nha Trang, from Tourane [since renamed Da Nang] to Hue and Dong Ha, and from Haiphong to Hanoi.

Besides the essential mission of keeping routes of communication open, armor units were called upon to act as fire brigades. They deployed on short notice to help besieged posts or units pinned down in an ambush. Day and night the armor platoons moved out to rescue their harassed friends. Such operations became more and more hazardous because the Viet Minh deliberately provoked them by attacking isolated posts in order to draw the responding armor platoons into ambushes.

Infantry battalions also required armor support against an enemy who was becoming increasingly better trained. Very close cooperation between infantry and armor became the rule. But, dispersion of armor units along roads, lack of strength and poor cross-country mobility of organic wheeled vehicles limited the benefit of such combined operations. Moving at the same speed as foot infantrymen or assuming monotonous *bouclages* (blocking positions) armor units often used up their resources without any real benefit having been gained.

Major Michel Henry

Amphibious units of *Crabs* and *Alligators* were successfully employed together in the area of Nam Dinh, Tonkin, in 1953.

EVOLUTION OF ORGANIZATION

The first two armored groups (*sous groupements blindees* or *GB*) were initially organized in 1951. These had their own infantry. Under the command of a small armor headquarters, these groups included one company of *M24* tanks of four platoons (each with three *M24* tanks and two half-tracks) and two mechanized infantry companies mounted in half-tracks. The effectiveness of that formula was rapidly confirmed during the operations of Hoa Binh from November 1951 to February 1952 and Phu-To in November and December 1952.

Simultaneously, reconnaissance groups (*groupes d'escadrons de reconnaissance* or *G.E.R.*) were organized. These were composed of one *M24* tank company, one armored car troop of three platoons (each with five *M8* armored cars) and one platoon with three *M8* 75mm self-propelled howitzers. In addition each group had indigenous-forces infantry.

It is essential not to confuse these armor units with the so-called mobile groups (*groupements mobiles* or *G.M.*) which were created during the same period. These were composed of three infantry battalions mounted in trucks which were supported by a towed 105mm artillery battery and a platoon of three *M24* tanks. Some of these, such as the famous *GM 100*, were supported by an entire tank company.

At the same time, amphibious units such as the *1er Regiment de Chasseurs* and the *1er Regiment Etranger de Cavalerie* were more extensively employed. These were organized into two groups, each composed of two companies of *crabs* reinforced by two *alligator* platoons. These *alligator* platoons carried one company of indigenous infantry. The *alligators* were able to operate where the *crabs* were stopped by the impenetrable terrain or enemy fire. They were intensively and successfully employed in the Plain of Reeds and in the area around Nam Dinh, Tonkin.

The organization of these armored and amphibious groups allowed French armor to regain its momentum. However, very often it was still necessary to attach an infantry battalion to these units, since their organic strength did not provide enough dismounted soldiers to search villages.

Beginning in 1948, French armor began to use locally enlisted soldiers. Some units had more than 50 percent of these native-born soldiers. In addition to its other missions and training its own local recruits, French armor assisted in the development of the newborn Vietnamese, Laotian and Cambodian armies which had begun under the direction of Marshal de Lattre. Five Vietnamese armor troops and one each from Laos and Cambodia were organized and trained. In addition, one infantry battalion was formed from each French armor regiment for the new national armies.

By the end of 1953, the group organizations begun in 1951 had been completed and combat-tested. Lessons learned were reflected in the 1953 French armor structure in Indochina which included the following principal types of units:

The armored groups with:

- one M24 tank company of four platoons each with four tanks.
- three companies of truck-mounted infantry each with four rifle platoons and one support platoon.
- one mechanized infantry company of four rifle platoons each with four half-tracks.

The group headquarters was provided with excellent communications and was able to control not only its organic elements but several attached units as well.

The amphibious group with a mobile group headquarters and two tactical sub-group headquarters which could control task forces tailored from these subordinate elements:

- two *crab* companies each having three platoons and a total of 33 *crabs*.
- three *alligator* troops each with 11 LVTs. Three LVTs in each troop were armed with 75mm howitzers. Each of these troops normally carried three infantry platoons aboard their LVTs.
- a separate support platoon of six LVTs mounting 75mm howitzers.

This organization gave French armor in Indochina the capability to engage the enemy independently and with effectiveness. The Viet Minh had many bitter experiences with these reorganized units.

Service Cinema des Armees

In 1948 French armor began to use locally enlisted soldiers. Here indigenous troops participate in Operation *Bretagne*.

During July 1953, on the Street Without Joy northeast of Hue, one battalion of Viet Minh Regiment 95 was annihilated during Operation *Camargue*. Later, in October and November, Operation *Mouette* saw Viet Minh Division 304 so mauled that it did not return to the war for more than four months. During this operation, on 24 October 1953 near Lai Cac, 180 enemy were killed and 20 captured on one day alone. In June and July 1954, during a mobile defense conducted as part of Operation *Auvergne* in the Tonkin Delta area, six Viet Minh battalions were destroyed.

When the ceasefire came on 20 July 1954, French armor forces in Indochina totalled four armored groups, two amphibious groups, three reconnaissance groups and six separate armor battalions.

IN RETROSPECT

Nine years of experience on the battlefields of Indochina led French armor to certain conclusions concerning armored warfare in that area.

French armor in Indochina was always faced with the problem of having to support the infantry while at the same time maintaining its natural desire to concentrate all its means into strike forces which could achieve success through mobility.

For example, when a tank platoon had to be attached to an infantry unit, the parent tank company was left with insufficient firepower and mobility to maintain the necessary momentum to lead the attack against more than a battalion size enemy. Flexibility of maneuver was greatly facilitated by having all four organic platoons with their total of 16 tanks available to the tank company commander.

The optimum infantry-armor mix for Indochina was found to be one infantry battalion with one tank company.

Due to a lack of personnel carriers, except for half-tracks with severely limited mobility, infantry frequently had to be transported on the rear decks of the tanks.

The cohesion of, and cooperation within, the armored and amphibious groups was excellent due to the fact that their personnel were all drawn from armor. Singleness of purpose, mutual understanding, coordination and rapid maneuver were normal.

Tactics used in the different geographical regions had to be fitted both to the materiel and to the seasonal weather conditions. These tactics were also influenced by the enemy and, more importantly, by the personalities of the leaders. Ingenuity and sheer determination enabled most terrain obstacles to be overcome.

Opposed by an enemy who acted at night, which is always true of insurgency warfare, the French armor units rapidly developed the capability for quick and violent reaction during the hours of darkness.

French armor began the Indochina campaign with armored battalions similar to those which had fought in Europe during WWII. By 1954 it had reorganized its units based on different concepts more suited to the particular conditions of the conflict. When the cease fire came this evolution was not considered complete and further refinements were in progress.

Despite the adverse terrain, the great variety of enemy threats and the ever growing necessity to provide armor support for the infantry, it was generally agreed that there was a very real need for units fitted to carry out the traditional missions of the cavalry.

Service Cinema des Armees

Secretary-Treasurer of the United States Cavalry Association
and Editor of the Cavalry Journal 1935-37

CHARLES SUMNER MILLER
1887-1967

We never knew our predecessor Colonel Charles Sumner Miller. On 24 August 1967 he rode beyond that hill marking the final boundary of this world. The mortal coil lies honored in Arlington National Cemetery. The essential spirit of a rational man who served his God, his country and his fellow men well goes on. The record conveys that spirit. We now know him well.

Charles Miller was born in Muscatine, Iowa on 16 April 1886. His family moved to Jennings, Louisiana when he was six. Following in the footsteps of *his* father, Colonel Miller's father published a newspaper—*The Jennings Times Record*. Young Charles grew up with editorial concerns ever at hand. Prior to graduating from high school in 1905, he had earned a place in the fourth estate by dint of his own labors.

While attending Louisiana State University, from which he earned the Bachelor of Arts (1909) and Bachelor of Laws (1910) degrees, he commanded the corps of military cadets. Admitted to practice in Louisiana, and before the Supreme Court of the United States, he practiced law in Jennings until 1916. Then he entered on active duty as a major, having served as a lieutenant and captain of cavalry in the Louisiana National Guard since 1909.

World War I saw Miller serving as an infantry reserve major. In 1920 he was honorably discharged from this appointment to accept a commission as a Regular Army cavalry captain.

As a cavalry officer, Captain Miller drew upon his legal background while serving as a member of the War Department Claims Board. There followed command of two troops of the 13th Cavalry, attendance at the Cavalry School, service on its faculty and then graduation from the Command and General Staff School and the Army Industrial College.

Thereafter, Captain Miller's experience as a journalist, attorney, instructor, student of the military arts and sciences and line officer were to be focused on a task of the greatest importance to the professional standing of his chosen arm. On 15 April 1935, he was appointed Secretary-Treasurer of The United States Cavalry Association and Editor of the *Cavalry Journal* by Major General Guy V. Henry, then President of the Association.

At this time the Cavalry Association had 1564 members and the *Cavalry Journal* a circulation of less than 2000. There were 139 delinquent accounts. Some of them had gone uncollected for as long as nine years. The condition of the Association was hardly characteristic of the dynamic branch whose interests it was designed to serve.

Attacking on all fronts, Miller revitalized the *Cavalry Journal* with a new cover design, increased illustrations and artwork, a fact-filled "Cavalry School Digest of Information," bi-monthly news from every cavalry regiment and detached squadron, an annual roster of cavalry officers and a revived annual index. Under his pen, the *Cavalry Journal* focused commendable and long due attention on mechanization.

At the same time, the Association's business operations moved firmly forward with the times. As part of his modernization program, Captain Miller brought about joint procurement with the Field Artillery Association of the then latest thing in machine processing, the computer-addresser of the day—an addressograph.

That these approaches did not go unnoticed is graphically illustrated by an item which appeared in the January-February 1936 *Infantry Journal*. Describing the *Cavalry Journal* as a "deadly rival" which had "beaten us at our own game," the famous infantry magazine noted that that branch had four Army National Guard regiments in which 100 percent of the officers were Infantry Association members and all unit funds were subscribers while the Cavalry Association had eight such regimental supporters with "the ninth in the bag." The *Infantry Journal* Editor continued, "With many more National Guard Regiments than . . . the Cavalry . . . we are trailing. This, gentlemen, is a hell of a note. . . ."

Major Maurice Rose, 6th Cavalry, who was later to be killed in World War II combat as a Major General commanding the 3d Armored Division, wrote from Fort Oglethorpe "your journal has certainly advanced by leaps and bounds."

Not only did Captain Miller, the Editor, understand what would appeal to potential and actual readers, but so too did Captain Miller, the Secretary-Treasurer, know how to command the attention of his fellow cavalrymen. Even though he had reduced the delinquent accounts to a manageable handful, he refused to give up without further final efforts. Sensing that some recipients of the increasingly pointed collection letters from the Cavalry Association were discarding these with but a cursory glance, he decided that novel techniques were called for. Thereupon, in at least one case, he had the lady the Association had employed to cope with the vastly increased business activity address, in her own delicate hand, a plain envelope to a procrastinator. This was then stuffed with a bill, liberally scented with the latest from Paris and dispatched. A check was received in the return mail.

The records of the association do not indicate the reactions of all the recipients of the various ingenious statements of account. However, one member paid up, promptly resigned and then rejoined within the year. More important, there were no longer any overdue accounts nor were these to recur while Association affairs continued in Miller's competent hands.

By the time his tour as Secretary-Treasurer and Editor ended on 15 July 1937, the Association was fiscally sound. In two years the net worth of the Association had been increased by several thousand dollars even with the expenses of hiring the needed civilian secretary, greater outlays for a better journal and investments in efficient new office equipment. This is significant when considered with the fact that dues were then $3.00 per year of which 60 percent was for the *Cavalry Journal*. Book business showed an increase of 72 percent.

Captain Miller had recruited 1220 new members to bring the total to 2784. All but less than 30 Regular Army Officers were members, all Regular Army cavalry troops were subscribers and 10 of the 20 National Guard cavalry regiments were on the 100 percent honor roll.

Major General William K. Herndon, commanding the 24th Cavalry Division, the only one of its type in the National Guard, summarized the feelings of many toward their Association and paid tribute to its departing Secretary-Treasurer and Editor when he wrote, "I have always felt that we need the Association more than it needs us. The magazine that the Association sends each member is worth far more than the annual dues, and an officer who is not willing to support this organization and take advantage of the fine material in the *Cavalry Journal* to advance his professional fitness hasn't the interest of the Cavalry at heart, and has but very little business wearing the crossed sabers."

Captain Miller then attended the Army War College after which he commanded the Machine Gun Squadron, 7th Cavalry, where he was promoted to major. He served on the staff of the 1st Cavalry Division. In 1942 the World War II expansion brought Lieutenant Colonel Miller to the newly formed Tank Destroyer Center at Camp Hood, Texas. As G4 and Chief of Staff, he played a key role in the development of the tank destroyer concept which he viewed as an extension of the traditional cavalry role of mobility fully exploited to seek, strike and destroy the enemy. He saw the focal point of this new force grow to 70,000 men before, now a colonel, he left to join the Pacific Section, Operations Division of the War Department General Staff.

In the summer of 1943 he was sent to visit the force invading New Georgia. The official Army history of the Operations Division notes that when the G2 of this force was wounded, "Colonel Miller took over and handled the assignment." For his active participation in the assault landing he was awarded the bronze arrowhead. Subsequently he obtained a permanent assignment to the Pacific Theater and served with distinction as Commander of the Services of Supply, South Pacific Area, and as Chief of Staff and Commander of Special Troops, GHQ, U.S. Army Forces Pacific. For these services he was awarded the Legion of Merit.

Following his retirement from the Army on 30 April 1946, after 37 years of service including 30 years of active duty, Colonel Miller served for two years with the International Refugee Organization in Austria. Thereafter, never idle, he gave of his time and talent to a number of meritorious activities which needed a true cavalryman's dedication, initiative and ingenuity to bring them to fruition.

According to his widow and his daughter, Colonel Miller always seemed to have most enjoyed, and remembered with the warmest feelings, his service to The United States Cavalry Association as Secretary-Treasurer and Editor of its *Cavalry Journal*. He set a criterion for those of us who have followed, are following, and will follow him. We must and shall keep moving. He intended that we should.

the Editor

ARMOR

EAST of SUEZ

Israeli Embassy, Washington

Brigadier General S. L. A. Marshall

In my field notes from the Six Day War there are extended interviews with Brigadier General Haim Barlev, whom his peers regard as the ablest armored commander in Israel, and Brigadier General Israel Tal, present chief of the Armored Corps.

Serving as Deputy Chief of Staff last June, Barlev was all over the combat zone, advising and assisting. Tal commanded the division that broke the front of the Egyptian 7th Division at Rahfa, smashed through the Jeradi hedgehog to El Arish, broke the third hedgehog at Bir Lafhan and along two different axes rolled through to Suez.

The ground rules at the time my notes were made were that no commander could be directly quoted. Abiding by those ground rules and resorting to the first person plural, I am combining the two interviews in such a way that Israel's doctrine and conclusions from the campaign will still be reflected accurately.

THE ISRAELIS SPEAK OUT

We have a great advantage in the technical and tactical employment of the single tank. And that is all. It is what saved us and saved lives. We destroyed tank battalions by having more accurate fire power, instead of by assaulting, or through armored shock. That's how we won and anything to the contrary oversimplifies.

On the whole, our tankers came through the campaign feeling better about the *Sherman* than the *Patton* or the *Centurion*. It is more mobile over a great variety of difficult terrain, some of which would normally be rated impassable. But one should not make too much of this. Only the name *Sherman* remains. Except for a few tanks we used in direct support of infantry, we have replaced the 75 on the *Sherman* with the 105. The engine is new; also, the suspension system is new. So in effect we are talking of a new tank.

We found the *Patton* definitely superior to the Russian-built *T 54 or T 55*. (The main difference between the two is that the *T 55* is equipped with infrared.) Any of our tankers would rather fight out of the *Patton* because of its handling, mobility and snap-shooting. We equipped one company of *Pattons* with the 105mm and diesel engines. Its performance was sensational. This tank can go on for 20 hours without refueling. It was our surprise weapon in the pursuit.

Soviet armor on the whole is good enough. Here we speak of the quality of the plate. The *Stalin III*

had thicker frontal armor than the *T 55*. But we found that it made little or no practical difference in tank-against-tank action at ranges between 800 and 1000 meters. On a direct hit, the 105mm could knock out either one of them with equal ease. Why should that occasion surprise? Even the 75mm shot can penetrate a *Patton* at 800-1200 meters.

The enemy lost an unusual number of *Pattons* through one shell penetrating and exploding the ammunition racks. The whole turret would blow, settling 10 meters or so from the wrecked hull.

We found out that the AMX is no tank to risk around minefields. One mine exploding under the left track will blow the tank and usually kill the driver. It's not only a matter of 12 millimeters of protection versus 25. The distance between the track and the driver's seat is also much less.

Where we used the flail, it was effective. But we learned one thing about them: they should be used in pairs, or not at all. The idea is to cut a wide enough lane that you can be sure of just as quickly as possible. Using one flail, especially at night, just isn't possible.

Our artillery we never keep so far back in the column that it cannot give almost instant and direct support to the armor and armored infantry. It must be so placed that it simply squares away and starts shooting. The forward observers and the battery both work from the map. The FO gauges liberally, gets the guns going as fast as possible, then pulls the fire back or makes whatever adjustment is necessary. This is what we call "snap action."

Our ordinary infantry brigades, as well as our paratroops, must get regular training with tanks. We never know when their having had it becomes the most important thing. For example, using the paras as armored infantry during the attack into Sinai was strictly an improvisation. Commando raids and vertical drops are their main missions. But we put them in there because we needed their kind of heart and action.

Our armored infantry is trained to do mopping-up like all the rest of our infantry. But it is taught to fight mounted while mopping up. The half-tracks are, in effect, fire bases. We only dismount when going against mines or when the terrain blocks passage by the vehicle.

Each halftrack mounts two machineguns. But as to how the men are armed, we vary the mix according to the mission. We leave the commander (section leader) on the vehicle with the gunner and the driver; he directs the fire. We never let the gunner use his own judgment. The driver may assist the gunner when the halftrack is stationary.

We believe that the tank in any kind of terrain—repeat, any kind—is the ideal assault weapon. Certainly it is true of the way our army is organized

Israeli Embassy, Washington

BRIGADIER GENERAL HAIM BARLEV

and of how it feels about war in this region. The other arms are there to support the tanks and exploit the openings they have created. So our army is organized mainly as an armored force, but so balanced that armored infantry will contribute its full measure to achieving superiority over the enemy.

Our reserves get sufficient time training with the equipment in hard field exercises, and that is why they're good. It wasn't so in 1956. We fought that war with tanks taken right off the dock in Haifa. So we learned two lessons: First, you can't do it that way if you expect to win big. Second, armor properly used is the backbone of the attack. In '56 our artillery could not follow the armor, since except for one battery, it was all towed. This time we had self-propelled guns and it made all the difference.

But the bigger thing is that now all of our tankers have two and one-half years of standing service, all with armor. And, when on going to the reserves they get their periodic training, it is with armor in the field. Once made tankers, they stay tankers all the way.

We learned in 1956 that we needed far more experience in war games and large-scale maneuvers. So we went to it. This time, when war came we had everything prearranged and ready. Everything we tried had been tested. There were no new problems. The task was simply one of applying what we already knew.

MAINTAIN TO FIGHT

By Captain William F. Daugherty

Armor plays a key role in Vietnam. To remain an effective fighting arm in Vietnam, our armor units have had to overcome many challenging obstacles to keep their equipment in fighting trim.

This is a report on how the first tank battalion to enter combat in Vietnam—the 1st Battalion, 69th Armor—has met the test.

The 1st Battalion, 69th Armor, commanded by Lieutenant Colonel Paul S. Williams, Jr., arrived in Vietnam in March 1966 as part of the 25th Infantry Division. Except for the tanks, the equipment came with the battalion from Hawaii. All the *M113* family (*M113, M106, M577*) are gasoline powered as are the *M88s* and the two AVLBs (*M48A2* chassis). The "Black Panthers" drew rebuilt diesel *M48A3* tanks in Okinawa prior to arrival in Vietnam.

Except for a relatively few salvaged vehicles, the battalion still had the same tracks after more than a year of combat operations in Vietnam. Because track vehicles dominate the maintenance effort, this discussion will be restricted primarily to the *M48A3* and the *M113*.

Initially the battalion (—) began operations in the Cu Chi area, while Company B began operations in the Pleiku area of the Central Highlands. The wooded Cu Chi area took an immediate toll of fenders and external interphones which was long evident.

In May 1966, the entire battalion moved to the Pleiku area. Consequently, the evolution of our maintenance system was greatly influenced by the environment of the Central Highlands. The battalion was attached to, and thus supported by, the 4th Infantry Division.

CAPTAIN WILLIAM F. DAUGHERTY *was graduated from the United States Military Academy in 1962 and has attended the Armor Officer Basic Course, the Airborne School, and the Armor Officer Career Course. He served with the 1st Armored Division, Fort Hood, and with the 1st Cavalry Division, Korea. He is currently assigned as Maintenance Officer, 1/69 Armor, Vietnam.*

PHOTOGRAPHS BY THE AUTHOR

Normally, companies or platoons are placed under *operational control* (OPCON) rather than being *attached*. OPCON means that the parent armor unit must still provide repair parts, recovery, and track mechanics. Because the infantry battalion or brigade does not have the organic capability to support fully one tank platoon, much less a tank company, OPCON is realistic.

An extreme example of how OPCON can affect an armor battalion occurred in March 1967. Company A (—) and Company C were under 1/69 Armor control securing Highway 19E between Pleiku and Manyang Pass. Company B (—) was under OPCON of the 1st Squadron, 10th Cavalry, securing Highway 19W to the Special Forces camp at Duc Co near the Cambodian border. One platoon from Company B was under OPCON of Troop C, 3d Battalion, 4th Cavalry securing Highway 509 between Pleiku and the forward fire base of the 2d Brigade, 4th Infantry Division, near the Cambodian border. Under OPCON of the 2d Brigade was the 1st Platoon, Company A, 1/69 Armor. Road distances to these elements from the centrally located battalion base camp were:

Co A (—) on Highway 19E: 27 miles
1st Platoon, Company A on Highway 509: 37 miles
Company B (—) on Highway 19W: 14 miles
3d Platoon, Company B on Highway 509: 29 miles
Company C on Highway 19E: 36 miles

These distances posed real logistical and maintenance problems—problems unique to an armor unit in an infantry environment. These problems were solved. Some of the solutions are presented here in the hope that this will assist others.

WEATHER AS AN ENEMY

The Central Highlands offer two weather-induced obstacles to the performance of maintenance—choking dust during the dry season, and frustrating mud during the monsoon rains. Each season lasts roughly six months. Each takes its toll from the equipment and the men who maintain it.

During the dry season every road, base camp, and forward area in the Central Highlands turns into a literal dust bowl with a fine, powdery layer up to one foot deep. Winds frequently swirl this dust into choking clouds blotting our visibility, contaminating equipment, and making normal breathing difficult. Road marches become hazardous. Air cleaners, along with oil coolers, become easily clogged. Frequent cleaning of these is required. No bearing surface or lubricant is completely protected from the abrasive dust. Weapons must be cleaned at least daily.

What is normally good tank terrain during the dry season becomes a veritable nightmare during the worst of the monsoon rains. With one of the highest annual rainfalls in South Vietnam (110 inches) comes armor's greatest obstacle—mud. Mud causes thrown tracks, hides suspension deficiencies, contaminates lubricants, and discourages normal crew maintenance. Vision devices become obscured due to prolonged moisture.

Mud also causes a virtual halt to wheel travel in most areas, seriously reducing the parts resupply capability. What would normally be a three-hour march during the dry season may take three days during the monsoon. Helicopters can keep only a minimum parts and POL resupply going to isolated armor units. A possible further solution to the resupply problem during the monsoon might be a full-tracked cargo carrier.

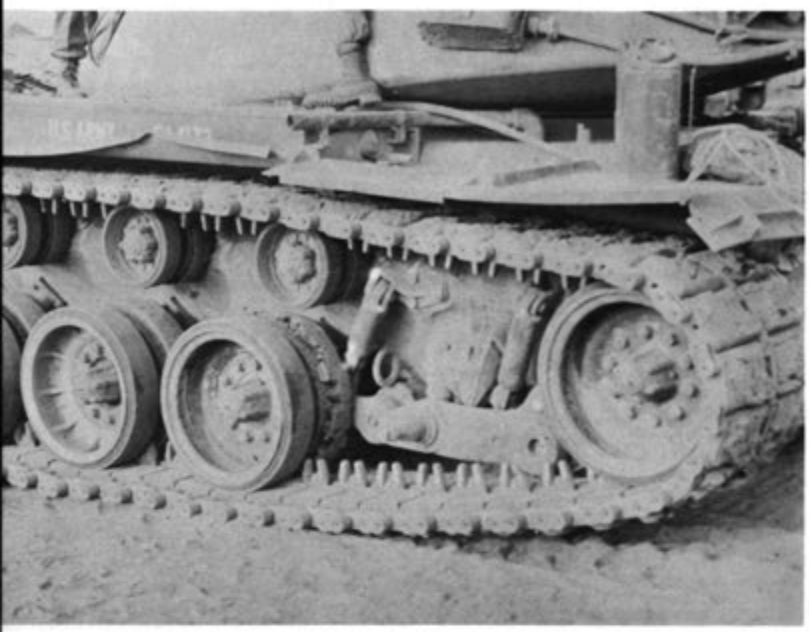
The frustration, fatigue, and dampness of the rainy season, and the stifling dust of the dry season are enough to discourage even the best mechanic or tank crewman. But, here we can be proud. Their jobs in Vietnam are never-ending. Yet they work in dust until their eyes are bloodshot and their heads throbbing. During the monsoon, they work literally covered from head to foot with mud to keep the vehicles running.

The tank crewmen must operate seven days a week and be prepared for combat 24 hours of every day. It is hard to imagine tankers in any war—past or future—being more challenged or responding better.

EVACUATION

The principle of repairing as far forward as possible is sound and must be followed. For example, on-site repair of mine damage is the first and preferred course of action. However, if the parts are not immediately available, or if security for the tank becomes a problem, the company evacuates the vehicle to its forward area for repair. Should the tank be a combat loss, or for some other reason require evacuation to the rear, this is done by the battalion maintenance platoon.

In effect, there are no maintenance collection points. The company forward areas and the battalion rear (base camp) are the focal points of evacuation and repair. Because the battalion base camp, within the division base camp, is centrally located, stable, and close to the source of parts supply, all the battalion maintenance capability is based there. The elimination of the battalion maintenance portion of the combat trains does not impede, in any way, recovery or repair in a forward area.



"After hitting the first mine, B22's crew rejoined the right track . . ."

THE ROLE OF ENEMY MINES

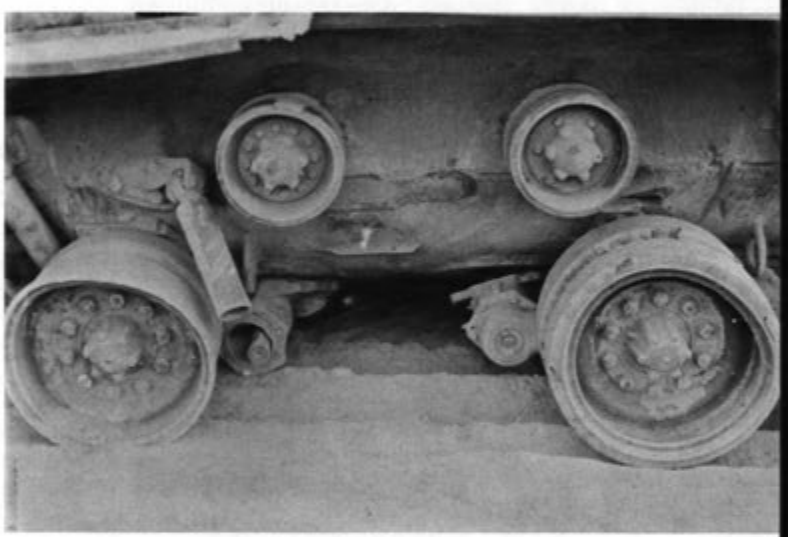
Mines have had more impact upon maintenance than any other single factor save mileage. The enemy has found the mine to be his most effective weapon in dealing with armor. He uses anything from a Chinese Communist version of our *M1A1* mine to our own unexploded artillery shells and bombs.

The effect, however, has been more that of education rather than that of a serious threat. An emphatic justification of our main battle tank weighing over 50 tons is evident.

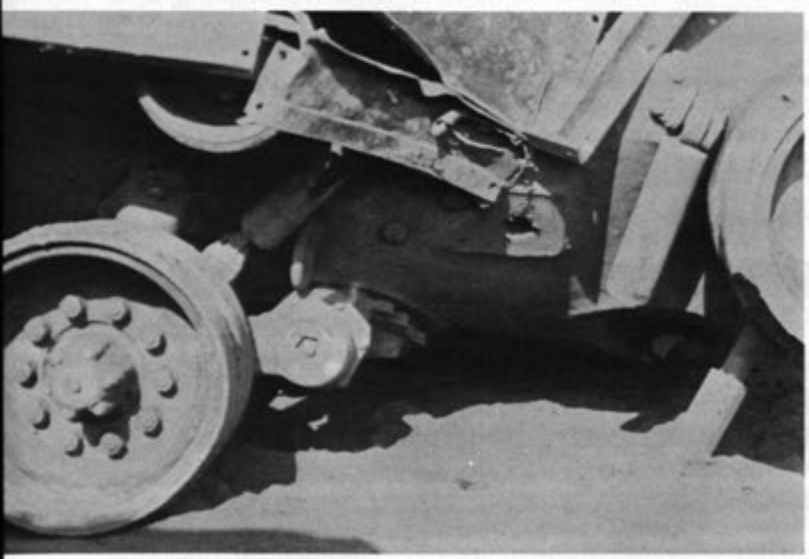
The suspension of the *M48A3* suffers from mines, but this is repairable and often within 24 hours if parts are available. Crew casualties and tank losses due to mines are negligible.

The experience of one tank, B22, illustrates the mine situation. On 17 March 1967, while operating near the Cambodian border, B22 hit a mine. It lost a left intermediate road wheel arm. The parts were available and the tank was operational again within 24 hours. Then, on 26 March, B22 hit another mine which destroyed the right front road wheel arm and four track blocks, loosened the housing and broke the torsion bar. The crew rejoined the right track with spare track blocks, then proceeded toward their forward area for repair.

Within 2000 meters, the tank hit another mine. This one destroyed the left front and two left intermediate road wheel arms, sheared the two intermediate housings from the hull, destroyed 10 track blocks and broke three torsion bars. B22 was towed, minus the left track, by a battalion maintenance tank recovery vehicle (VTR) to the battalion base camp.



". . . only to hit a larger mine 2000 meters away."



". . . front road wheel arms sustain most of the damage."

Repair involved first lifting the front end of the tank with a VTR, then placing a stack of old road wheels under the hull for support. Four stubborn torsion bars were then removed. Housing bolts, sheared off at the hull, had to be removed by a tedious process involving a skillful welder and a tap and die set. Then began the replacement of parts. Each complete left intermediate arm, for example, requires 16 separate parts excluding the housing which is usually recoverable. Any one of these parts, if not available, can cause the tank to be deadlined for an excessive period of time.

The damage to B22 is typical of that from the larger mines. Left and right front road wheel arms sustain most of the damage. Larger mines will also take off intermediates and loosen the housings. Obviously, mines have had a significant impact upon spare parts supply.

Few tanks have actually been destroyed by mines. Last year, however, one tank hit a 500 pound bomb rigged as a mine near Cu Chi. The results were staggering. The entire engine compartment, including the six ton pack, was destroyed. Miraculously, the crew survived! Another tank suffered a warped hull from a large mine causing it to be a combat loss. One other tank, which had developed long cracks underneath the hull, possibly due to residual mine damage, was salvaged.

For the M113 armored personnel carrier (APC), however, mines are a more serious threat. Because of its light weight aluminum construction, mines can warp or pierce the hull making the vehicle a combat loss. Large mines made of 250 to 500 pound bombs, or equivalent explosives, can destroy the APC.

The resilience of our medium tank has resulted in a tendency to use it as a mine sweeper. Dismounted engineers, sweeping a road with mine detectors, may take too long or be unavailable in an emergency. Consequently a tank is used. About nine-tenths of the mines detected by the 1/69 Armor were disclosed by a tank hitting them. An effective, mobile mine detector, which will preclude the costly damage to tank suspensions and the resulting loss of operational capability, would be highly desirable.

REPAIR PARTS

A tank battalion in combat is a severe test of our parts system. The supply procedures in AR 735-35 work if they are understood and applied at all levels. It is the correct application of those procedures in a combat situation that is the challenge. In meeting this challenge, the 1/69 Armor learned some valuable lessons.

Perhaps the lesson most driven home is that the PLL (Prescribed Load List) as set forth in TM 9-2300-233-20P is an unrealistic point of departure for an armor unit deploying to a combat area *anywhere.*

In spite of all that is taught in our service schools concerning mine warfare, no provision is made for an armor unit to carry the vital suspension components to repair mine damage. Out of the 16 different parts required to repair the left intermediate roadwheel arm in the example of B22, only four are authorized by TM-9-2300-223-20P. Our experience from World War II and Korea would seem to have been ignored. Consequently, 1/69 Armor deployed to Vietnam pitifully short of the repair parts to cope with mine damage.

The ASL (Authorized Stockage List) of the maintenance battalion reflected the same lack of foresight. The entire supply system was to suffer a sudden shock, recovery from which required something approaching superhuman efforts.

Through the record of demands, the PLL can be altered to reflect the current usage of the unit.

A few examples of what effect demands had upon authorized stockage are shown below.

The lesson here, and a sobering one, can be deduced from those few examples of the authorized stockage shown. The weight and size of the revised PLL preclude it being carried by the organic transportation of the battalion maintenance platoon.

SELECTED PLL AUTHORIZATIONS

ITEM	*AUTHORIZED TM 9-2300-223-20P*	*AUTHORIZATION BASED ON DEMAND*
Roadwheel arm, left front	0	3
Roadwheel hub, w/stud nuts	0	10
Bearing, inner roadwheel	0	14
Roadwheel	4	35
Pin, shock absorber	0	15
Track shoe	4	1435
Torsion bar, left	0	6

One thousand, four hundred and thirty-five track shoes, or roughly nine complete sets of track, weigh approximately 36 tons. Three left roadwheel arms, or even six left torsion bars, weigh 660 pounds. Obviously, the battalion would have to shed a good portion of its PLL, such as track, to move. This would also mean sacrificing needed items.

Movement within Vietnam poses another problem for an armor unit. Just as soon as one direct support maintenance unit gets adjusted to the huge demands of an armor unit by revising its ASL in order to provide a constant supply of parts, the armor unit may change location to an area supported by a different maintenance unit.

Although not presented as a panacea for armor units in Vietnam, there are advantages to having PLL parts consolidated at battalion level.

The tank company has too few personnel to do the PLL book-keeping, and it does not have organic transportation to carry sufficient parts.

By being consolidated at a stable base camp PLL records can be closely supervised to insure that vital demand data is being kept accurately. Demand records are the key to getting and keeping the supply system functioning.

Instead of four or five separate users going to the maintenance battalion for parts or direct exchange items, there is only one customer with a consolidated, edited list of requirements. This insures closer cooperation and prevents confusion. Scarce parts can be issued to the company with the greatest need, which results in greater efficiency.

Because the PLL is consolidated, distribution of parts is essentially supply point. Companies bring direct exchange items and requisitions to battalion maintenance and receive their parts at the same time. Whenever possible, heavy parts are delivered to the company forward area by the battalion transportation platoon.

Salvaged vehicles can be a fruitful source of hard-to-get parts. However, cannibalization must be properly controlled.

SCHEDULED MAINTENANCE IN COMBAT?

Mileage is the factor which sets the frequency of scheduled maintenance in Vietnam. With convoy and road security missions, together with cross-country operations, a tracked vehicle can easily meet the required 750 mile criteria in a month and a half. This halves the time requirement of three months and doubles the frequency of essential scheduled maintenance. To keep pace, the company maintenance section and the battalion maintenance platoon are constantly busy. The company maintenance section and the battalion maintenance platoon alternate the scheduled maintenance. This means that each tank will be seen by battalion maintenance for an even "Q" four times each year.

The 1/69 Armor does scheduled maintenance by platoon. For an even "Q" the battalion maintenance officer coordinates with the battalion commander and S3 to schedule a platoon due maintenance. Preferably, the platoon receives its service at the base camp for then it is located near the source of repair parts and any necessary field maintenance repairs. The change of pace is welcomed by the crews. If all goes well, the platoon is released within five days.

Should the tactical situation preclude a tank platoon from moving to the base camp, a maintenance team from the battalion maintenance platoon will travel to the forward location of the platoon. This team normally consists of two NCOs, two track mechanics, a turret mechanic, and a welder. A VTR, parts trucks and welding equipment go with the team.

Semi-annual and annual services for wheeled vehicles are also critical. The battalion commander specified that wheels would be serviced every 3000 miles or every three months, whichever came first. This doubles the frequency of scheduled maintenance but it is necessary due to the extreme weather conditions. Semi-annuals are done by companies. Annuals are done by battalion maintenance.

FIELD MAINTENANCE SUPPORT

Because of high mileage and rugged operating conditions, tank engine and transmission failure is fairly common. In keeping with the principle of repairing as far forward as possible, Company C, 704th Maintenance Battalion, commanded by First Lieutenant Richard J. Hutchinson, provided a contact team, to each of the three line companies. Headed by an NCO and with three mechanics, the contact team stayed with the supported company. Whenever an engine or transmission needed replacement, the company motor sergeant handed a DA Form 2407 (Maintenance Request) to the contact team chief who accepted it on the spot. The contact team chief then obtained the engine or transmission and had it brought to the forward area for installation. Depending upon the availability of engines and transmissions, the whole process could often be accomplished within 24 hours. The outstanding cooperation and teamwork between the company and the direct support maintenance is indicative of a fine overall relationship.

If field maintenance on turrets, instruments, or armament was required, an appropriate contact team from Headquarters and Company A, 704th Maintenance Battalion was dispatched to the field position.

To further illustrate the cooperation of the maintenance support elements, the example of Company A is worth noting. This company, commanded by Captain Robert W. DeMont, was attached to the 1st Cavalry Division (Airmobile) for operations along the coastal area north of Qui Nhon near Bong Son. Realizing that the 1st Air Cavalry Division was less capable of supporting a tank company than an infantry division, the company commander requested that his maintenance contact team accompany him even though he would be entirely out of the 4th Infantry Division's area. The maintenance battalion commander, Lieutenant Colonel William R. Gilbanks, not only agreed, but augmented the

A track thrown to the inside in an inconvenient stream.

contact team with a small arms repairman and a repair parts specialist. The repair parts specialist gave Company A the capability to deal directly with the 704th liaison at the port of Qui Nhon, the source of repair parts supply. The contact team's limited transportation of one 2½-ton truck with trailer was augmented by one of the two ¾-ton trucks of the battalion maintenance platoon. With this support and a break-out of high mortality repair parts from the PLL, A Company successfully adjusted to its new environment. By allowing his contact team to remain with this company, the maintenance battalion commander kept the months of experience and teamwork of his men where it was most needed and contributed much to the successful accomplishment of the mission.

PAPERWORK!!

Reports in Vietnam are few. A daily deadline report, a monthly mileage report, and the quarterly Materiel Readiness Reports (DA Form 2406) are all a company needs to worry about.

Records, of course, are vital to insure accurate reports. Maintaining these properly in combat is a very real problem.

The heart of the Army Equipment Record System (TAERS), the vehicle logbook, is often neglected. Only aggressive command emphasis can prevent vehicle commanders from placing the tactical mission foremost and shoving the "nuisance" of a logbook aside. Most tank commanders and platoon leaders fail to realize that devoting a little of their time and attention to their logbooks will help them in the long run.

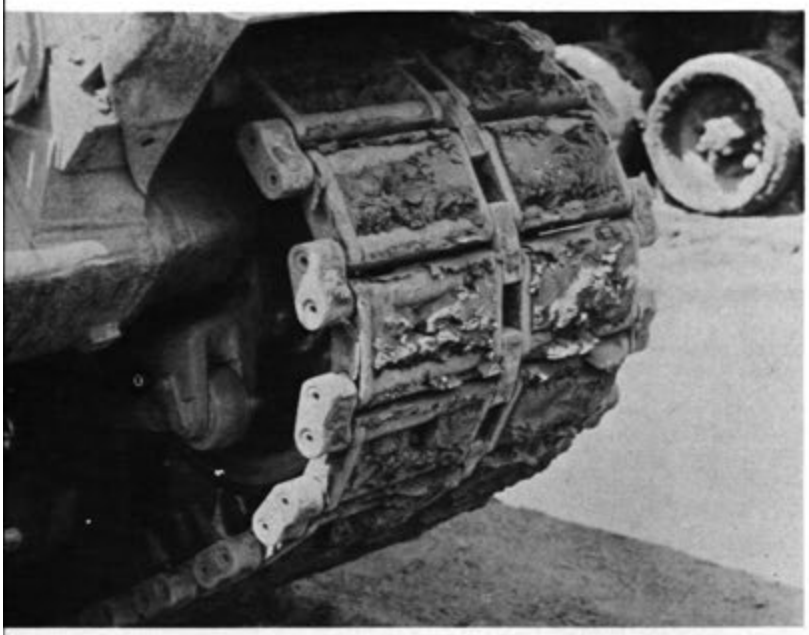
Lack of knowledge of the various operator and organization forms seems to be the most serious obstacle to getting the job done properly. It would appear that armor trainees have only a brief encounter with the forms they will have to use as drivers. Tank commanders may have a limited knowledge of the logbook but this is not enough. As supervisors, platoon leaders also show a lack of logbook know-how in more than a few areas. If these key individuals fail, TAERS will also fail. Unfortunately, time to educate and train in a combat zone is hard to obtain.

Examples of frequently misunderstood and neglected logbook forms are:

DA Form 2408-3 (Equipment Maintenance Record-Organizational): Countless organizational parts, such as suspension components installed by the crews, fail to get entered. The crews feel "It's a mechanics job to mess with the 2408-3," even if no mechanic is available. Mechanics also forget to enter, or do not know about entering, parts they have installed or maintenance they have performed in the logbook.

DA Form 2408-4 (Weapons Record Data): Most tank commanders and platoon leaders do not understand how to maintain this form. Lack of knowledge leads to failure to maintain.

DA Form 2408-6 (Equipment Maintenance Record-Support): Although a support maintenance



Tanks operating near the Cambodian border can expect only about 750 miles out of a new set of track.

form, the assumption cannot be made that support maintenance personnel will always complete it. Engines and transmissions have been installed in the past with no record on either the 2408-6 or 2408-10. The platoon leader, often operating independently of his parent company, should know how to check for both the down-time on the 2408-1, and proper entries on the 2408-6 and 2408-10 (Equipment Component Register).

DA Form 2408-14 (Uncorrected Fault Record): Basically, lack of entries on this form can mean two things—that the flow of information between the vehicle crew and the motor sergeant is faulty, or that the maintenance section is swamped and unable to keep the 2408-14 current.

The DA Form 2408-14 problem brings out two different viewpoints on where the logbook should be—on the vehicle or with the motor sergeant. The latter solution, although radical at first glance, has some distinct advantages. First, the logbook, will stay unmutilated and intact during the lengthy monsoon rains. Second, the motor sergeant can properly maintain his portion of the logbook while the tanks are out on missions during daylight hours.

The obvious disadvantage of not having the logbook available for the crew's use can be offset by providing the crew with a second logbook containing DA Forms 2404 (Daily and ESC), 2408-1 (Daily), 2408-2, 2408-3 (Current), 2404-4, and the pertinent ESC TM. One of our companies provided their crews with a mimeographed form which, used as a feeder report, provided all the information required to maintain the previously mentioned forms. The feeder report was turned in weekly to the motor sergeant. This system was quite successful.

WHAT CONSTITUTES "DEADLINE"

"Deadline" in Vietnam has definitions which do not correspond to the peacetime version.

To the battalion commander, the number of operational tanks that he can count on to perform that day's mission is all important. "Non-operational deadline" to him is any tank that cannot move, shoot, communicate, or is in scheduled maintenance. "Operational deadline" pertains to a tank that can meet the criteria to fight, but has a handicap such as an inoperative radio, no turret power, or extremely worn track.

Higher headquarters simply wants to know how many tanks cannot move, shoot, or communicate, and those which need parts to get them operational.

Generally, inoperative ballistic computers or range finders do not keep a tank out of the fight. As long as the secondary fire control system is still functioning, the tank can fight. Inoperative instrument gauges and lights of all types do not prevent employment of a tank. The lack of fixed fire extinguishers, however, will deadline a tank unless an absolute emergency exists.

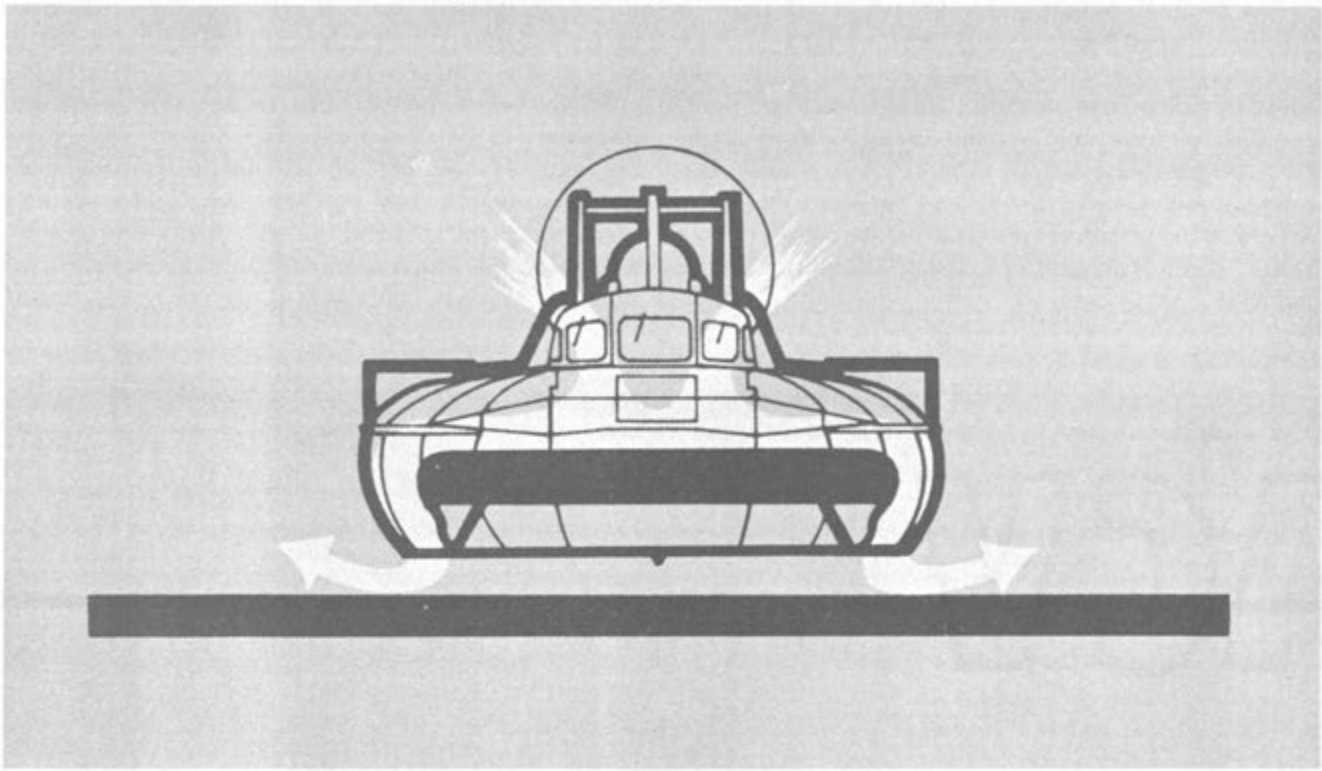
Radio is the primary means of transmitting daily deadline and spot reports. A unit must have a standard report format that cuts down on the length of transmissions as well as denying the enemy complete knowledge of the deadline. The report format used by the 1/69 Armor identifies the vehicle by bumper number, whether or not it is "operational," and, if not, what it is deadlined for.

Only the quarterly Material Readiness Report (DA Form 2406) will indicate all major deficiencies. Obviously, the number of "red" tanks as determined by the appropriate ESC TM, will far exceed those tanks actually deadlined. The equipment deployability profile, based on the ESC, is misleading under combat conditions. As stated on the first page of any ESC TM, the ESC evaluation is based on "peacetime preparedness for prompt and sustained combat commitment." Once in combat, the ESC loses its value. A different standard should be devised which can accurately assess a unit's capability under combat conditions.

To those closely associated with armor and its maintenance many of the problems encountered in Vietnam are already all too familiar. Armor people in Vietnam can expect the additional challenges of extreme weather, mines and high mileage.

It takes knowledge, initiative, willingness, hard work and ingenuity to keep armor moving, shooting and communicating. WE MUST MAINTAIN TO FIGHT.

innovation in process



PROSPECTS FOR the ACV

by ROGER A. BEAUMONT

In the past year, the air cushion vehicle (ACV) has come of age in several dimensions. Field trials with forces of the British Army in Malaysia led to the establishment of an operational ACV unit in the Royal Corps of Transport. The United States Navy, while testing ACVs for patrol work off the Mekong delta, found them to be ideal for moving over swamps, marshes, and soft ground and became involved in operations up to seventy miles *inland*. And at EXPO '67, in San Francisco Bay, and on the English Channel, ACVs have become commercially operational and popular with the witnessing public.

In a sense, the ACV is something like the airplane just before World War I, or the tank in 1915. It is recognized as having potential, but just what that potential is, no one is quite sure. There has always been a lag between technological innovation and the development of rational systems of organization and control to properly use the original invention.

What is the future of the ACV in the Army and, more exactly, in land warfare? While it has been recognized as valuable by the Navy and the Marine Corps for anti-submarine warfare and coastal and amphibious operations and would obviously be of great help in opening up rivers as routes for supply and evacuation, there is a pressing need for the Army to take a hard look at the ACV as a supplement to the existing arsenal of combat vehicles. In short, it is time to start working on organization and doctrine.

No element of any army knows better than its Armor officers how essential the development of a proper system of control is in terms of getting the most out of a new weapon. The great lost opportunities for tank employment in 1916 were errors of poor planning and weak policy. A similar pattern can be seen in the use of airborne forces in World War II before doctrine was evolved. As a result, the full impact of their potential was never achieved.

ACV

It would be nice to think that times have changed, that there is assurance of careful, rational, and speedy consideration of the capabilities of the air cushion vehicle and its smooth phasing into modern military organization. Yet most of the data we have on creativity—technological, artistic, and organizational—shows that it is the inspired few who do the job when it comes to introducing change into large organizations. Sir John Moore, Frederick Taylor, Mitchell, Liddell Hart, Fuller, and Rickover all demonstrate the vast gap between systematic committee-oriented rationality and the extra dimension of initiative and effort that makes men still something more than boxes on organization charts.

What, then, must be done *vis-à-vis* the ACV? One lesson we have learned: new weapons systems are initially the province of junior officers. Perhaps due to the naturally conservatizing influence of seniority and experience, perhaps due to skepticism or commitment to existing systems, new concepts are usually combat tested, and subsequent doctrine evolved, at lower echelons. Examples include submarines, fighters and bombers, tanks, armored cars—and guerrilla warfare, *à la* Lawrence. So it may be with the ACV.

There are a lot of bugs to be ironed out and questions to be answered. The Soviets and others are already moving ahead in this area. Even though research may be under way under security conditions, the officers of the Army in general, and of the Armor branch in particular, should be familiar in some detail with the progress of the ACV and begin thinking of its potential in terms of their existing mission.

What can the ACV do? It can move across land, sand, water, marsh, broken ice, up to 17 percent long grades and short grades of 34 percent at speeds now exceeding 100 miles per hour in some models. The ACV's operational efficiency increases with size. It functions by directing a blast of air from a downward-oriented fan or propeller system through the shaped chamber in its hull. The larger models are powered by aircraft engines and controlled by rudders and/or throttle manipulation. Some of the smaller models are powered by ducting of the air cushion itself, or by direction from centrifugal fans.

Operational costs are running less than half of those of a helicopter over the same distance. Models of 125 tons are in production, and a 10,000 ton transoceanic model has been proposed. Most versions are designed with flotation characteristics in case the cushion fails over water. Since the ACV has relatively weak lateral thrust, and therefore weak towing or pushing power, the addition of

rubber skirts has helped by extending the air cushion. This in turn allows the metal hull to pass over obstacles which the rubber skirts then adapt to in passage, without losing the cushion. Present clearance of the *SRN5*, used in Vietnam, is something over four feet.

The safety record of the ACV has been excellent since its development in the late 1950s. The training of operators is considerably simpler than that of airplane pilots, tank drivers or bulldozer operators. Most of the engineering lead and production experience is presently focused in England. American firms involved in ACV development include Bell-Aerosystems, Republic Aviation, and General Dynamics.

Most of the developmental work has been directed toward commercial goals, particularly ferrying across relatively small bodies of water. Both British, and United States, Navy work has been mentioned vaguely in the press, but anti-submarine roles are clearly paramount.

The ACV potential for land operations is, in a sense, the most revolutionary. The use of streams, marshes, and rivers for high-speed thoroughfares and routes of passage for all arms, as well as the high-speed potential in normal level terrain, desert, and tundra, suggest a new look at tactics in all these contexts.

Who is going to have to do the work? Should it not be the task of Armor officers, since Armor of all the branches of the Army has the habit of speed of thought, the sense of ground combat, and the mechanical orientation best suited to analyze the ACV? In addition, in the long run, the impact of the ACV in battle will affect the other elements of high-speed land warfare which Armor is most concerned with.

There is the need for a lot of scanning from the perspective of ground combat. A central repository and information exchange could be established, unofficially or officially, perhaps at the Armor Center, perhaps within a specific command. Armor officers might consider subscribing to or poring over the journals of aviation and the special air cushion vehicle publications which come to their attention, and above all forwarding information on ACVs to the information center as it comes to their attention.

Questions should be raised by Armor officers concerning the ACV role in combined arms situations. General awareness of ACV developments should be disseminated not only by written articles but in the curriculum of Armor officer and NCO training. Ideally, some provision should be made for liaison with industry by Armor officers, including operator familiarization and training, toward the goal of evolving specifications based on field experience and industrial potential.

There is and will be, in addition, a whole dimension of administrative, engineering, and tactical problems which will require general thought and work on the part of the field practitioners of armored warfare as well as the reflections of theoreticians.

What kinds of armored ACVs are feasible? Should there be ACV tankers, command vehicles, ambulances, "tanks," assault guns, support vehicles, armored personnel carriers, *et al.?* What special kinds of maintenance or fuel problems would they cause? How about the balance of armor placement? How much should speed and clearance be sacrificed for armor protection?

How about gunner, driver, and commander reaction time in a 70 mph-plus vehicle? Will ACVs provide a more stable gun platform? What kind of propulsion methods should be considered? What will be the range factors? How will the high vehicle speed affect antitank gunners and weapons systems? What signature problems will ACVs create or avoid? What impact will ACVs have on amphibious doctrine? (The Marines have already considered this problem.)

What about the further effect on higher echelon command reaction and techniques of control? What kinds of traction aids should be included? Will greater speed call for smaller caliber guns using more ammunition? How will personnel standards for crews complement or oppose present requirements?

These and many other problems are already apparent. They are the modern equivalents of the

whole new world of quandaries that the tanks posed from 1915 on.

The ACV clearly has major implications for the future of armored warfare. Quick perception and development of tactics and systems may be as essential ultimately as the varied reactions of nations to the tank after 1918. A new vehicle, moving in a new context, at high speed, suggests a whole new dimension of possibilities.

And perhaps most significant, in tank and assault gun configurations, the ACV could do much to raise the average speed of the armored *expanding torrent,* bringing a far wider area of the enemies' administrative network under immediate potential threat in the exploitation phase. In addition, the higher speed would allow concentration, decision, and dispersal to take place far more quickly on a nuclear battlefield or under enemy air dominance.

ACV

The author ROGER A. BEAUMONT is currently pursuing doctoral studies in military history at Kansas State University under Dr. Robin Higham, the noted authority on the British military intellectuals who contributed so much to the development of the doctrine of modern mobile warfare. Previously, Mr. Beaumont was assistant to the Director of the Center for Advanced Study in Organization Science, University of Wisconsin. An earlier contribution on the ACV by Mr. Beaumont appeared in "The Sounding Board" (ARMOR, September-October 1966).

The most immediate question is: what specifically in the way of unique combat and logistical specifications does the ACV offer to the commander? The ACV is no replacement for the tank, since it would be blocked by dense woods, thickets, and high fixed obstacles. But it could move into areas at a high speed that no other vehicles, other than boats, and helicopters, can approach.

In desert warfare, the ACV would allow much greater range of movement of infantry, supplies, artillery and fuel. Evacuation of wounded in non-flying weather, or under conditions of sufficient enemy aerial presence to limit helicopter "dust-offs," would be possible—with riding comfort beyond that of any other vehicle. The ACV has already been proven as a supply vehicle in the wetlands of Borneo and clearly has impressed the Navy with its tactical successes in the Mekong delta.

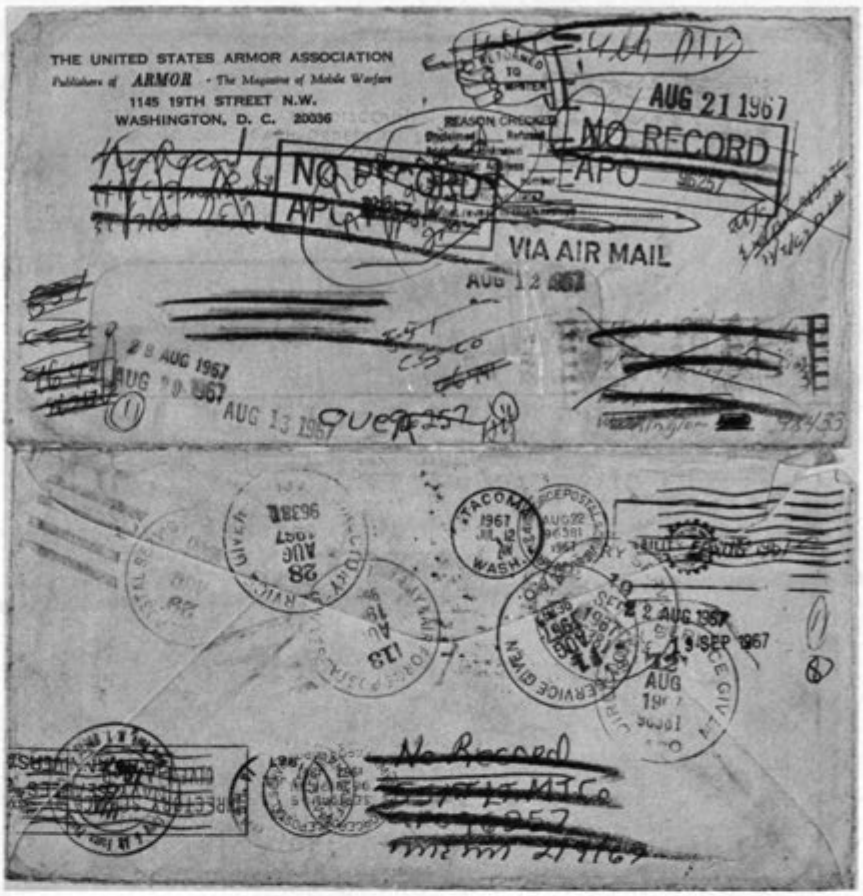
Certainly it would be a novelty to the commander to be able to ignore the restrictive effects of rivers, swamps, and streams and even employ waterways as undamageable, broad, unobstructed avenues of approach or supply routes. The unmarked contact mine barrier would lose much of its effectiveness. In short, the ACV would fill in much of the map now marked impassable or limited to other types of vehicles.

The greatest obstacles to ACV development may prove to be inertia and perhaps a certain amount of inter-service rivalry. The Navy has already stolen a march, as it did in Britain with the tank in 1915. The utilization of the air cushion vehicle by all services should not be restricted by any artificial boundaries. The establishment of an Army tactical study center would only be the first step toward moving forward in this new and crucial area.

It will take something more than awareness and appreciation to make the ACV fulfill its promise. It will take research, action, and working out techniques in the field. And at this point, how many ACVs are available—even small ones—for field trial by the Army? Much distance remains to be covered before even the first ACV moves onto a maneuver ground, for use by troops.

Somebody will be first with a tactical ACV system. Who will it be? Students of military history and innovation alike will be very interested in how it develops. And so will the first field commander who employs ACVs—and the first one who encounters them. But of equal interest will be the source of the change. Will the adaptation of innovation take place within a formal organization, or will it be the informal response of enthusiasts? In view of past experiences, the latter seems more likely.

PROBLEM



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1917-THE MARK V

To celebrate its 50th Anniversary, a major part of the Royal Tank Regiment gathered at Reinsehlen, Germany for a gala regimental mounted review.

Following the honors to the Colonel-in-Chief, Queen Elizabeth II, the Queen inspected her assembled regiment.

Then the pass in review began as a single 1917 29-ton **Mark V** tank lumbered by, its unditching beam prominently displayed on top.

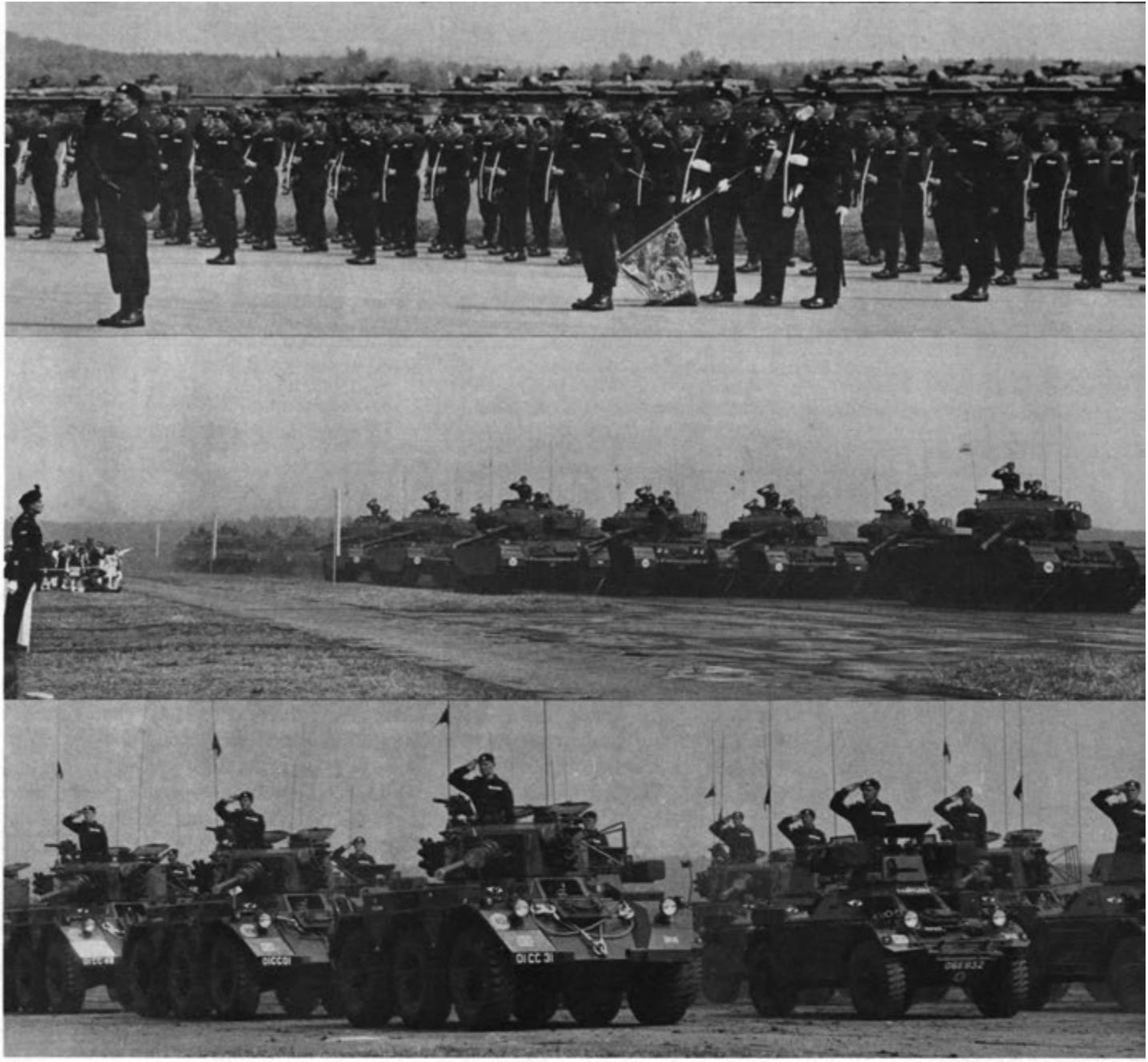
Next came the **Centurion** tanks of today's armored regiments, the **Saladin** and **Ferret** armored cars of the armored car squadrons and a host of other armored fighting and auxiliary vehicles. As each passed by, its guns dipped in salute.

Fifty years of progress were dramatically demonstrated by the **Chieftain** whose high speed and 120mm gun were in marked contrast to the **Mark V's** turtle pace and two pounders.

American Armor joins in saluting our British comrades-in-arms who developed and first employed the tank, who contributed so much to our doctrine and with whom we fought side by side in two World Wars and in Korea. They have served the cause of freedom fearlessly for 50 years. We wish them well as they embark on another fifty.

THE ROYAL TANK REGIMENT

CELEBRATES 50 YEARS



1967-THE CHIEFTAIN

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!!

DO WE EXPECT TOO MUCH?

By CAPTAIN PHILLIP L. McFADDEN

The Armor noncommissioned officer of today is required to be a leader, tactician and instructor. He commands and is responsible for highly technical, complex items of military equipment. Weapons, automotive, and communication systems are complicated and must be thoroughly understood. The *Sheridan, MBT 70* and other new equipment will only magnify the requirement for knowledge. Experience undoubtedly is the best teacher. But with the various types of equipment in our present inventory, and those that the future promises, how can an Armor NCO be expected to be proficient and prepared for the various situations that he will face?

The potential Armor NCO receives his first technical knowledge in the second eight weeks of his army life during Armor Advanced Individual Training.

This training is designed to fit the basic Armor crewman for his first assignment. By the time a professional soldier becomes a staff sergeant or platoon sergeant, he will probably be working with completely new and more sophisticated equipment.

The knowledge and experience gained from unit training, army training tests and field training exercises is unquestionably the most valuable to any soldier—be he officer, NCO, specialist or private. However, the Armor NCO should be allowed a period, while in grades E5 or E6, to learn in an academic atmosphere. During this time he can reflect on a vast background of knowledge, learn new skills, and learn what is expected of the senior NCO.

Army Regulation 350-90 offers guidelines for U.S. Army NCO Academies. This regulation requires a minimum of four weeks instruction on general military subjects appropriate for an NCO. These courses are good and certainly no one can disagree with their need.

However, these courses offer little to the Armor NCO in the way of that good solid hardware training which is essential to his job performance. It is easy enough to say that an Armor NCO is a leader and that the technical skills he requires can be obtained through experience and study of field and technical manuals. But, in reality, only an academic atmosphere can give adequately that broad and solid foundation which he needs.

A good program of extension courses is available to the Armor NCO. The Armor School presently offers two courses, the Armor Noncommissioned Officer Course and the Armor Senior Noncommissioned Officer Course. The Armor Noncommissioned Officer Extension Course is designed for all enlisted personnel assigned to Armor units. The course consists of 246 credit hours including a mandatory phase of 125 hours and an optional phase will be changed in the future to an electives program in which the NCO must complete a certain number of hours of his own choosing.

The Armor Senior Noncommissioned Officer Extension Course is designed for E8s and E9s but can be pursued by E6s and E7s under certain circumstances. Completion of this course qualifies one to take the NCO extension course offered by the Command and General Staff College.

These courses offer to the Armor NCO the opportunity to learn required skills as his career progresses. But, it is also true that many NCOs are required to spend far more hours than the normal 44 a week in the performance of their jobs. To expect an NCO to complete extension courses in his limited free time is often expecting too much. NCOs should be programmed into school based on criteria similar to those used for officer schooling.

The MOS requirements for an E6 11E40, E7 11E40, E8 11E50, or E9 11E50 are comprehensive indeed. There are few, if any, sergeants in the Army today who can truthfully say that they can perform all the duties required by their MOS descriptions.

In addition to the requirements given in the MOS descriptions, there are certain other duties that we all expect of our more senior NCOs. The most important of these is the training of our junior officers. It is well-known that any platoon leader who does not take advantage of his platoon sergeant's knowledge and experience is very foolish. We cannot afford to have platoon sergeants and first sergeants who are not willing and capable of performing this task of training young officers.

The U.S. Army Armor School offered an Armor Noncommissioned Officers Course between fiscal years 1957 and 1961. This course varied in length from fifteen to nine weeks. The course in 1957 and 1958 was designed for both E6s and E7s. From 1959 to 1961 the course was for E6s only and was reduced to thirteen weeks in 1959 and to nine weeks in 1960. The difference in hours between the fifteen and nine weeks courses was generally in the Command and Staff and General Subjects Departments. The hours eliminated paralleled reductions in the Armor Officer Basic Course during the same period.

All Armor NCOs in grades E5 and E6 should be scheduled to attend formal schooling at the Armor School. This schooling should be pointed toward the job requirements of grades E7 to E9. The NCO course should be a prerequisite for promotion to grade E8. Further, the Command and General Staff College extension course should be offered as a resident course for selected E8s and E9s.

The Armor noncommissioned officer needs formal schooling. Will we continue to leave him to his own individual devices, or will we assist him with formal schooling? Armor NCOs deserve the sort of military education that Fort Knox has previously presented. It should be offered again.

151 HAZARDS

By CAPTAIN HENRY MORRIS

In 1961 the Ford Motor Company gave birth to a new ¼-ton truck. It began simply enough, its potential seemed adequate, and it was snatched from its crib, subsequently named the *M151* and promptly adopted by the U.S. Army.

This vehicle matured slowly and only now after several years of use are its true colors coming to light. The vehicle, innocent though it may seem, is a potential death trap in the clinches.

The *M151* is different from other military wheeled vehicles and requires special driver training. All ¼-ton drivers receive this training which should eliminate most accidents caused by the unique suspension. However, the rapid turnover of personnel and accelerated promotion system do not allow a driver sufficient time to become thoroughly accustomed to the very different feel of this vehicle. Even well-trained, experienced drivers have accidents.

Perhaps speed, weather conditions or the roads are the real scapegoats. The best qualified driver I had in my unit was involved in an *M151* accident. He was traveling less than 10 MPH on a snow-covered, rut-infested road. Speed was definitely not a factor whereas the weather and the type road were limited contributing factors. However—the primary cause of this mishap was deception of a good driver by a seemingly innocent independent suspension. The hazard may be in part, the driver, the road conditions, the terrain, the weather conditions or the speed. But the major hazard is the deceptive independent suspension.

The *M38's* leaf springs and solid rear axle gave a rough ride. In 1961 the *M151* was praised for its soft ride owning to its independent suspension and segmented rear axle. This soft ride has become too dangerous. Something must be done.

The soft ride need not of necessity be abandoned. The canvas and related metal supports on the standard jeep, for example, afford some protection to the vehicle's occupants should the vehicle capsize. The standard metal cover affords even more protection, but both covers share shortcomings.

Reconnaissance with an inclosed vehicle limits visibility to less than 180 degrees. And to achieve maximum protection from the covers, seat belts should be standard equipment. These seat belts and the vehicle covers would decrease reaction time and flexibility to an unacceptable level in a combat zone. Also, inclosed vehicles are impractical in climates where the temperature and humidity remain near or above 90 degrees year round. Tops with no doors might afford some protection from turnover while maintaining most of the visibility and much of the flexibility and reaction time. This idea merits expansion.

If there were some way to maintain the soft ride, yet incorporate the advantages of the canvas or metal cover without the disadvantages, then perhaps the *M151* would be an acceptably safe vehicle. This could be done with a "roll-bar" kit. The term may sound like a stamp of approval for hot-rod drivers but it is not. Furthermore, its name could be "safety-bar," "life-bar" or something similar to avoid the drag-strip connotation.

Should a vehicle equipped with such a kit roll over, the occupants would have a chance of not being crushed. The addition of seat belts would help to prevent them from being thrown from the vehicle. Thus the *M151* could be made much safer and would retain a practical combat configuration.

Photo E. C. Armees

Panhard Armored Cars

By RICHARD M. OGORKIEWICZ

Armored cars produced recently in France provide an outstanding example of the development of wheeled armored vehicles. They are, therefore, of considerable interest from the point of view of armored vehicle design. What is more, they demonstrate the successful employment of wheeled armored vehicles in the important fields of ground reconnaissance and security operations.

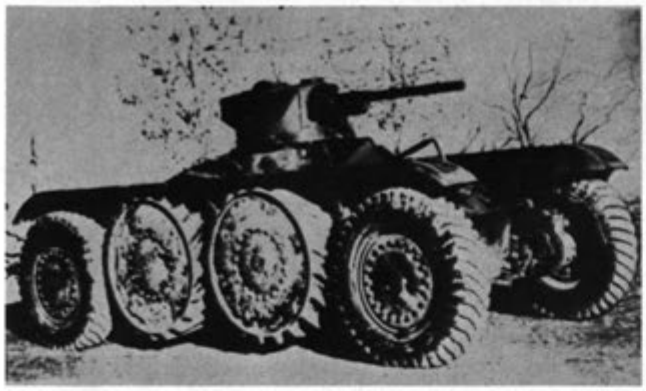


Figure 1—Prototype Panhard Model 201 built in 1940.

DEVELOPMENT BACKGROUND

The armored cars are of two main types, the *EBR* and the *AML*. Both have been developed and produced by the Panhard Company. This company has a distinguished record with respect to the production of wheeled combat vehicles which goes back to before World War I. In fact, it was as early as 1911 that Panhard produced their first *automitrailleuse*, an unarmored machinegun car. Panhard's connection with combat vehicles is longer, therefore, than that of any other organization in the world.

Of the two current types of armored cars, the *EBR* is by far the earlier. Indeed, its development may be said to have started as early as 1937. At that time Panhard was producing the *AMD 178*, a four-wheeled armored car adopted by the French cavalry for its mechanized reconnaissance units. The *AMD 178* represented a major advance from earlier armored cars. But, under the stimulus of the French cavalry's requirements for wheeled reconnaissance vehicles with still better off-the-road performance, Panhard embarked on the development of a much more advanced, eight-wheeled armored car which became known as the *Model 201*.

A prototype of the *Model 201*, (Figure 1) was built by 1940 but then France was defeated and its development came to an end. The prototype was actually evacuated to what was then French North Africa only to be lost in the sands of the Sahara. The design drawings were destroyed to prevent them falling into enemy hands.

The ideas embodied in the *Model 201* were, however, revived after the liberation of France in 1944. In July 1945, the French Army issued a requirement for a wheeled armored reconnaissance vehicle whose design would follow that of the *Model 201*. This became the *Engin Blindée de Reconnaissance*, or *EBR* (Panhard *Model 212*). The first two prototypes of the new vehicle were completed in July 1948. Production started two years later, and continued until 1960.

THE EBR

Apart from its eight, commendably large, wheels the most striking feature of the *EBR* is the almost complete symmetry of its layout. This stems from the adoption of two driver's stations to achieve equal facility in driving forward and backward, and the location of the engine underfloor in the center of the vehicle (Figure 2).

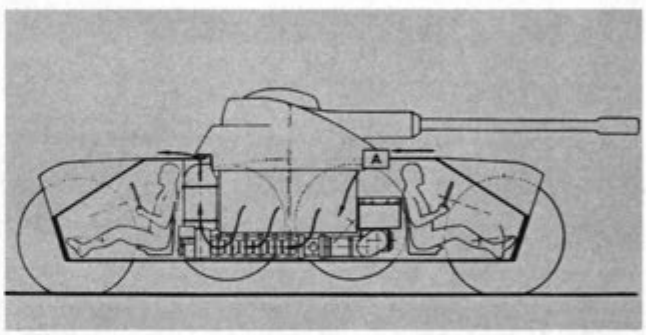


Figure 2—View of driver locations and engine position.

To be placed in the center of the vehicle the engine had to be as flat as possible. To meet this requirement Panhard developed a 12 cylinder, horizontally opposed, air cooled engine which develops 200 bhp (brake horsepower) but is only 8½ inches high. In consequence it can be located under the floor of the fighting compartment without adverse effect on the height of the hull, which is only 40 inches.

From the engine the drive is taken through two gearboxes connected in series to a single central differential, which can be locked out, and then along each side of the hull to all eight wheels. The front four wheels are mounted on leading arms and the rear four on trailing arms. All eight are independently sprung. However, only the four outer wheels are fitted with pneumatic tires. The four inner wheels are non-pneumatic and heavily studded. The difference is due to the fact that the inner wheels are not required for operation on roads and are normally clear of the road surface.

RICHARD M. OGORKIEWCIZ *needs no introduction to constant readers of* ARMOR. *His reputation as an authority on armored fighting vehicles is well established among mobile warfare enthusiasts everywhere. The September-October* ARMOR *carried his keynote address to the 78th Annual Meeting of The United States Armor Association which was entitled "Developments in Armored Equipment", as well as a summary of his achievements. Mr. Ogorkiewicz' new book,* Design and Development of Fighting Vehicles, *will be published early next year. All photos were provided by the author except the first photo of the AML.*

Figure 3—Original version of the Engin Blindee de Reconnaissance with FL 11 turret mounting 75mm gun. Intermediate road wheels are raised.

When the four center wheels are lowered for off-the-road operation, all eight wheels are in contact with the ground. With all eight wheels in contact, the nominal ground pressure exerted by the *EBR* is only 10 psi, which is as low as that of any battle tank. On the other hand, on roads the *EBR* is capable of speeds of up to 62 mph. This is well above the maximum speed of any tank. Consequently, it possesses a combination of on and off the road performance which is superior to that of any tracked armored reconnaissance vehicle.

Moreover, the *EBR* is not only highly mobile but it also carries effective armament. The original version (Figure 3) had the *FL 11* turret mounting a 75mm gun capable of firing armor-piercing projectiles with a muzzle velocity of 1970 feet per second (fps). The second version (Figure 4) was fitted with the larger *FL 10* turret of the *AMX 13* tank which mounts a much more powerful 75mm gun firing armor-piercing projectiles with a muzzle velocity of 3280 fps and has an automatic loading mechanism.

Figure 4—The FL 10 turret of the AMX 13 tank heightened the silhouette of the EBR and added weight.

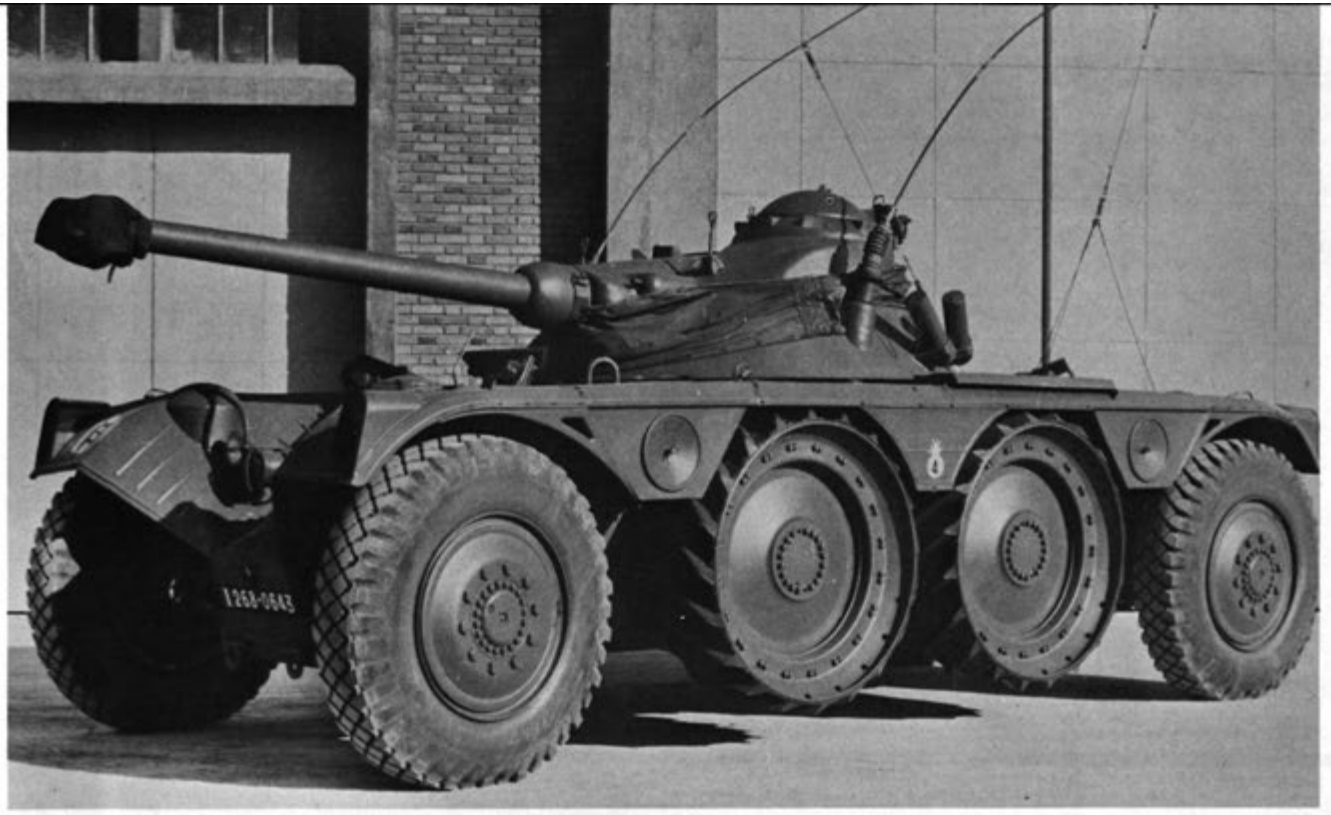


Figure 5—Latest version of the EBR with a 90mm gun permits this armored car to engage battle tanks.

However, the *FL 10* turret increased the weight of the *EBR* from 29,000 to 33,600 pounds and its overall height from 88 to 102 inches. Therefore, all the *EBRs* have now been refitted with the *FL 11* turret which has been modified to mount a new 90mm smoothbore gun which fires fin stabilized, shaped charge projectiles are capable of penetrating armor 350mm thick. Thus it is possible for the *EBR* to engage even battle tanks (Figure 5).

All the turrets are manned by two men, the vehicle commander who also acts as loader in the FL 11 turret, and the gunner. All the turrets are of the trunion-mounted, or oscillating, type. It is worth noting that the *EBR* was the very first armored vehicle to be produced with this type turret. In addition to the main armament, each turret mounts a coaxial 7.5mm machinegun. Each of the two drivers is also provided with a 7.5mm machinegun fixed in the lower hull plate.

THE AML

Excellent as it is, the *EBR* did not meet all the needs of the French Army for wheeled armored vehicles. In particular, counterinsurgency operations in Algeria during the fifties brought out the need for a vehicle less powerful than the *EBR* but better armed than the Daimler *Ferret* scout cars procured at the time from Britain. Out of this, in 1956, came a French Army requirement for what became known as the *Automitrailleuse Légère* or *AML* (Panhard *Model 245*).

Prototypes of the *AML* were built in 1959 and its production followed with a speed all too rare these days in the field of armored vehicles. As a result, one French armored cavalry unit was fully equipped with the *AML* by the end of 1961. Production of the *AML* has continued ever since, not only to fulfill orders placed by the French Army but also by the armed forces of nine other nationalities. In addition, several hundred *AML* have been built under license in South Africa.

Compared with the *EBR*, which is a sophisticated vehicle designed to achieve the best possible combination of road and off the road operation, the *AML* is a much simpler vehicle designed to meet much more modest requirements. It is also powered by an air-cooled, horizontally opposed engine but this has only four cylinders and develops only 90 bhp. However, the *AML* is considerably lighter and its engine is sufficiently powerful to give it a maximum road speed of 56 mph.

In contrast to the *EBR*, the engine is located at the rear of the hull, as in most other armored cars, and there is only one driving station. In two important automotive respects the *AML* is, however, similar to the *EBR*. First, it has a similar type of transmission layout with a central differential. Second, its wheels are mounted on trailing arms and are independently sprung by means of coil springs. The wheels are fitted with tires which are much more flexible than those normally used with combat vehicles by virtue of the fact that they are also fitted with special Hutchinson inner tubes. These tubes enable the vehicle to operate after the tires have been punctured but they do not interfere with the flexibility of the tires under normal conditions. This is particularly advantageous from the point of view of operation on sand and other soft surfaces.

Figure 6—Counterinsurgency operations by the French in Algeria during the fifties brought out the need for a less powerful, simpler scout car than the EBR.

Like the *EBR*, the *AML* are fitted with two-man turrets but these are of a conventional type. The original version (Figure 6) is fitted with the *HE 60* turret which mounts an unusual combination of a 60mm breechloaded mortar and two 7.5mm machineguns or one 50 caliber machinegun. These combinations were inspired by the experience of counterinsurgency operations. The second version (Figure 7) is fitted with the *H 90* turret which mounts a 90mm smoothbore gun and a coaxial 7.5mm machinegun. The 90mm gun, which fires shaped charge projectiles with a muzzle velocity of 2450 fps, is the same as that mounted in the latest version of the *EBR* and gives the *AML* a very effective form of armament, particularly in relation to its size. In fact, the second version of the *AML* only weighs 12,000 pounds while the original version weighs even less—10,500 pounds.

A missile installation has also been developed for the *AML* to provide it with a long range antitank capability. The installation consists of an *SAMO 1160* launcher with four *ENTAC* antitank guided missiles on an *HE 60* turret. The missiles are normally stowed behind the turret. For firing, the launcher brings them out in pairs on either side of the turret (Figure 8).

EMPLOYMENT

Because of the differences in their characteristics and capabilities, the *EBR* and the *AML* are currently assigned to different type units. The *EBR* is assigned to the divisional armored reconnaissance units of the French Army field forces. The *AML*, on the other hand, is assigned to the light armored units of the territorial defense forces and the intervention force intended for overseas operations.

The divisional armored reconnaissance units are designated *Regiments de Cavalerie Légère Blindée*. These carry on the traditions of the regiments of *hussards*, the light cavalry which so distinguished itself in the wars of the 18th Century by its mobility and dash—the very qualities which are expected of today's armored cavalry units.

In American cavalry terms, each regiment consists of a headquarters troop and four armored car troops. An armored car troop has four armored car platoons, each with three *EBR*, three ¼-ton trucks carrying scouts and a supply truck. In addition, the troop has one rifle platoon in light trucks.

The organization of the *EBR* units is, therefore, relatively simple and lends itself to dispersed operation in a number of small, officer-led armored car patrols—sixteen patrols, in fact. This, together with the exceptional mobility and radio equipment of the *EBR*, enables these units to cover large areas and perform effectively their primary roles of reconnaissance and security to include surveillance over wide fronts and delaying actions.

The light armored units of the territorial defense force are designated *Regiments Blindés de Défense Operationnelle du Territoire*. In keeping with their varied functions they maintain the traditions of the regiments of *chasseurs a cheval*, the versatile mounted riflemen of the 19th Century.

Their organization, like that of the *EBR* units, is simple. There are only three armored car troops per regiment and only three armored car platoons per troop. However, the platoons are larger, each having five *AML* and four scout-carrying ¼-ton trucks.

The *AML* are normally expected to operate in troops, each of which can be split up, if necessary,

Figure 7—Second version of the Automitrailleuse Legere (AML) is fitted with a 90mm smoothbore gun and a coaxial 7.5 machinegun.

into as many as six armored car patrols for the surveillance of critical areas, protection of lines of communication and escort duties. Other roles envisaged for these troops include supporting the infantry units of the territorial force against lightly armed hostile elements and cooperating with the field forces against hostile armored units.

In addition to its employment by the French Army, the *AML* has been effectively used by the Irish contingent of the United Nations peace-keeping force in Cyprus. It has also been acquired by several countries to strengthen their internal security forces and it has been procured by Israel to reinforce the units guarding its frontiers against raids from neighboring Arab countries.

The *AML* is clearly suitable for a wide variety of roles and together with the *EBR* indicates the capabilities of well-designed wheeled armored vehicles. In fact, the two types of Panhard armored cars show that wheeled armored vehicles can be superior to tracked vehicles in a number of roles. These versatile fighting vehicles make it possible for armor to extend its range of operations into the wide and increasingly important field of security operations for which tracked armored vehicles are largely unsuitable.

Figure 8—Four ENTAC antitank guided missiles add long range antitank capability to the AML.

THE ARMOR OFFICER IN THE MODERN ARMY

VIETNAM

This is the final article in a series of three prepared by members of Armor Branch, Office of Personnel Operations. The first article which appeared in the May-June issue, discussed overall branch strength, sources of officers, promotions, school selection, and assignments. The second article, in the July-August issue, outlined career development of Armor officers and trends in career management. This article by Colonel John R. Barclay, Chief, Armor Branch is concerned with Armor officers serving in Vietnam and those who can expect to serve there in the future. It is based, in part, on the author's observations made while serving as a member of the Mechanized and Armor Combat Operations in Vietnam (MACOV) Study Group during the period 6 January-2 April 1967. EDITOR

The MACOV Study was directed by the Department of the Army based on a requirement from the Chief of Staff, to determine whether a pattern for mechanized infantry and armor operations was emerging in the Republic of Vietnam (RVN). The study mission was assigned to the Commanding General, US Army, Vietnam. The study group of 68 officers, two warrant officers and 21 enlisted men was headed by MG Arthur L. West, Jr., US Army Combat Developments Command.

The results of the study are contained in a classified report of six volumes. An additional *Official Use Only* report summarizing the operational and training aspects of the study was also prepared. This additional report was designed to supplement previously published training literature dealing with mechanized and armor combat operations in Vietnam. It has been distributed to units, training centers, and service schools for their use in developing Vietnam oriented training. The MACOV group is also producing a training film which will be distributed as a Vietnam Training Report about the time that this article appears in print.

The study group also produced a draft field manual on air cavalry operations which has been distributed to air cavalry units and service schools. The MACOV study recommended that the draft serve as the basis for a Department of the Army Field Manual on air cavalry operations.

My observations, while participating in the study, were limited to those US Army units operating under II Field Force Vietnam during the latter part

of January, and early February, 1967. From 13 February until 2 April, my primary occupation was report writing. I do not wish to convey the impression that I became an expert during this short period. I did, however, have the opportunity to interview a great many Armor officers both in US Army, Vietnam (USARV) and in the Military Assistance Command, Vietnam (MACV).

It is not my purpose here to present a resume of mechanized and armor combat operations in Vietnam. The reports and training film mentioned above cover this field in considerable depth and are based on the experiences, observations, and reports of the real experts—the people who are there now doing the job both in the air and on the ground. My purpose in this article is to answer, at least in a general way, the questions most often asked about Armor officers in Vietnam, and by those now serving there or those who expect to serve there in the future.

Before proceeding, it is necessary to remind the reader of the misleading information contained in the first article of this series which appeared in the May-June issue of this journal. Specifically I refer to the chart on page 14 of that issue which purported to show the percentage of Armor officers, by grade, who were serving in Vietnam. Unfortunately, the color scheme used was reversed from what it should have been and had the effect of reversing the percentage figures thus portrayed.

To further the confusion, the data have changed rather dramatically since the article was prepared. These changes are partly the result of increases in branch strength from OCS, ROTC, and USMA sources. Other changes were caused by new deployments and by promotions in all grades. The accompanying chart represents the percentage of Armor officers from lieutenant to lieutenant colonel, who were serving in Vietnam on 30 June 1967.

	MACV	USARV	TOTAL RVN
Lieutenant Colonel	6%	6%	12%
Major	6%	12%	18%
Captain	8%	17%	25%
Lieutenant	>½%	8%	8%

The overall percentage of the branch, lieutenant through lieutenant colonel, serving in the Republic of Vietnam on 30 June was about 14 percent.

During the current fiscal year, the percentage of lieutenant colonels in the country will increase on the order of one percentage point because of newly announced deployments. The percentage of majors will increase on the order of two to three percent as a result of the infusion of Armor officers into infantry positions and new deployments. The percentage of captains will increase to about 33 percent for the same reasons. The percentage of lieutenants in Vietnam will decline slightly as more officers enter the branch from OCS. The recently announced cutback in the OCS program will not affect this downward trend greatly during the current fiscal year. The reader is cautioned to keep in mind that the decline in the *percentage* of lieutenants serving in Vietnam is due to an overall increase in the number assigned to the Armor branch. The *number* serving in Vietnam is expected to increase as a result of new deployments and other requirements.

The percentage of officers by grade serving in MACV and USARV is useful in answering a question frequently asked by Armor officers programmed for service in Vietnam: "What are my chances of serving in a US unit?" Based purely on percentages, the answer is obvious. If you are a lieutenant colonel the odds are even money. Captains and majors enjoy odds of two to one in favor of assignment to American units. Officers in the grade of lieutenant are almost certain of assignment to American units. The few who are in MACV are either aides or are in administrative type positions. A few exceptionally well qualified lieutenants are serving in advisory positions.

Percentages of officers assigned to MACV and USARV are simply a reflection of the requirements of these two commands. On becoming available for service in Vietnam, an individual's qualifications are the primary factor in determining his assignment. At the risk of oversimplification, a captain who is a graduate of the advanced course and is well grounded in his branch is a likely candidate to fill an advisory position in MACV. A major who is a graduate of the Command and General Staff College or its equivalent is much more likely to fill a MACV staff or advisory position than he is to receive an assignment to a US Army troop unit. Assignment of lieutenant colonels is complicated by requirements for commanders and the happy circumstance of having many more volunteers than positions to fill. Lieutenant colonels who are recommended for command are usually assigned to USARV. Those who have already had a tour in command are usually programmed for MACV assignments. Armor Branch does *not* assign commanders, it simply identifies to USARV, those

officers who are, because of their past performance, qualified and recommended for command.

Aviators, with the exception of a few serving in MACV, are assigned to USARV aviation units. A little less than half of Armor's aviators were serving in Vietnam at the end of June 1967. Projections indicate that we will go slightly over the halfway mark in early 1968, and then begin a gradual decline as more aviators enter the branch from the flight training program.

Another question often asked, and one which is related to the foregoing, concerns the type of US units to which Armor officers are most likely to be assigned. By the time this appears in print there will be nine armored cavalry squadrons, three air cavalry squadrons, six separate armored cavalry troops, and two tank battalions serving in Vietnam. Reducing this line-up to the troop/company level there are:

- 36 armored cavalry troops (including ground cavalry troops organic to air cavalry squadrons)
- 14 air cavalry troops
- 9 tank companies

The Armor branch is peculiarly blessed in that it is the only combat arm having branch material aviation positions. These are in the air cavalry units. These units are not, at present, wholly manned by Armor aviators because of the requirements to maintain some degree of equity in repetitive Vietnam tours. Within this limitation, the branch fills as many of the positions in air cavalry units as possible.

Armor lieutenants, other than aviators, have the best chance of serving in US armor units. This is because of the limited number of assignments in MACV and minimal requirements for their services in infantry assignments. Armor lieutenants are most likely to serve in armored cavalry units since these outnumber tank units four to one.

The prospects for Armor captains and majors to serve in Armor units are considerably less than those enjoyed by lieutenants. This is because of demands on these grades to fill division, field force and USARV staff positions and requirements to assist in manning infantry positions.

Service in Armor units for lieutenant colonels means command. Suffice to say, the competition is keen. In addition to those filling the Armor battalion and squadron command positions, during the past year, Armor has averaged three lieutenant colonels in command of infantry units and two in command of aviation battalions other than air cavalry.

Another question of increasing interest and pertinence to Armor officers these days is "When can I expect to serve a second tour in Vietnam?" The answer again depends on grade and whether or not you are an aviator. The question of aviators will be addressed first since second tours, in an involuntary status, have been in progress for some of these officers for some time.

At the risk of being accused of "waffling" the answer, second tours for aviators depend on many factors. Some are fairly simple, and others practically defy analysis. These include grade, individual aircraft qualifications, retention of junior officers, unit activations, and the $64.00 question of how long the war is going to last.

Some aviation units which were recently deployed contained avaiators with a minimum of service in CONUS since their return from Vietnam. This temporary situation was caused by activation of these particular units at a time when the availability of graduates from the flight training program did not allow meeting the aviator requirements with officers who had not served a previous tour in the Republic of Vietnam.

We would like to establish a minimum turnaround time of 24 months between Vietnam tours. Those factors mentioned previously would continue to affect significantly individual cases. Based upon our current and projected aviator strength, it is likely that it will take four or five years to program *all* presently qualified Armor aviators for second tours. The validity of this forecast hinges on several assumptions. First, continuance of the war at about the present level of intensity; second, no additional unit activations with subsequent deployment (beyond those presently programmed); and last, stabilization of the aviator manning level for Vietnam at the point now anticipated for Fiscal Year 68.

Second Vietnam tours for other than aviators depend on grade, retention of junior officers, requirements to man infantry positions, unit activations, and the $64.00 question mentioned earlier.

Lieutenants with two year obligations who do not change their category to Voluntary Indefinite or Regular Army are not concerned with second tours. Further, some officers in this category will be required to man positions in Europe, Korea, and the Continental United States (CONUS).

Conversely, those officers who serve a tour in Vietnam as lieutenants are vulnerable for a second tour while they are captains. This circumstance is a result of the many requirements for captains both in MACV and USARV. Based on current requirements, it appears that some Armor captains will start serving a second tour in Vietnam in the summer of 1968. The first to go will be those who have been back longest.

In the case of majors, it now appears that second tours will start somewhat sooner than for cap-

tains but the time between tours should approach two years throughout 1968. Lieutenant colonels will not be required to serve second tours for the forseeable future.

Another question, which is of particular interest to short timers, concerns assignment on completion of a tour in Vietnam. To the extent that requirements permit, officers returning from Vietnam are given priority in obtaining their preference of both geographic area and job. Most company grade officers returning are, or soon will be, captains. If the command-experienced captain has not already attended, he will be programmed for the next available course. If a captain has not had command at the company level, he can look forward to a command tour probably in a training center. If he has had both command and the advanced course, he can expect a staff assignment, or a tour on the staff and faculty in a service school or in an ROTC instructor group.

Insofar as majors are concerned, those who are eligible are considered for attendance at the Command and General Staff College and, if selected, are so assigned. Those who have already completed the course are in great demand in the training base and for higher level staff positions.

It is difficult to generalize very much about the assignment of lieutenant colonels. Those who have successfully completed a command tour should not be surprised to find themselves programmed for a job in the Pentagon. Those who have yet to complete a command tour may request assignment to a command in Europe or in CONUS. At the present time there are 38 command positions for lieutenant colonels in Europe and 50 in CONUS.

In conclusion, I should like to address briefly a question often asked by retired Armor officers and by the many former members of the branch who have returned to civilian life. The question is, "How are Armor officers doing in Vietnam?" I might add that I consider myself well qualified to answer this question for two reasons: I saw many of them in action, admittedly for a short period, and, I have the opportunity to see the efficiency reports on every one of them.

I can state, without qualification, that the Armor officers in Vietnam are doing an outstanding job. They learn fast and are learning more every day as their operations are extended into areas never before penetrated by Armor units. They have demonstrated clearly that armor can be used effectively in Vietnam, even in those areas which, not so long ago, were considered accessible only by air or on foot. Our predecessors in the long illustrious history of cavalry and armor need have no qualms about the fine reputation they have so ably established. The present group is not only maintaining it—they are adding to it.

thirty years ago—

THE GENESIS OF AN ARMOR LEADER

General Patton's achievements as a commander and leader of mobile troops have been well documented and are widely known. Equally renowned are his aggressiveness, confidence, spirit and thorough scholarship in matters of importance to the military professional. That these qualities were not solely characteristic of his later and more famous years, nor a product of his many biographers, is illustrated by the following letter.

This document was discovered in the National Archives by Mr. Timothy K. Nenninger, a University of Wisconsin graduate student of history. Mr. Nenninger is preparing a thesis on the development of American armor doctrine in the period between World Wars I and II. This past summer it was the privilege of the Armor Association to assist his research.

To our knowledge, this letter has not been published previously. It is presented here for the penetrating view it gives of a 31-year-old captain who foresaw a great future for an as yet unproven and highly speculative means of mobile warfare and put forth a lively bid to play a causative role in bringing about that future.

Headquarters Troop, A.E.F.
October 3 1917.

From: Capt. G.S.Patton, Jr. Cavalry.
To: The Commander-in-Chief. A.E.F.
(Thru Commandant Hq. A.E.F.)

Sub: Command in the Tank Service.

1. I understand that there is to be a new service of "Tanks" organised and request that my name be considered for a command in that service.

2. I think my self qualified for this service for the following reasons.

A. The duty of "Tanks" and more especially of "Light Tanks" is analagous to the duty performed by cavalry in normal wars. I am a cavalryman.

B. I have commanded a Machine Gun Troop and know something of the mechanism of Machine Guns. I have always had a Troop which shot well so think that I am a good instructor in fire. It is stated that accurate fire is very necessary to good use of tanks.

C. I have run Gas Engines since 1917 and have used and repaired Gas Automobiles since 1905.

D. I speak and read French better than 95% of American Officers so could get information from the French Direct. I have also been to school in France and have always gotten on well with frenchmen.

E. I believe that I have quick judgement and that I am willing to take chances. Also I have always believed in getting close to the enemy and have taught this for two years at the Mounted Service School where I had success in arousing the aggressive spirit in the students.

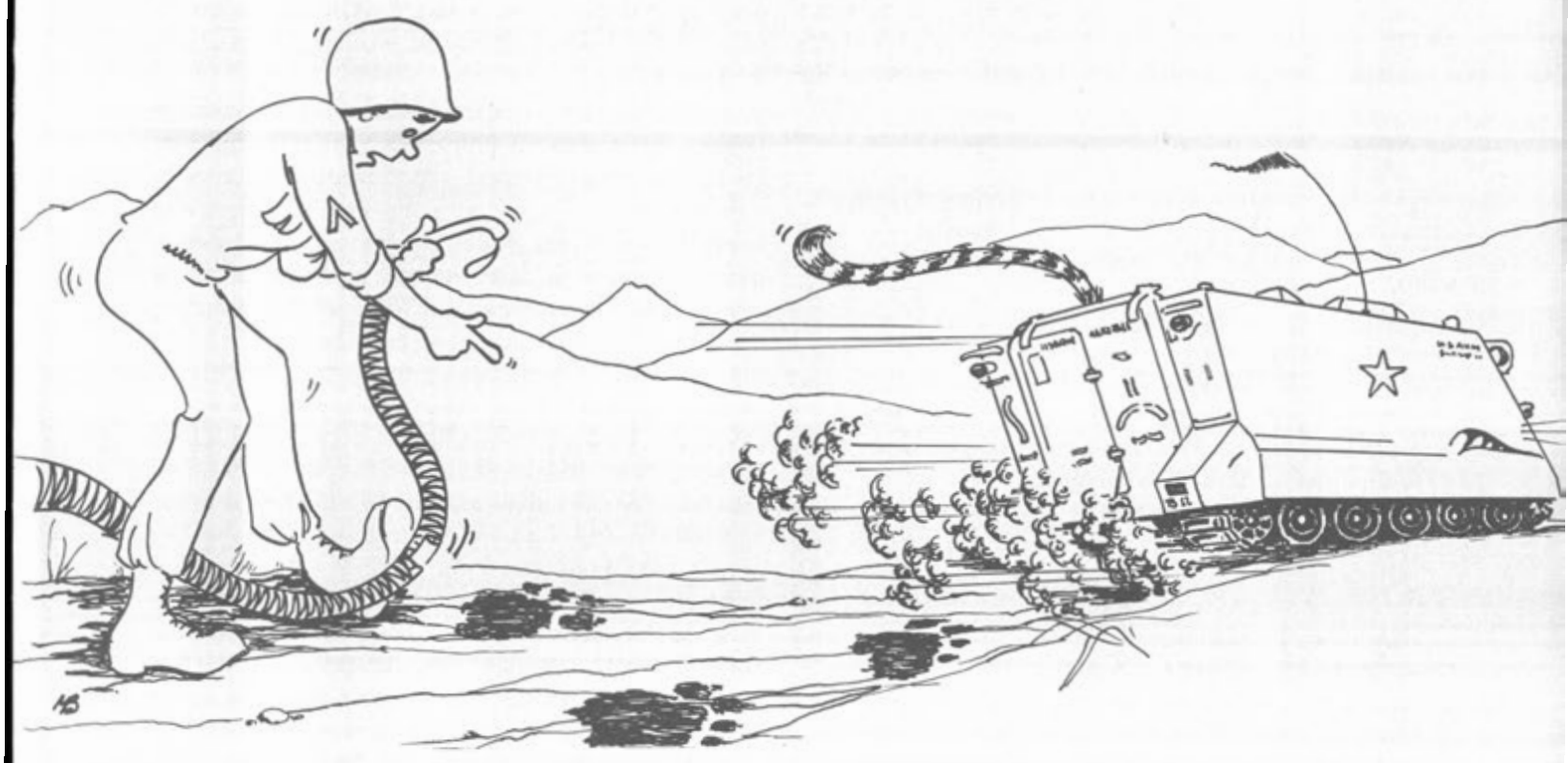
F. I believe that I am the only American who has ever made an attack in a motor vehicle.

3. This request is not made because I dislike my present duty or am desirous of evading it but because I believe that when we get "Tanks" I would be able to do good service in them.

G S Patton Jr.

Capt. of Cav.

PUT A TIGER IN YOUR M-113 TANK



By CAPTAIN THOMAS M. JOHNSON

"That's the last track of Bravo Company, Sir. The lead platoon of Charlie Company should enter the refueling area within the next sixty seconds." Just as the S4 spoke his last word, an *M113* armored personnel carrier, bearing the numerals **'11'** appeared below their vantage point.

The battalion commander loosened the wool scarf around his neck, removed his gloves, and spread a large plastic map case across his lap. The activity at the base of the hill soon resembled a combined Indianapolis 500 pit stop and backstage activity between scenes at a Broadway play.

The CO's curt voice and stern countenance belied his inner excitement as he remarked: "The entire battalion will be topped off and in position before the rest of the brigade breaks up their administrative refueling parking lot! This is a really efficient operation. Your rapid refueling plan should be incorporated in a field manual. Well, I'm heading for the battalion CP. Hope you finish here in time for chow."

The mechanized infantry battalion as well as

CAPTAIN THOMAS M. JOHNSON *is presently assigned to MACV. A 1960 ROTC graduate from the University of Tennessee, he is also a graduate of the Infantry Officers Basic Course, Airborne and Ranger schools. He served as commanding officer of a rifle company in the 24th Infantry Division and as an instructor on the Rifle Marksmanship Team of the Weapons Department, United States Army Infantry School. He was graduated from the Infantry Officers Advanced Course this September.*

Illustration by **Mary Burney.**

other armor units needs a rapid, efficient, and highly flexible means of refueling when on an extended road march or maneuver. Many a battalion S4 and his support platoon leader have pulled their hair out attempting to devise an efficient solution to this problem.

The *M113* armored personnel carrier has a fuel capacity of 80 gallons of gasoline, which it consumes at the rate of 2.5 miles per gallon. In the current mechanized rifle company, there are eighteen *M113s* and one *M114*. Therefore, the support platoon leader is faced with the problem of rapidly refueling about 60 mechanized combat vehicles from the three rifle companies. In addition, the headquarters contingent increases his task by some 70 wheeled vehicles and 23 more mechanized vehicles. To accomplish his refueling mission, the support platoon leader has four gasoline tankers organic to his platoon, each with a capacity of 1250 gallons.

Current Army doctrine, as presented in field and technical manuals, does not prescribe or even recommend a rapid method of tactical refueling. Invariably, then, the burden is placed upon the individual battalion S4 and his support platoon leader. What methods of refueling are presently available?

The most common method is to attach one of the four support platoon tankers to each of the three rifle companies. The remaining tanker is used to refuel the headquarters elements.

Once the tanker is attached to his company, the company commander must decide on one of two alternatives—move the gasoline vehicle to the *M113s* or vice versa. The first alternative has the inherent disadvantage of being time-consuming and detrimental to company area security. Additionally, the terrain may limit, or even preclude, the movement of the wheeled gasoline vehicle. In any event, refueling by this method usually requires most of the night to complete.

The other alternative, that of moving each of the personnel carriers to the static gasoline tanker located in the company forward area, is also marked by disadvantages. This method is extremely noisy since each individual *M113* must be started and moved a considerable distance. Unit integrity is lost since the vehicles move as separate units back to the refueling point. This method is also time-consuming.

Another refueling means available, but seldom utilized, is the use of five-gallon gasoline cans employing either unit or supply point distribution. Not only is this method extremely time-consuming, but it also requires over 320 five gallon cans to refuel just one company.

A prerequisite for all three of the methods discussed thus far is a static tactical situation.

But the problem of rapid refueling has not reached an impasse. The S4 of the mechanized infantry battalion with which I served in Europe used an ingenious solution. This was to refuel all the vehicles of the battalion at a consolidated battalion refueling point enroute to the forward area using all four of the gasoline tankers.

This technique required the battalion S4, in coordination with the battalion S3, to select a site. Then the tankers were positioned approximately 100 meters apart along a route parallel to the direction of travel of the battalion and faced toward the approaching battalion. Once the tankers were in position, the hoods were raised. On the underside of each hood was painted, in luminous paint, a 1, 2, 3, or 4.

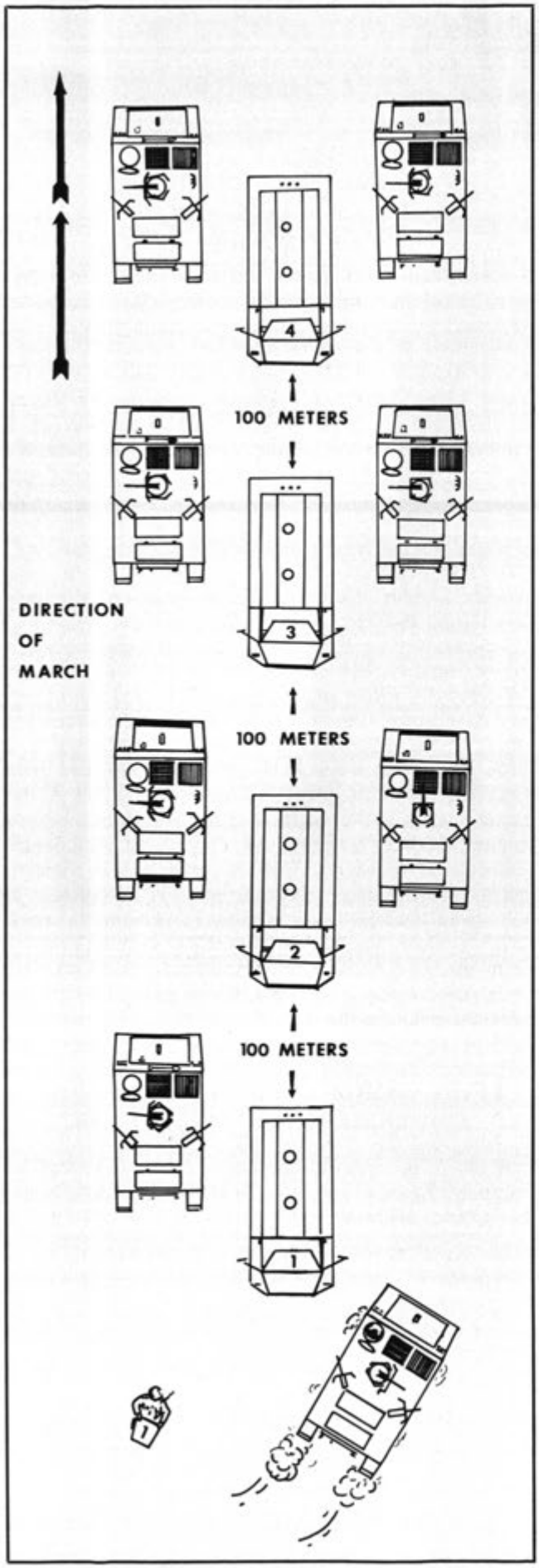
A guide, usually the POL section leader, would position himself at the entrance to the refueling site. Using four plywood panels, each bearing a luminous number to correspond with the number under the hood of one of the four tankers, the guide designated a tanker to each vehicle commander as he approached the refueling site. There was no verbal exchange between the guide and the vehicle commander which could impede the flow of traffic.

In accordance with the SOP, the guide would route the lead platoon of a rifle company (four personnel carriers) to the left of the line of gasoline tankers. The personnel carriers would stop in order and refuel using the power pump unit. The vehicles of the next platoon would then be routed to the right side of the tankers for refueling. Each vehicle in the platoon would complete refueling at about the same time and, consequently, the platoon leader could move his platoon back onto the route of march as a unit.

After proficiency was gained by both the POL section and the individual squad members participating in the operation, the entire battalion could be refueled in about the same amount of time as that required for the battalion, moving in a tactical road march formation, to pass a given point. I have taken the rifle company that I commanded through this refueling system and have been completely topped off in less than 18 minutes.

The only item of equipment used that was not a component part of the *M49C* tank and pump unit as issued was one *Y*-yoke hose per gasoline tanker. This hose, when connected to the outlet of the tanker, makes it possible to refuel two vehicles simultaneously. The *Y*-yoke hose can be requisitioned and is a must for this system of refueling.

Not only can complete refueling be accomplished without appreciably slowing the forward momentum of the battalion, but there are a number of other



advantages. This refueling method:

- maintains unit integrity.
- insures complete refueling of all units passing refueling site.
- insures an uninterrupted flow of vehicles.
- maintains the prescribed order of march.
- provides centralized control of gasoline tankers.
- increases the security of the tankers.
- prevents lost tankers.
- maintains unit security.
- increases the speed of refueling.

Of paramount importance to the success of this plan is the selection of a proper refueling site. The primary considerations are that the site:

- be parallel to the route of march.
- be large enough to permit four gasoline tankers and eight *M113s* in file.
- have adequate concealment.
- have firm standing.
- be out of range of massed enemy light artillery.
- provide multiple entry and exit routes.
- be easily identifiable.

The various squad members were assigned specific duties to perform during the "pit stop." One was designated to man the refueling hose while another held the fire extinguisher. The two air guards maintained constant surveillance of the sky throughout the entire operation. Individuals not actively participating in the refueling itself would utilize this time to check the tie-downs to insure that everything was secure.

Vehicle commanders found this time to be invaluable for amplifying an initial fragmentary or other operation order. They also had an opportunity to check internal and external communications and handle administrative matters such as issuing rations and redistributing ammunition.

After proficiency is attained, all vehicles of the three rifle companies can be completely refueled in 56 minutes. The remainder of the battalion is normally located in the vicinity of the combat or field trains. Therefore, it can be refueled as the situation permits. The headquarters company platoons can either be refueled at the consolidated refueling point or by using five gallon gasoline cans.

In the mess tent, the battalion commander looked over his tray of roast chicken and waved a drum stick toward the man of the hour, the S4. "You know you missed your calling. The entire battalion, including the wheeled vehicles, was topped off today in one hour and fifteen minutes—start to finish. You could surely teach those oil company types something about putting tigers in tanks!"

NEWS NOTES

General John K. Waters, USA-Retired, President U.S. Armor Association and Major General Charles S. O'Malley, Commanding General, Military District of Washington, receive the Old Guard's salute at the special retreat review honoring The United States Armor Association at Fort Myer, Virginia, on 23 July 1967.

ARMOR OFFICERS NOMINATED

Four Armor officers are among 32 nominated by President Johnson for their second stars. They are:

Donald H. Cowles, Military Assistant to the Assistant Secretary of Defense for Public Affairs.

William M. Fondren, Deputy Director, J4, U.S. Army, Europe.

George M. Seignious II, Office of the Joint Chiefs of Staff.

Gilbert H. Woodward, Assistant Division Commander, 2d Armored Division.

ARMOR ASSOCIATION HONORED BY REVIEW

More than 1000 people, including nearly 300 Armor Association members with families and guests, witnessed an inspiring ceremony honoring the Armor Association at Fort Myer this summer. The United States Army Band (Pershing's Own) and the 3d Infantry (The Old Guard) joined forces to pay tribute to the Army's oldest professional association at a Sunday retreat review. A special feature noting armor's heritage from the cavalry was a horse-mounted detail with uniforms and standards of the post-Civil War period.

Music for the review included "The Cavalry Soldier," "Hit The Leather," "Sabre and Spurs," "Boots and Saddles," "She Wore A Yellow Ribbon," "Garry Owen" and the "Second Armored Division March."

The souvenir program given all attending carried a cut of Frederic Remington's "Old Bill" and noted: "While justly proud of its past, The United States Armor Association has moved forward with the advancing times. It faces squarely the challenges of today, and those of tomorrow as well. Always concerned with battlefield mobility, the Association today has a dynamic interest in the means and techniques of mounted combat in every environment and under all circumstances. Its journal, ARMOR, reflects this interest. On its current pages the helicopter is completely at home with the tank and the armored personnel carrier. Southeast Asia, the Middle East, Europe and elsewhere claim attention. Undeveloped and frequently startling ideas share space with classical concepts. Lively professional debate is the norm."

EIGHT ARMOR COLONELS NOMINATED FOR BRIGADIER GENERAL RANK

Eight Armor colonels are among 71 nominated by President Johnson for promotion to temporary brigadier general. They are:

Joseph W. Pezdirtz, 4th Armored Division.

William E. Potts, Headquarters, U.S. Army Pacific Command.

Melvin A. Goers, ROTC Instructor Group, University of Illinois.

Harold H. Dunwoody, U.S. Army Element, Supreme Headquarters Allied Powers (Europe).

Michael J. L. Green, Office of the Joint Chiefs of Staff.

George R. Dunn, Headquarters III Corps.

William W. Cobb, U.S. Army Armor School.

James V. Galloway, Military Assistance Command, Vietnam.

2D ARMORED DIVISION ASSOCIATION HONORS UNKNOWN SOLDIER

Following the annual reunion held at King of Prussia, Pennsylvania, a sizable delegation of 2d Armored Division Association officers and members travelled to Arlington National Cemetery to lay a wreath on the Tomb of the Unknown Soldier and to present a plaque as a permanent memorial.

Shown at the ceremony are (front row) MG H. L. Peckham (nearest camera), immediate past president, COL R. F. Perry, secretary-treasurer and Milton Greenberg, new president of the 2d Armored Division Association, (second row) LTG W. D. Crittenberger and GEN W. B. Palmer, former division commanders, (third row) LTG W. H. S. Wright, former division commander and MG L. R. Dewey, former association president, and (fourth row) MG J. E. Kelly, former division commander and BG S. R. Hinds, former association president. Former association president J. G. Semmes was also present.

The presentation of the 2d Armored Division Association plaque brings to eight the number of armored divisions associations which have so honored the memory of the "Unknown American of World War II." Memorial plaques on display in the trophy room at the Arlington shrine include those of the 1st, 3d, 4th, 5th, 6th, 7th and 10th Armored Divisions.

ARMY DIGEST WILL MARK 50TH ANNIVERSARY OF THE TANK CORPS

The January issue of *Army Digest,* official magazine of the Department of the Army, will carry a special color commemorative section marking the 50th anniversary of the establishment of the Tank Corps on 26 January 1918. The article will feature combat art of World War I, World War II and Vietnam, as well as recruiting posters throughout the years.

From The Armor Branch Chief

AVIATOR ITT'S TO USAREUR

While intertheater transfers are possible for very few officers, there is one group currently acting as "the exception to prove the rule." Aviators in the grades lieutenant through major who desire an ITT from a short tour area to USAREUR should make this preference known as soon as possible after arrival in the short tour area. The early preference statement will assist materially in programming those aviators into USAREUR who desire such an assignment following their short tour. It must be realized that world-wide aviation requirements may require such tours to be curtailed following completion of 12 months in USAREUR.

★ ★ ★

PRESIDENTIAL UNIT CITATION GOES TO FIRST CAVALRY DIVISION

The 1st Cavalry Division (Airmobile) has received the Presidential Unit Citation for combat and civic actions in Vietnam from 23 October to 26 November 1965.

The First Team is the first division-sized unit to receive this award for action in Vietnam. Only four other entire Army divisions have earned the honor of displaying the Presidential Unit Citation streamer from the staff of their colors. Now, two yellow divisional standards are surmounted by the distinctive blue and gold streamer—those of the 1st Cavalry Division and of the 4th Armored Division.

The Presidential Unit Citation is the highest award that can be made to a unit in the Armed Forces and requires the same degree of heroism on the part of a unit as that for the award of the Distinguished Service Cross to an individual.

Major General Harry W. O. Kinnard was in command of the Division at the time the action occurred.

An account of one phase of the combat recognized by this award is in the article, "Company B" (ARMOR, September-October 1967).

★ ★ ★

GENERAL RUHLEN RECOGNIZED

The Editor of ARMOR has denied vigorously to a number of people that Major General George Ruhlen was intentionally or inadvertently omitted from the July-August photo feature on Armor leaders. Said editor's defense was summarized: "Despite thinly veiled threats of probable and justified vigorous reaction by the veterans of the 4th and 9th Armored Divisions, by recent members of the 1st Armored Division, and by others, we could not get anyone to tell us where General Ruhlen was going when he left "Old Ironsides." General Ruhlen added a note of mystery when he wrote that he would pay his dues (which he always does promptly) when he had a new address. Now happily we have both his check and his address."

General Ruhlen was born, brought up, enlisted and then commissioned in the Artillery upon graduation from West Point. However, all his extensive service with troops, before he became a brigadier general, saw his horse-drawn and then his self-propelled guns in close support of cavalry or armor. He commanded the 3d Armored Field Artillery Battalion, 9th Armored Division throughout World War II. It was as a brigadier general that he had his one command of a unit outside the field of mobile warfare—an air defense brigade. On 1 June 1965 he returned to armor to command the 1st Armored Division for over two years. Other assignments have included duty as the Chief of Staff, Army Section, Republic of China Military Assistance Advisory Group (MAAG), and Chief, MAAG Pakistan. General Ruhlen is now Special Assistant for Military Assistance Affairs in the Office of the Joint Chiefs of Staff.

ARMOR SCHOOL ANNOUNCES MEMORIAL AWARD WINNER

Major Jack E. De Muynck, an instructor in the Command and Staff Department, U.S. Army Armor School, is the 1967 recipient of the Joseph M. Hibbs Memorial Award. The award perpetuates the memory of Mr. Hibbs who served the Armor School for 20 years as a senior instructor in the Instructor Training Division. The award is presented to the most outstanding Armor School faculty member selected by a board of senior faculty members from among those nominated by each department director.

COMMANDO ARMORED CARS IN VIETNAM

Six Commando armored cars are in Vietnam to supplement the armed jeeps of the 18th Military Police Brigade on convoy escort duty there.

This is the first time that the U.S. Army has used armored wheeled vehicles in combat operations since World War II.

The seven-ton vehicle can travel at 60 miles an hour under ideal conditions. With hatches closed the Commando can navigate calm bodies of water at walking speeds.

The four-wheeled armored car features a hull design with no vertical surfaces and all around armor that protects the crew from small arms fire and hand grenades, and helps to deflect larger projectiles and shrapnel. The turret has twin-mounted machineguns.

The Commando is manufactured by Cadillac-Gage Corp. It is now being tested under combat conditions to determine its acceptability as an item of issue.

The September-October 1965 ARMOR featured a definitive account of the Commando and gave Commando specifications.

HONOR UNITS

FOUR YEARS

☆ Hq, Hq Co, 2d Bde, 27th Armd Div, NYARNG

☆ Hq, Hq Co, 1st Bde, 49th Armd Div, TEXARNG

TWO YEARS

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

☆ Hq, Hq Co, 3d Bde, 30th Armd Div, TENNARNG

NEW HONOR UNITS

☆ 1st Bn(Mech), 114th Inf, NJARNG

☆☆ 2d Bn, 67th Armor, 2d Armd Div

☆ 100 percent Officer Members and Unit Funds

☆☆ 100 percent Officer and Senior NCO Members

SGM Robert Sauter presents the scroll which accompanied a saber given to BG Albin F. Irzyk, departing Assistant Commandant, by the Armor School noncommissioned officers.

GENERAL IRZYK LEAVES THE ARMOR SCHOOL

One of the truly great young tankers of World War II who subsequently made great contributions to the body of Armor professional knowledge through three tours on the faculty of the Armor School and extensive professional publication again has returned to field service. Brigadier General Albin F. Irzyk served in the famed World War II 4th Armored Division as tank company commander, battalion S3 and battalion commander winning the Distinguished Service Cross and several other awards for valor. He remained with the division as Chief of Staff until it was inactivated and its units joined the U. S. Constabulary. In addition to having had a number of key staff assignments in the field of military international relations, General Irzyk commanded the 14th Armored Cavalry Regiment in Germany.

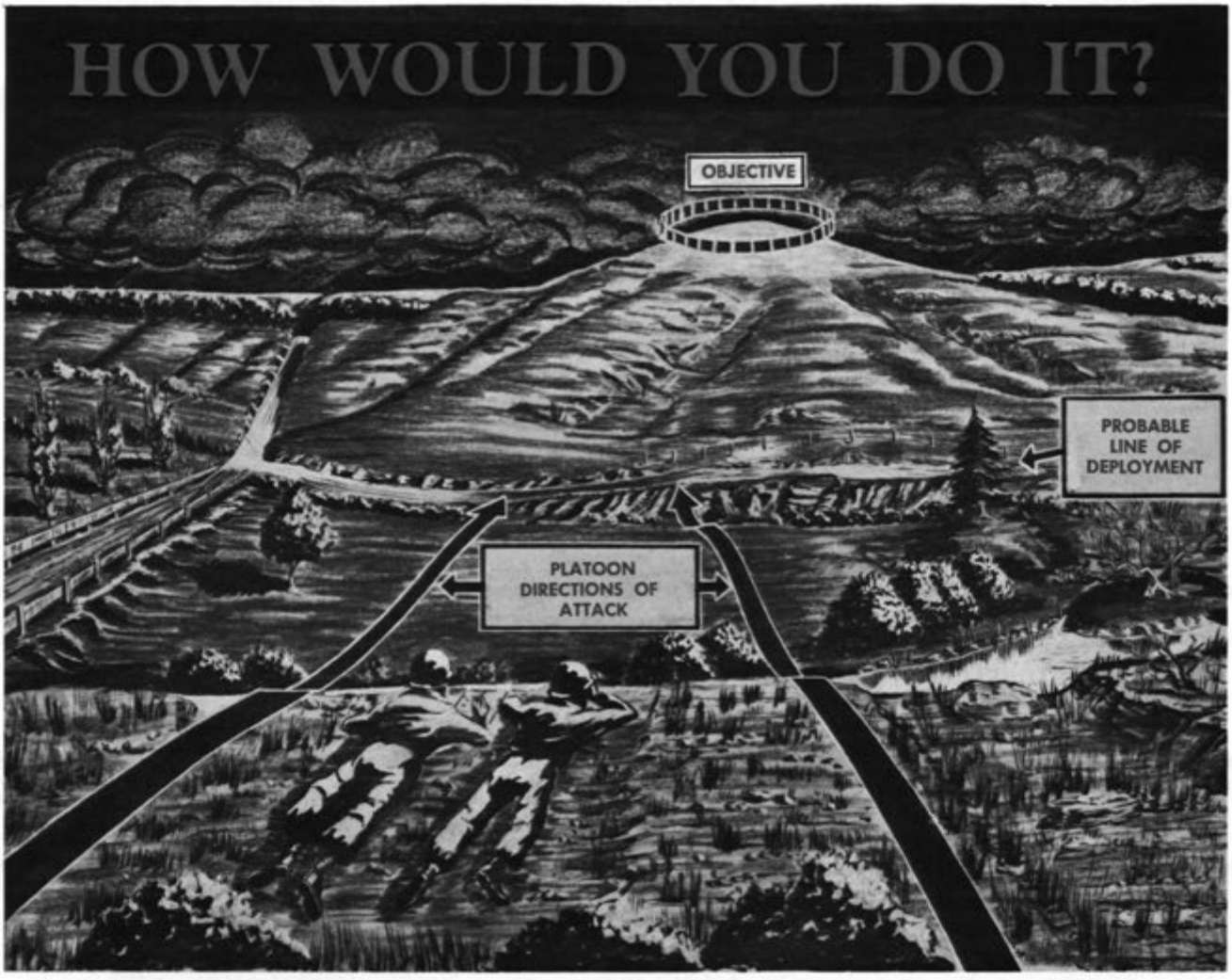
General Irzyk taught gunnery and tactics at the Armor School from 1947 to 1949. From 1951 to 1954 he was Chief of the Tactics Division. In July 1965 he became Assistant Commandant. By the time he departed for Vietnam this September he had established the record of longest tenure in that office. Under his leadership the Armor School expanded to meet the needs of Vietnam for trained Armor officers and men. The Armor Officer Candidate School was reinstituted, the Allied Student Program enlarged and strengthened and the Armor Officers Advanced Course aligned with the times prior to the Haines Board recommendations that all such courses be so revised. Despite the constraints of limited resources, the job was done and well.

TIMING OF ASSIGNMENT PREFERENCE STATEMENTS

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

COLONEL COBB HEADS THE ARMOR SCHOOL

Colonel William W. Cobb, who was the first commander of the 11th Armored Cavalry Regiment in Vietnam, is the new Assistant Commandant of the U. S. Army Armor School. Colonel Cobb, who has been nominated for promotion to brigadier general, brings to the Armor School a background of varied experience in mobile warfare to include, in addition to his service in Vietnam, command of an airborne company in World War II, operational planning during the Korean War and command of an armored cavalry battalion along the Iron Curtain in Austria. From 1955 to 1958, Colonel Cobb served on the faculty of the Command and General Staff College. He was a member of the U. S. Armor Association Executive Council prior to going to Vietnam in 1966 and has now been reappointed by the President to fill the unexpired term of General Irzyk. Colonel Cobb has been awarded the Silver Star, Distinguished Flying Cross, Vietnamese Cross of Gallantry, and a number of other decorations.



SITUATION

You are the commander of a tank-heavy team (2 tank platoons, 1 mechanized infantry platoon). Your mission is to attack north to seize an objective, a hill from which the enemy dominates the relatively open terrain in front of it and the major road on the west. An attack during daylight hours is ruled out; it would result in unacceptable losses. Why not use the cloak of darkness to achieve surprise and minimize losses? Your TF commander agrees and promises indirect fire support by a battery of 155's. He'll also let you have a platoon of tanks from another team for support by fire and illumination.

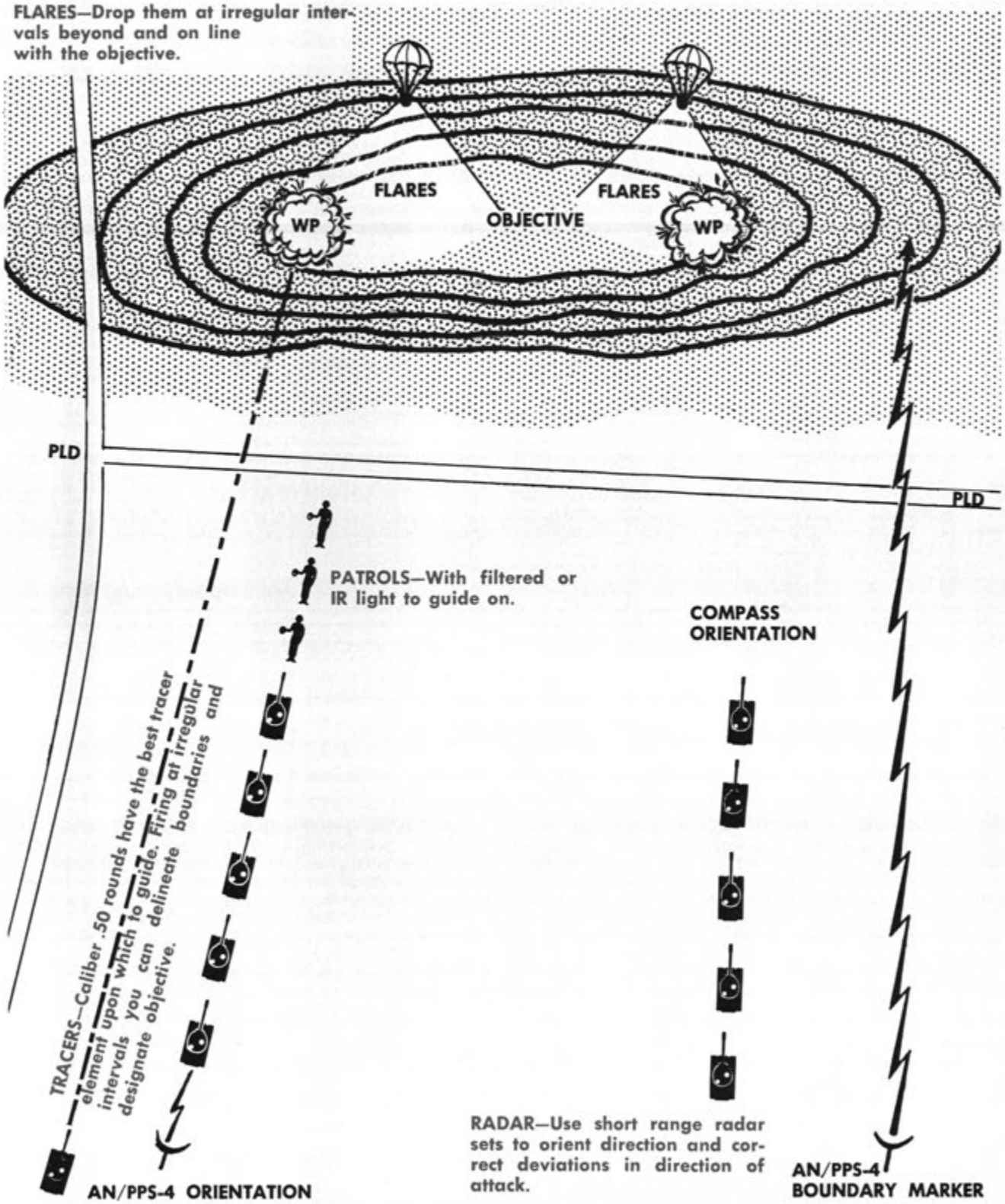
You can't complain—You're getting a lot of help. But you still have a problem to solve, which becomes more apparent as you look over the terrain with darkness setting in. The open area between the line of departure and the probable line of deployment (PLD), which you plan to traverse in darkness, is devoid of any terrain features upon which your attacking platoons can guide their movement. Infrared is out; the enemy is known to have IR detection devices. Getting to the objective after reaching the PLD will be facilitated by illumination, which you plan to call for once the PLD has been reached.

AUTHOR: MAJ E. F. REICHELT **ILLUSTRATOR: JOE WARD**

PROBLEM

Maintaining direction while moving is extremely difficult at night during the nonilluminated period of an attack. Consequently, what measures would you employ to ensure that the attacking platoons are oriented on the objective?

SOLUTION



"For Glory lights the soldier's tomb"

LIEUTENANT GENERAL GEOFFREY KEYES

30 OCTOBER 1888 - 17 SEPTEMBER 1967

Geoffrey Keyes was born at Fort Bayard, New Mexico on 30 October 1888. He grew to manhood surrounded by the traditions of the frontier cavalry. On graduation from West Point in 1913, he chose to wear proudly the crossed sabers of the arm of mobility.

His initial assignment was with the 6th Cavalry. Later he served as a troop commander, a squadron commander and a staff officer in the 2d, 12th and 13th (Mechanized) Cavalry regiments. He was graduated from the Cavalry School, the Command and General Staff School, L'Ecole Superieure de Guerre, and the Army War College. He served twice as an instructor at the United States Military Academy and as an instructor and as Chief of the Department of Tactics at the Cavalry School.

Later, he was one of the pioneer leaders of American armor with the 7th Cavalry Brigade (Mechanized). In 1940, he became the first Chief of Staff of the 2d Armored Division. Thereafter, he activated the 9th Armored Division as its first commander.

In 1942, General Keyes was deputy to General Patton when Task Force A invaded Morocco. Thereafter, he commanded the I Corps in North Africa. During the invasion of Sicily he commanded the Provisional Corps which seized Palermo and the western half of Sicily. Throughout the Italian campaign he commanded II Corps in its actions at Cassino, the capture of Rome, the breaking of the Gothic Line and the advance through the Apennines and the Po Valley to the Alps.

General Keyes was the first occupation commander in Austria. Subsequently, he commanded the Seventh and Third Armies in the occupation of Germany. In 1947, he became Commanding General of United States Forces in Austria and concurrently United States High Commissioner. On 31 October 1950, he retired from the Army to be recalled the next February for a tour as Director of Weapons System Evaluation Group, Office of the Secretary of Defense.

A member of the Cavalry and Armor Associations since he was commissioned, General Keyes served as Vice President and as a member of the Executive Council. During the 1950s he headed the committee which studied various proposed mergers. He consistently supported an All-Army association to which Armor officers would belong while they maintained a strong branch association which focused attention on more specialized military knowledge. A lifelong scholar, as well as soldier, General Keyes was a rational and persuasive spokesman for the profession of arms who recognized the necessity for attention to both general and particular professional thought and discussion.

General Keyes' decorations included the Distinguished Service Medal with two Oak Leaf Clusters, Legion of Merit, and the Silver Star with one Cluster. He was a Companion of the British Order of the Bath and an officer of the French Legion d'Honneur.

General Keyes was buried with military honors at West Point.

MAJOR GENERAL DONALD WILSON MCGOWAN

30 AUGUST 1899 - 24 SEPTEMBER 1967

Donald Wilson McGowan was born in Orange, New Jersey on 30 August 1899. In May 1916, at the age of sixteen, he began a long and distinguished career as a citizen soldier by enlisting in the 5th Infantry, New Jersey National Guard. A month later he entered active Federal service and participated in the Mexican Campaign.

During World War I he saw combat in the Meuse-Argonne as a Battalion Sergeant Major in the 114th Infantry, 29th Division. Following that war he attended the United States Military Academy for a year. Returning to civilian life he reentered the National Guard and was commissioned in 1922. In 1936 he was appointed Deputy Adjutant General of New Jersey.

In January 1941, then Colonel McGowan again responded to his country's call as Regimental Commander of the 102d Cavalry Regiment ("The Essex Troop"). He led this mechanized unit in the D-Day Assault on Omaha Beach and in subsequent actions. Later he served as Provost Marshal of the Chandur and Normandy Base Sections. In 1946, he became Combat Command B Commander in the 50th Armored Division, New Jersey National Guard and two years later division commander. In 1955, General McGowan was appointed Chief of the Army Division, National Guard Bureau and, in 1959, became Chief of the National Guard Bureau.

General McGowan saw the results of his untiring efforts to increase Guard readiness during the 1961 Berlin Mobilization. Never before had these citizen soldiers been so well prepared.

General McGowan retired on 30 August 1963. Long a member of the U.S. Armor Association, he had served on its Executive Council for several terms and as Vice President when he became President in 1964. Following a successful year, he was reelected for a second term in 1965.

General McGowan held the Distinguished Service Medal and the French Croix de Guerre with Palm as well as a number of other American and foreign awards.

He was buried with full military honors in Arlington National Cemetery.

A GUIDE TO READING ON VIETNAM

By LIEUTENANT COLONEL L. A. HUMPHREYS, USA-Retired and JANET COLSON

Until 1955, the great bulk of Western language writing on Vietnam or Indochina was, quite naturally, in French. The amount in English before that time was meager. Then, English language books began gradually to increase until after 1964 the number seems to have escalated with the war. This essay is confined to English language works (some are translations), but the bibliographies discussed at the end of the essay and some of the bibliographic lists in the cited books cover French materials as well as English. Those who read French may wish to consult them for further study.

In writing this review, the authors have kept three principles in mind; objectivity, readability, and availability. Some of the books do not meet all these criteria, but there is at least one book in each category which approaches this standard. In keeping with our resolve to eschew the unobjective and the polemical, those books that tend to distort rather than inform have been weeded out. Books critical of the United States and American activities in Vietnam have been included, even some that criticize the conduct of American military operations, but it is criticism of a constructive sort—the criticism of a "loyal opposition."

Geographical, Sociological and Historical Background. To introduce Vietnam and its physical environment and to place that environment in regional perspective, the reader will find *South-East Asia:*

LIEUTENANT COLONEL L. A. HUMPHREYS, U.S. Army-Retired, is a 1945 graduate of the United States Military Academy and holds a Master of Arts in History from Stanford University. He was graduated from the Advanced Course of the Armor School and from the Command and General Staff College. Colonel Humphreys is an Oriental linquist and has had extensive service in the Orient. He is now a research associate at the Hoover Institution on War, Revolution and Peace of Stanford University.

MISS JANET COLSON holds the Bachelor of Arts and Master of Arts in Political Science degrees from Stanford University. She is now a research assistant at the Hoover Institution on War, Revolution and Peace of Stanford University.

A Social, Economic, and Political Geography by Charles A. Fisher the most complete and up-to-date guide. *South-East Asia* is a formidable work of 800 pages, but for the reader interested in Vietnam, only those parts dealing with Southeast Asia as an entity, and those concerned specifically with Vietnam and her neighbors need be read. Should Fisher be unavailable, *Southeast Asia* by E. H. G. Dobby is still excellent.

The nature of the Vietnam war makes some knowledge of the social organization of the country indispensable in order to comprehend the problems faced there. *Village in Vietnam,* Gerald C. Hickey's fine sociological study adds immeasurably to our understanding.

Any attempt at a broad understanding of the current situation in Vietnam and the various factors influencing it should begin with a historical grasp of Southeast Asia as a whole—a region of great cultural richness and diversity, related by geography and climate, but so varied in historical development. Perhaps the best general history of Southeast Asia for our purpose is *Southeast Asia: Its Historical Development* by John F. Cady. Cady also emphasizes the geographical, cultural, and ethnic aspects of the region. Although Cady does not attempt to cover in great detail the major political developments since World War II, he concludes with a chapter entitled "Relevance of the History," in which he discusses the various factors influencing modernization and places the post-World War II problems of the region in perspective. The final sections contain a useful chronology of historical developments by regions and countries and a bibliography of basic reference guides, books, and periodicals. In addition to Cady, mention should also be made of the standard work, *A History of South-East Asia* by D. G. E. Hall, which can supplement or even substitute for Cady, although Hall concentrates on political history.

Other excellent historical works on Southeast Asia include *The Roots of French Imperialism in Eastern Asia* by John F. Cady and *The Making of Southeast Asia* by George Coedes, translated by H. M. Wright. These two focus primarily on some specific aspects of Southeast Asian historical development, but both books have direct relevance to Indochina and Vietnam.

Only one work in English can properly be called a history of Vietnam, *The Smaller Dragon: A Political History of Vietnam* by Joseph Buttinger. Well written and carefully documented, *The Smaller Dragon* treats Vietnam's history from earliest times to the French conquest at the end of the 19th century. The author concludes the book with a summary and chronology of events from the beginning of the 20th century to 1954.

There are several other books with good historical sketches included in them. The best of these is *Vietnam Yesterday and Today* by Ellen J. Hammer, but the concise history is not this little book's only merit. It also contains succinct and authoritative sketches on Vietnamese traditions and institutions and an excellent perspective of the Vietnam problem in the context of contemporary events. For the busy reader, Miss Hammer's book may be the best single work for understanding the broad outlines of the background to the Vietnam problem. The book has been criticized as over-sympathetic to Ngo Dinh Diem, but if this is a fault, it is a minor one. *French Indochina* by Virginia Thompson was the standard prewar work on French Indochina in English. It can still be read with profit for its excellent analysis of the French colonial period.

The French War. Little material exists in English on the "dirty little war" between the French and Viet Minh which dragged on from 1946 to 1954; there is no comprehensive work available on the military operations. By far the most detailed book on the events leading to the war and the political aspects of the situation in Indochina is *The Struggle for Indochina* by Ellen J. Hammer. The first edition does not include the events of 1954. The book is the best exposition of the complicated events of the Japanese occupation, the Allied liberation, the Communist-led independence movement and the belated attempt by France to reimpose colonial rule by force on the aroused people of Vietnam. It is still the standard English work for this era. *Street Without Joy* by Bernard B. Fall has given us a sensitive but incomplete view of the military side of the war. His descriptions of the battle at Hoa Binh, Operation *Lorraine,* Operation *Atlante* and other battles are vividly portrayed, and are the best available accounts. He has much to teach us about the Vietnamese variety of Communist revolutionary warfare. Unfortunately, Bernard Fall was killed in February 1967 near the coastal road in Central Vietnam known to the French as the *Rue sans Joie* (Street without Joy) from which he took the title for this book.

The desperate battle at Dien Bien Phu is generally recognized as the climax of the First Indochina War. By a wide margin, the best book on it is *Hell in a Very Small Place: The Siege of Dien Bien Phu* by Bernard Fall. Every military man should read this account.

Vietnam Between Wars. The interwar period from 1954 until 1959 begins to show the increased interest by American writers as our involvement in Vietnamese problems deepened. Several excellent works deal with this crucial period, but only one at-

tempts to span both the situation in North Vietnam and South Vietnam—*The Two Viet-Nams: A Political and Military Analysis* by Bernard Fall. This is probably Fall's best politically oriented book, but the reader should be warned that Fall, a Frenchman, was sensitive to American criticism of the French in Indochina (although he did not hesitate to criticize them himself). *South Vietnam: Nation Under Stress* by Robert Scigliano is a well-documented and highly-readable treatment of the Diem period in South Vietnam. He presents well the political, military, economic and sociological problems faced by American advisors to the South Vietnamese government. *The Lost Revolution* by Robert Shaplen is more than the story of interwar years. The first hundred pages are a history of the First Indochina War, but the book's emphasis is on the Diem era. Shaplen is highly critical of United States policy in Vietnam, particularly our failure to foster democratic forms. He feels that our best opportunity passed without our taking proper action. It is a highly controversial, but thought-provoking book.

On North Vietnam, two excellent works are recommended. The first is *From Colonialism to Communism* by Hoang Van Chi, which reviews the various nationalist movements in Indochina, the establishment of Communism in North Vietnam, and the key role of Ho Chi Minh in these developments, with emphasis on the goals and tactics of the North Vietnamese Communists. A second well-written, thorough analysis of North Vietnamese statements and actions is *Communism in North Vietnam: Its Role in the Sino-Soviet Dispute* by P. J. Honey. In it, Honey discusses key North Vietnamese leaders, the evolution of North Vietnam from a "Chinese dependent" to a "Communist neutral," and Hanoi's effort to follow a middle path between Moscow and Peking.

The definitive analysis of the Communist movement in South Vietnam is *Viet Cong: The Organization and Techniques of the National Liberation Front of South Vietnam* by Douglas Pike. This detailed account of the organization and tactics used by the Communists to build a political and social base in South Vietnam establishes beyond a shadow of a doubt that the Viet Cong movement is directed from Hanoi by the Lao Dong (Communist) Party and that the National Liberation Front is under their control. Pike has also included a valuable glossary of terms and a section of biographical notes.

Although space prevents thorough analysis of periodical literature, one essay on the Viet Cong should be brought to the reader's attention. George A. Carver, Jr. has made a concise, thorough analysis of the development of the Viet Cong organization and strategy in "The Faceless Viet Cong," in the quarterly *Foreign Affairs.*

The Current War. No aspect of the Vietnam situation has received greater attention than the problem of United States involvement. The subject has been argued from every viewpoint imaginable and there are many books and many more pamphlets and articles in print. The subject also arouses some of the bitterest controversy on Vietnam. On the general problem of the United States in Southeast Asia, there is *Southeast Asia in United States Policy* by Russell H. Fifield and *The Security of Southern Asia* by D. E. Kennedy. The Kennedy book is more recent and points more directly to military problems; Fifield's is more comprehensive and includes a valuable bibliographical note. Three other excellent books cover this same field and cannot be ignored: *Southeast Asia Today—and Tomorrow* by Richard Butwell, *The United States and the Sino-Soviet Bloc in Southeast Asia* by Oliver E. Clubb, Jr.; and *The Changing Face of Southeast Asia* by Amry Vandenbosch and Richard Butwell.

Turning next to books dealing specifically with the United States commitment to South Vietnam, with one exception, none really analyze the situation in a dispassionate and acceptably objective manner. The exception is *The First Vietnam Crisis: Chinese Communist Strategy and United States Involvement* by Melvin Gurtov, but this excellent study is concerned only with the crisis of 1953-1954. Works highly critical of United States government actions abound. "Vietnam: Evolution of the Crisis" appears in the quarterly magazine *Asia.* The series of articles under this title is helpful in understanding the American involvement, as are Fall, *The Two Viet-Nams;* Scigliano, *Vietnam: Nation Under Stress;* and Shaplen, *The Lost Revolution.* (Reservations about Fall and Shaplen still pertain.) *Viet-Nam Witness, 1953-66* by Bernard B. Fall is also helpful, but Fall's bias becomes more pronounced in this later volume. Fall and Marcus G. Raskin have jointly edited another book, *The Vietnam Reader: Articles and Documents on American Foreign Policy and the Viet-Nam Crisis.* It carries pieces expounding many points of view, but the whole volume is clearly slanted toward the editor's own viewpoints. Compiled certainly not as an explanation of United States involvement in Vietnam, the symposium *Vietnam Seen from East and West,* edited by Sibnarayan Ray gives us a sympathetic view of American actions and problems in Vietnam by foreign and American authors.

An effective defense of the United States government's position is found in the publications of the Department of State. Among these are the white papers, *A Threat to the Peace; North Viet-Nam's*

Effort to Conquer South Viet-Nam, and *Aggression from the North; The Record of North Viet-Nam's Campaign to Conquer South Viet-Nam.* Other important speeches and statements on Vietnam have been reprinted in the United States Department of State Far East pamphlet series.

Many of the books, especially those written by news correspondents, report on military operations. They often comment at some length on the effectiveness of specific American or enemy tactics, but there are surprisingly few books dealing specifically and comprehensively with the military problem. However, every military man is urged to read this recent book on counterinsurgency in Southeast Asia: *Defeating Communist Insurgency: The Lessons of Malaya and Vietnam* by Sir Robert G. K. Thompson. The author draws useful lessons from his long experience in both Malaya and Vietnam. One older but still useful book deserves mention: *Communist Revolutionary Warfare, The Vietminh in Indochina* by George K. Tanham. To understand the enemy's view on "wars of national liberation," one would do well to read *People's War, People's Army* by Vo Nguyen Giap. This volume also includes Giap's article on the battle of Dien Bien Phu. For the Chinese theory on guerrilla warfare, from which Giap's tactics derive, we recommend *On Guerrilla Warfare* by Mao Tse-tung translated by Samuel B. Griffith.

The Vietnam insurgency will obviously not be defeated by military action alone, and United States military personnel are coming more and more to realize this fact. Several of the books mentioned above treat the multiple non-military problems. Two other books will be helpful for understanding some of the problems of the American non-military effort: *War without Guns* by George K. Tanham with W. Robert Warne, Earl J. Young, and William A. Nighswonger is the story of provincial operations of United States overseas missions in South Vietnam; and *The Politics of Foreign Aid: American Experience in Southeast Asia* by John D. Montgomery is an examination of our aid program in Southeast Asia, with Vietnam as the primary example.

Many of the journalists' accounts of the events there are not easily placed in the above categories; they are treated as a separate grouping. These highly readable accounts of personal observations and experiences can help round out the reader's knowledge and often can give him a better "feel" for the situation in Vietnam than many of the footnoted and documented narratives cited. The best of these are: *Our Vietnam Nightmare* by Marguerite Higgins, good on the Diem period; *The Quicksand War: Prelude to Vietnam* by Lucien Bodard translated by Patrick O'Brian, unsurpassed coverage of the French period, 1946-1950; *The New Face of War* by Malcolm Browne, long-time reporter on the Vietnam scene; *Vietnam in the Mud* by James Pickerell, who is very critical of American tactics; and *The Last Confucian* by Denis Warner.

Periodical literature on Vietnam is abundant. All the general magazines and news magazines have given Vietnam considerable coverage. *The Reader's Guide to Periodical Literature* will direct the reader to most sources. We wish to recommend specifically some lesser known journals which have carried excellent and copious material on Vietnam. Among these, *Asia, China Quarterly, Foreign Affairs, Journal of Asian Studies, The Reporter* and *Vietnam Perspectives.* "Vietnam and World Peace" by Richard Scalapino in *Vietnam Perspectives* is an article deserving special mention. (Scalapino's article also appears in *Vietnam Seen from East and West.*)

The United States Congress has published extensive material on Vietnam, including the testimony of many of the experts whose works are listed above. To mention some recent materials: *The Vietnam Conflict: The Substance and The Shadow,* Report of Senators Mansfield, Muskie, Inouye, Aiken, and Boggs to the Senate Committee on Foreign Relations, January 6, 1966; *United States Policy Toward China,* Report of the House Subcommittee on the Far East and the Pacific, 19 May 1966; *Background Information Relating to Southeast Asia and Vietnam* (2d Revised Edition), Senate Committee on Foreign Relations, March 1966; and *Supplemental Foreign Assistance Fiscal Year 1966—Vietnam,* Hearings before the Senate Committee on Foreign Relations, Eighty-Ninth Congress, Second Session, 1966. This last also appears in commercial paperback editions under various titles.

Many of the works cited earlier have excellent bibliographies or bibliographic notes in them, but the reader's attention is called to at least a few pertinent bibliographic works. One excellent and recent bibliography of bibliographies: *South and Southeast Asia: A Bibliography of Bibliographies* by G. Raymond Nunn. Among recent bibliographies we recommend *Vietnam: A Select Reading List,* compiled by Rennie C. Jones (this bibliography may not be generally available). Perhaps the most useful of all is the yearly September issue of the *Journal of Asian Studies,* which carries an extensive, if not exhaustive, listing of materials on Asia appearing in the previous year. Library of Congress, *Southeast Asia: An Annotated Bibliography of Selected Reference Sources in Western Languages,* compiler Cecil Hobbs (Washington, D. C., 1964) will be useful for an introduction to French works on Vietnam as well as English; there is also an earlier (1952) edition of this volume.

READY REFERENCE LIST OF THE RECOMMENDED BOOKS

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WAR WITHOUT GUNS by George K. Tanham with W. Robert Warne, Earl J. Young, and William A. Nighswonger. 1966. 141 pp. **$4.95**

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Armor Magazine Index-Volume LXXVI, 1967

AUTHORS

NEWS NOTES

FROM THE BOOKSHELF

ISSUES OF NATIONAL SECURITY IN THE 1970's

Edited by Colonel Amos A. Jordan, Jr., Professor, U.S.M.A.

(Praeger. 379 pages. $7.50)

Reviewed by Lieutenant Colonel Joseph S. Sulenski, G.S.

The story behind this book is almost as interesting as its content. Much of that story is contained in the opening chapter. Therefore, suffice it to say here that the book was published as a fitting tribute to the man, Colonel George A. Lincoln, Head of the Department of Social Services, United States Military Academy, who has been one of the chief proponents of the study of national security affairs. He was one of the first to recognize the many diverse and interrelating factors which go into providing for our national security and the need to meld these factors into a distinct area of study. He distinguished himself in this field when he wrote, and had published, one of the first texts written on national security which saw wide use in colleges and universities throughout the United States.

Issues is a compendium of essays covering the gamut of complex factors with which national security affairs are concerned. It highlights the increasing interrelationship of political policymaking and military strategy. Coverage ranges from discussion of general problem areas and specific questions of international significance to analyses of critical aspects of the institutional arrangements in the decision-making structure concerned with our national security. The contributors are both military and civilian and include a former President, a former Ambassador to Russia (and present Ambassador-at-Large) and a university president. All are experienced in the areas of national security and international affairs.

Of interest to the professional soldier is that most of the contributors are soldier-scholars. As such, the book represents an increasing awareness of the political-military interface in our government as well as a trend within the military to qualify itself for its expanding role in the decision-making process. Most of the military contributors are PhDs. Several are Rhodes Scholars. To epitomize the professionalism of the soldier-scholar, two of those contributors who hold PhD degrees are currently serving in Vietnam; one of them as an Armored Cavalry Squadron Commander.

Substantively, the title may be misleading. The reader will be disappointed if he is looking for clairvoyant and prophetic pronouncements from the essayists, or even a clear delineation of all the national security issues with which our country will be faced in the 1970s. Rather, he will find the essays present objective assessments of the current world environment and the factors that could lead to change. As such, they are essentially "think-pieces" presenting considerations which should be taken into account in projecting and assessing the courses of action available for the 1970s. They offer neither panaceas nor conclusive strategies to provide for our present or future national security. In reading *Issues*, look for insights, not for answers.

SWIFT SWORD by Brigadier General S.L.A. Marshall and the Editors of *American Heritage Magazine* and United Press International. American Heritage. 144 pages. $3.95.

THE SIX DAY WAR by Randolph S. Churchill and Winston S. Churchill. Houghton Mifflin. 250 pages. $3.95.

These two new books on the Arab-Israeli War deserve to be considered more as contemporary history than as journalistic impressions. The research behind them is impressive.

Both benefit from having an author who observed closely the military operations and interviewed the key participants while memories were fresh. Both contain sufficient detail to permit the student of tactics to analyze carefully the operations and to derive useful lessons from them.

Over 100 superior photographs, most in color, give the reader of the Marshall book somewhat of a sense of being an actual observer.

The Churchill book is distinguished by an astute analysis of the political and diplomatic aspects of the Middle East conflict. Comments on the BBC television coverage are thought provoking.

Both books are definitely worthwhile reading. Their low prices, by today's standards, are encouraging. —OWM, JR.

HENRY CABOT LODGE by William J. Miller Heinemann. 449 pages. $8.50.

There is a certain pleasure in seeing one of one's own achieve and then receive deserved high honors. Henry Cabot Lodge is Armor and an Honorary Vice President of the U.S. Armor Association.

This year's recipient of the AUSA George Catlett Marshall Medal is also a great many other salutary things —a one-time outstanding journalist, a distinguished former Senator who resigned his seat to serve as an Armor officer in World War II, former Ambassador to the United Nations, twice Ambassador to the Republic of Vietnam, a major general in the Army Reserve and now Ambassador-at-Large.

This book is a fine biography of a great American—citizen, soldier and statesman. It is interesting reading. It avoids sermonizing. One finishes it inspired to do a bit more oneself for the Country and renewed in the faith that courage, integrity and selfless dedication are indeed noble, but attainable, attributes.—OWM, JR.

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