

ARMOR

The Magazine of Mobile Warfare



JANUARY—FEBRUARY 1967

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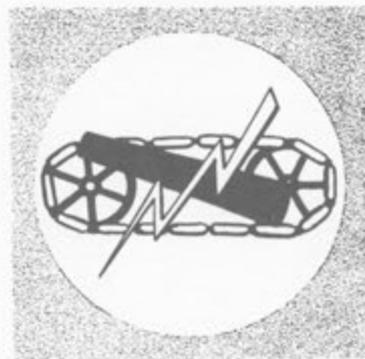
The traditions of
the old Cavalry



... and
the spirit of
early pioneers



... and
shock effect,
firepower,
mobility



... combine
to form the
**COMBAT
ARM
OF
DECISION**



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ARMOR

The Magazine of Mobile Warfare

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LETTERS

to the editor

EDITOR'S NOTE: The members of the U. S. Armor Association were recently sent a questionnaire which was a reader survey and also asked for views on expanding and changing the name of the association. The response was very pleasing and quite a number took time to write letters on the subject. We cannot, of course, print all, but we are printing excerpts from some of the letters. Since the writers were not asked to sign their names (though practically all did) we are printing these excerpts without acknowledgment. Because of the printing deadline a full report on the survey will not be available until the next issue.

I very definitely feel that the Armor Association should be expanded to include personnel in all fighting forces that have as base characteristics: Firepower, shock effect, and mobility. These would include Armored Infantry, Armored Artillery, Armored Engineers, Mechanized Infantry, Air Cavalry and Air Mobile units.

Armor has always stressed flexibility and adaptation to surmount the obstacles in combat operations, and has not been tied to fixed techniques or weapons. For this reason, Armor is a philosophy, a way of thinking, and not a particular combat vehicle for military operations.

The present use of air cavalry and airmobile units in Vietnam is in consonance with the principles of cavalry operations, but utilizes a different method of transportation. Armor welcomes any new means of mobility as long as it contributes to increased effectiveness on the battlefield, and, therefore, the term "Armor" should encompass these new air cavalry and airmobile units.

But the use of the term "Armor" does conjure up in the mind of the military the idea of armor plate in addition to firepower and mobility. In my opinion, now is the time to change the name of the branch and the Association back to the term "Cavalry." Bring back the unadorned crossed sabers and let's call our Association the United States Cavalry Association! . . .

LTC, Armor

Do not concur in changing or altering name, unless DA plans to rename the Branch.

To "expand" for the sake of expansion is unwise. To "expand" to provide membership to interested E-9, E-8 and E-7's, and other professional groups who are sympathetic to and support Armor doctrine, concepts and philosophy would be a mark of "comraderie" and professional esprit.

MAJ, Retired.

Should the scope and name of the Association be changed? My answer is a resounding "No."

Although I am now a civilian and in the National Guard (a member, of all things, of an Infantry battalion), my

two years as a Lieutenant of Armor opened my eyes to the amazing esprit the tankers would demonstrate over the others. I could not help but feel that I was part of a professional group of men within the U. S. Army, with their own proud lineage, with their own concepts of warfare, and, of course, with their own Association. . . . Therefore, my only link with an exciting period of my life is through the Association and ARMOR Magazine. . . . I suppose this is a selfish reason for my opposition to any change in the scope of the organization, or a change of its name, but I hope my argument will bring about the realization that the Association and the Magazine are responsible for the still-burning spark of pride that exists within the soul of a Tanker. . . . See you at Fiddler's Green.

LT, National Guard

"A rose by any other name would smell as sweet." If we are to keep mobile officers and men in contact with each other it might be a good idea to change the name of the Association. If it is to change I wonder if all the different type units could be encompassed in the name of Armor-Cavalry?

. . . So you can see how much we need your magazine, and the broader scope, I am for it. I would like to see the magazine come out monthly so all the subjects could be covered.

CPT, National Guard

Armor is a concept of mobile warfare—as such it includes not only tanks and armored cavalry but all mechanized combat arms and support to include SP artillery and air cavalry. The scope of the association and magazine could include all elements; however, since the name Armor embraces all, it should not be changed. (This concept of Armor has D/A approval.)

MAJ, Armor
Fort Knox

Scope of organization should be broadened. 1st priority into Air Cav, 2d priority to armored infantry, artillery and engineers.

Missions and roles of above are compatible with those of armor. Further broadening of the Association would be detrimental. ARMOR Magazine cannot adequately cover more than listed above.

I do not recommend changing the name of the Association.

MAJ, Armor
MAAG Advisor

I see no reason to change the name of the Association. I definitely feel that any unit which employs armored vehicles or the cavalry concepts of operation should be included in the Association's scope of organization. We in Armor cannot become tied to equipment but must keep an open mind for new ideas to add to the theories of cavalry employment from which our tactics and techniques stem.

MAJ, Armor
Ass't PMS

. . . in regard to broadening the scope of the Association, I agree that any area that deals with increased battlefield mobility should be of interest to "Armor minded" officers. Do not, however, consider changing the name of the Association.

Armor officers are generally a pretty proud, egotistical group of people and most of us belong to the Armor Association because it is Armor oriented and until such time as we obtain some type of badge to compete with the Infantry Badge or the infantry changes the name of INFANTRY Magazine to something else let's not change the name of ARMOR.

LTC, Armor
USCONARC

I think ARMOR Magazine should be for personnel of armored and armored cavalry units only. If you change the name of the Association I'll send my money elsewhere. If the name is changed and Association expanded you will only have another ARMY DIGEST or ARMY or MILITARY REVIEW type of magazine.

CPT, Armor
Fort Benning

It is probably heresy to infer that tradition and the status quo are desirable attributes in this day and age, but I feel strongly that we should be exceptions to the "winds of change." Frankly, I like things just the way they are.

LTC, Armor
Fort Bragg

I am against it. I consider ARMOR a publication concerned with the needs of people involved with armor operations. These of course include Armored Cavalry, Mechanized Infantry, etc. Because of the role of Armor and the need for understanding of armor operations among infantry units of all types I feel that they should be allowed membership in the Association so that they may be informed of armor operations. I also believe that an armored officer who has no contact with an infantry unit should certainly avail himself of the INFANTRY Magazine.

I believe the name of the Association should NOT be changed.

CPT, Armor
Illinois National Guard

THE COVER



SHILLELAGH/M60 — Two Army tankers load a Shillelagh anti-tank guided missile aboard an M60 A1E1 tank. The missile which was developed by the Philco-Ford Corporation, Aeronutronic Division is being mass produced for the U. S. Army by Aeronutronic at the Army's Lawndale, California Missile Plant. Photo by Philco-Ford

Corporation, Aeronutronic Division.

I believe that the Armor Association should be for Armor officers. It should not include infantrymen or artillerymen in any way, shape or form; nor should it include air cavalry or airmobile personnel per se, only if they are also in the Armor Branch. The name needs no change; however, the magazine might more properly be called the magazine of mobile *ground* warfare. The prime criterion for membership should be branch stability. Membership in organizations will vary.

BG, Pentagon

As an Armor officer who has always been associated with all other types of branches and whose assignment is with a primarily infantry unit (Inf. Tng. Center) I resist and oppose attempts to break down branch designations, one of the few vestiges of tradition and heritage the Army still retains.

1 LT, Armor
Fort Polk

... My opinion is that the answer to both of the questions should be positively *negative*.

The name of the association shouts the name of our branch and our profession and should not be subdued for literary purposes. I am proud of my branch and I want everyone to know it and to know that I feel I am in the best branch in the U. S. Army and any other service. I would not want my branch magazine cluttered with articles which have only a vague resemblance to Armor. If they want to express their opinion let them start their own magazine or write in ARMY magazine. A branch merely being "compatible" with Armor doesn't make them part of the family. *Any branch* is compatible with Armor for certain missions—afterall, isn't one of the key words "Flexibility?" Infantry, whether Air Cavalry or Mechanized has no more relation to Armor, from a branch or professional standpoint than Airborne does to the Air Force. We are definitely one team and the Armor Concept is a team effort of the combat and support branches but where do you draw the line when you start bringing other people into our magazine and thus our association? What about QM? They supply us. Should they be included? What about Engineers? They are part of the team.

My answer gentlemen is a flat no! Lets keep Armor for Armor professionals who foster the true meaning of the name.

MAJ, Armor
Fort Knox

Why are we suddenly interested in trying to bring Mech. Inf. into the fold? The U. S. Army Armor School, until approximately 1961 had proponency for Armored Infantry, as it was known in those days. However, our Commandant and Assistant Commandant of the Armor School at that time willingly agreed to passing this proponency to the Infantry School.

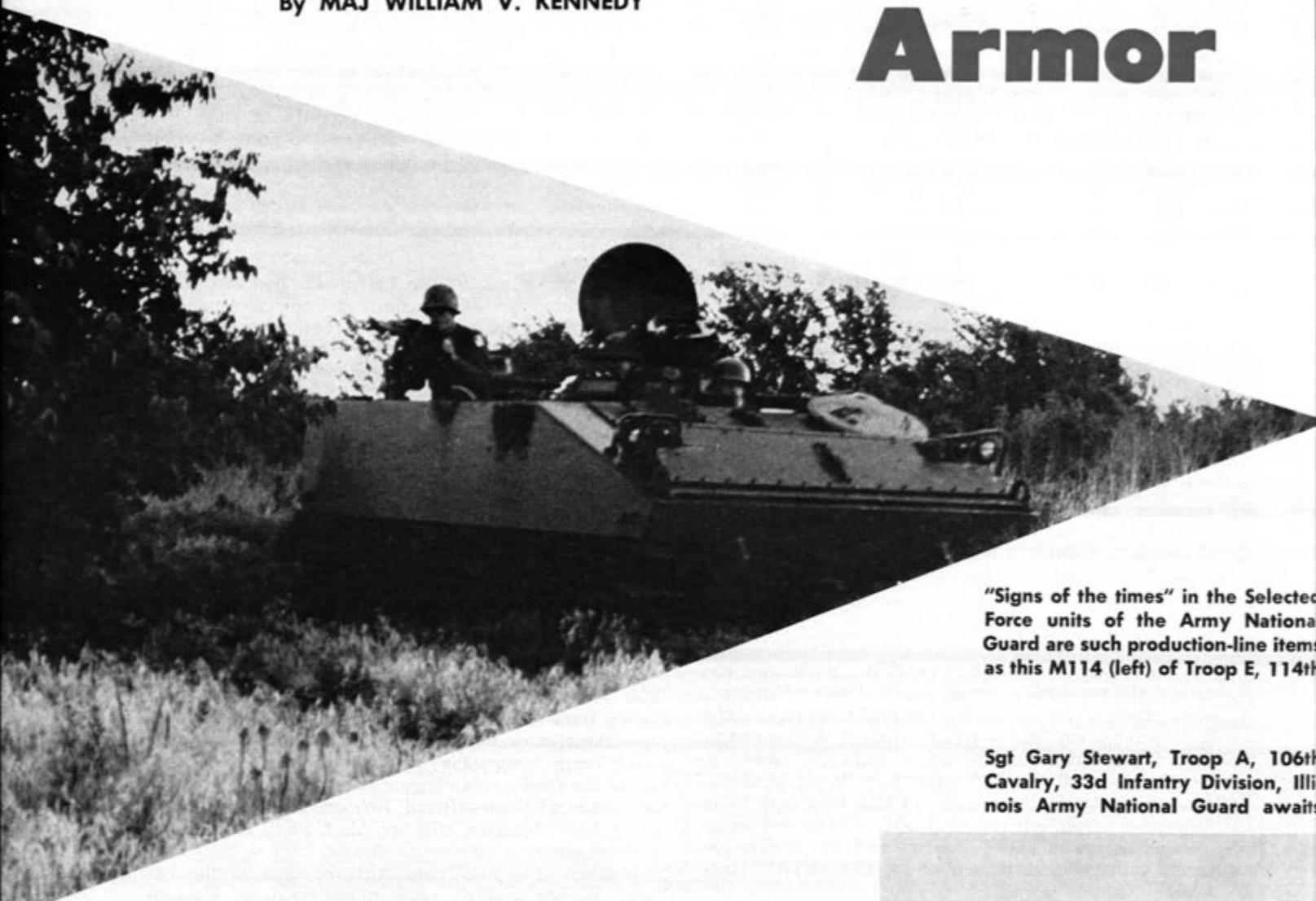
I agree with including Air Cavalry units, Mech. Inf. and Airmobile, by our own previous actions have, in fact, been turned over to the Infantry.

I believe the Association should continue primarily an association for Armor officers and the magazine should retain its present title.

LTC, Armor
Pentagon

By MAJ WILLIAM V. KENNEDY

Armor



"Signs of the times" in the Selected Force units of the Army National Guard are such production-line items as this M114 (left) of Troop E, 114th

Sgt Gary Stewart, Troop A, 106th Cavalry, 33d Infantry Division, Illinois Army National Guard awaits

An M41 of the 1st Squadron, 223d Cavalry, 28th Infantry Division, Pennsylvania Army National Guard charges ahead during the Squadron's ATT last June at Camp Drum, New York.



and the SRF



Armored Cavalry, Kansas Army National Guard and the M110 howitzer (right) of the 1st Bn 209 Artillery, New York Army National Guard.

the attacking aggressor during his unit's combat readiness test at summer camp this year.



For a few weeks in the summer of 1966 the Army National Guard operated what were probably the only TOE Armored Cavalry formations in the U. S. Army manned at 100% with MOS qualified personnel.

This unusual situation was due to several factors, among them:

- Modifications of standard TOE by organizations in combat in Vietnam, or destined for combat there;
- The basic individual training mission undertaken by Active Army units in the U. S. in response to demands of the war in Vietnam;
- Emergency strength adjustments in the Seventh Army incident to support of the effort in Vietnam.

The creation of full-strength Army National

Major William V. Kennedy, Armor, is a graduate of Marquette University and the Associate Company and Associate Armor Officer Career Courses. He recently completed a two-year tour of active duty with the National Guard Bureau. He is a military writer in civilian life and is presently assigned as Assistant to the Chief of Staff, Headquarters, 28th Infantry Division, Pennsylvania Army National Guard.

Guard Armored Cavalry units, also, was a product of the Southeast Asia crisis. It was made necessary by the transfer of numerous Active Army units from the strategic reserve in the United States to combat assignments overseas.

This deployment of Strategic Army Forces was the long-anticipated pattern for any such emergency. The present situation was made unique, however, by a national decision to reconstitute the strategic reserve *without a mobilization of reserve forces*.

The significance of this action and of the developments that made it possible are as yet imperfectly understood in the country as a whole. They represent, however, a turning point in U. S. military history and policy that is worth close study by every citizen in or out of the military service.

The origin of the decision not to mobilize, at least under the conditions prevailing through the first half of 1966, lies in the Berlin Mobilization of 1961-62.

There was a requirement at that time for an immediate and tangible demonstration of the ability of the United States to back up its commitments to Europe.

That demonstration was provided in dramatic fashion by the deployment of eight Air National Guard jet Tactical fighter squadrons to Europe, scarcely a month after they were alerted for mobilization.

With those squadrons went a fully organized and fully manned and trained Air Guard Tactical Air Control Group.

Three additional Guard fighter squadrons followed shortly after.

It was obvious from this deployment that, properly supported, "reserve" forces could meet the complex materiel, manpower, training and operational problems of modern war on a "ready-now" basis

In the years of slim Army budgets that followed the Korean War only one part of the Army's combat reserve forces had been able to achieve a comparable level of readiness. This was the Army National Guard component of the U. S. Army Air Defense system. Today, these Guard units man nearly half of the Nike Hercules sites in the Continental U. S., and all of the Hercules sites guarding Hawaii.

The Berlin Mobilization demonstrated that much greater emphasis and support was required as concerns the land combat and combat support and service elements of both the Army National Guard and the U. S. Army Reserve.

As a result of the Berlin experience, eight Army National Guard divisions, including two Armored divisions, and supporting units of both the Guard and Reserve were authorized to reach 80% strength, as compared to a ceiling of 71% imposed until the Berlin Mobilization. A start was made within available funds to accomplish on a standby basis the large number of administrative actions involved in a mobilization.

Armor unit commanders led the way in the most significant up-grading in Army reserve forces training accomplished in recent years. This was the conversion from the traditional evening drill to full weekend training, and the consequent change in emphasis from lecture-type training to productive year-round field training.

Beginning in 1963, the land combat reserve forces began to receive significant quantities of new equipment.

In the summer of 1965, the deployment of major combat forces to Vietnam brought the Nation face to face with another mobilization.

As Gen. Harold K. Johnson, Chief of Staff, U. S. Army has noted in Congressional testimony, a mobilization would have rung an alarm throughout

Troop E, 114th Cavalry, Kansas Army National Guard, deploys during the 69th Infantry Brigade (SRF) ATT at Fort Riley, Kansas.



the world, making it that much more difficult to limit the scope of the conflict in Vietnam.

An additional factor, noted by Secretary of Defense McNamara, is that, once mobilized, reserve forces are a "wasting asset."

This is due to the fact that, when the tour of active service is over, the unit concerned must be rebuilt from the small nucleus of officers and men remaining after mass expiration of terms of service, voluntary extensions of active duty, etc.

Not to be ignored is the psychological effect of mobilizing reserve forces and *not* deploying them to a combat theater immediately upon completion of advanced unit training.

In the Berlin Mobilization, hundreds of units remained on active duty in "Stateside" camps for months after the immediate need had been met. The absence of an obvious and compelling military requirement, combined with visible evidence of civilian job promotions and opportunities going to rivals and competitors produced a serious morale problem in many of these units.

It was clear, also, that the mobilization of reserve forces to reconstitute the strategic reserve in the present crisis would add greatly to the cost of the Southeast Asia conflict—without producing a direct impact on the combat situation.

Out of these considerations emerged the decision of the President on the advice of the Secretary of Defense to reconstitute the strategic reserve by measures short of mobilization.

This led to the creation of a "Selected Reserve Force" in the Army National Guard and Army Reserve and a complementing Tactical Air and Military Airlift force in the Air National Guard and Air Force Reserve.

The Army force consists of 119,000 Guardsmen and 31,000 Reservists. The Guard furnishes three Infantry divisions, an Armored Cavalry Regiment (107th, Ohio) and six separate Infantry and Mechanized Infantry brigades. Combat support and service support units are furnished by both the Guard and the Reserve.

Each of the Infantry divisions was formed from an existing Immediate Reserve division, with two of its three combat brigades drawn from lower priority Reinforcing Reserve divisions.

Two of the SRF divisions (28th Pennsylvania, Maryland, Ohio; 47th—Minnesota, Oklahoma, Wisconsin) are organized with eight Infantry battalions and one Mechanized Infantry battalion each. The 38th Division (Indiana, Illinois, Michigan) is organized with seven Infantry battalions, two Airborne Infantry battalions and one Mechanized Infantry battalion.

Armor in the Selected Force consists of the 107th Armored Cavalry; a separate Mechanized brigade; a separate Armored Cavalry regimental type squad-

ron (1st Squadron, 18th Armored Cavalry, California); the Cavalry squadrons and Mechanized battalions of the three divisions, and a separate Armored Cavalry troop (Troop E) in each of the six separate brigades.

The tank battalions of the "parent" SRF divisions continue in existence, but not in SRF status.

All units of the SRF are authorized 100% strength. One of the criteria established for the SRF by the Department of the Army was that this strength level was to be reached by the assignment of MOS-qualified personnel. This criteria was met by mass transfers from non-SRF units.

A nationwide redistribution and inventory of reserve forces equipment was accomplished in order to provide the SRF with the maximum training levels of equipment, and to " earmark" additional quantities of equipment for attainment of full TOE in the event of mobilization.

Selected Force paid training assemblies were increased by 50% for all members, over the normal schedule of 48 per year, and by 100% for commanders and selected staff and planning personnel down to unit level. All such assemblies were to be a minimum of four hours each.

The intention to form a Selected Army National Guard and Reserve Force was announced on 30 September 1965. The Force came into being on 1 November. Administrative actions accomplished in the past only after entry into active service were largely completed by the end of February 1966. Company, battery and troop ATT's were completed in most instances by mid-May.

Battalion ATT's were completed by early July, in annual field training status.

A total of 88.3% of the Guard units tested completed the ATT's successfully. The remainder were required to be retested in the Fall of 1966 in weekend training status.

The objective set for the Selected Force by the Department of the Army was largely attained by the deadline of 30 June: To be able to respond to a seven-day mobilization alert and to be able to initiate advanced unit training immediately upon arrival at a mobilization station.

Typical of Armor's share in the Selected Force program is the experience of the First Squadron, 223d Cavalry, 28th Infantry Division (SRF).

The ground elements of the 1/223d are spread all across Pennsylvania. Headquarters, Headquarters Troop and Troops A and B are in Philadelphia. Troop C is located in the Connellsville-Mount Pleasant area, nearly 300 miles west.

This wide separation was a product of the requirement that the SRF be manned at 100% and that all personnel be MOS qualified. Thus, the officers and men of the original Troop C were used to meet the strength and MOS requirements of the

Headquarters, Headquarters Troop and Troops A and B, in Philadelphia. A new Troop C was formed in October 1965 from elements of the 2d Battalion, 103d Armor, a Divisional tank battalion, and of the 1st Battalion, 110th Infantry, in the Western part of the Commonwealth.

At the time of the ROAD reorganization, in 1963, Troop D was not organized due to unavailability of pilots and aircraft. With the organization of the SRF, Troop D was organized from Maryland elements of the 29th Division Aviation Battalion, Edgewood Arsenal.

The job of pulling together these widely scattered elements belonged to Lt. Col. Merrill W. Goss of Lewistown, Pa., Squadron commander.

Colonel Goss took command in April. There remained at that time a total of six days unit training time, and eight days worth of staff assemblies in which to prepare for a Squadron ATT.

The 1st Squadron, 223d Cavalry (SRF) assembled for the first time in its eight-month history on 17 June 1966 at Camp Drum, N. Y., and began its ATT 72 hours later.

The 28th Division was required to test 15 battalions at Camp Drum between 17 June and 2 July. Both the time and space available dictated some modification of the tests as published.

Maj. Gen. Henry K. Fluck, Commanding General, 28th Infantry Division, directed his staff to run the tests to the limits of the time and space available.

By using virtually every inch of the maneuver ground, it was possible to establish a minimum test of 72 hours for each of the 15 battalions. The Cavalry Squadron test was set at 72 hours.

All combat vehicles and substantial quantities of additional vehicular and communications equip-

Umpire in helicopter observing a gun crew of the 3d AW Bn (SP) 111th Artillery, Virginia Army National Guard, during the Tactical Phase of Army Training Test, Camp Pickett, Virginia.



ment were drawn from the New York and New Jersey National Guard Field Training Equipment Concentration sites at Camp Drum between arrival time, Saturday, and the beginning of the Squadron ATT, 0900 Tuesday.

The excellent condition of this equipment was a decisive factor in the success of the testing program.

The task confronting the Squadron that Tuesday morning can fairly be described as imposing. It produced the finest Armored Cavalry training achieved in the "peacetime" history of the Pennsylvania Guard.

It was the first time since World War II that any of the State's four squadrons of Armored Cavalry had been manned at full strength, with virtually all of its weapons, vehicles and radios *and been employed in squadron-level operations in the field.*

This alone was worth all the effort that has been put into the SRF. The habit of dealing with reduced strength units, at reduced levels of equipment showed up in the SRF tests across the country as individuals, here and there, attempted to cram full strength, fully equipped units into the old, reduced-level concepts of time and space.

For years, Guard commanders and staffs have been "simulating" attachments, in large part because of the low level of training imposed by limited resources.

Simulation ended for the 1/223d at Camp Drum on that first day of the ATT, when a company of M-48's from the 2d Battalion, 103d Armor, and a motorized rifle company from the 1st Battalion, 110th Infantry, "joined up."

An Artillery liaison officer, and Artillery FO's were provided by the 1st Battalion, 107th Artillery, for half the Cavalry test, and by the 1st Battalion, 109th Artillery, for the remainder. The Artillery occupied firing positions in support of the Squadron.

The 138th Tactical Fighter Squadron, New York Air National Guard, Syracuse, provided an invaluable element of realism by making low-level, non-ordnance jet fighter "strikes" on elements of the Squadron twice during the ATT.

The remainder of the 2/103d Armor provided the umpires for the ATT, and the Armor elements of the Aggressor force. The remaining 28th Division Armor battalion, the 1st, 103d, provided Armor attachments and Aggressor Armor elements for the Infantry and Mechanized Infantry tests.

This was the pattern at all of the SRF training sites, from New York to California. The net effect was a vast up-grading in training, not only for the tested organizations, but for the Armor battalions supporting the tests.

The high point of the 1/223d test came just following an airmobile landing conducted on the third day by Troop D, supported by the 28th Aviation Battalion.



An APC, Troop E, 114th Armored Cavalry moves forward during the units ATT held at Fort Riley Kansas this past summer.

A counterattack by Aggressor Armor and Infantry was ruled to have put the lead troop of the Squadron out of action. The Squadron command mounted up the attached Infantry on M-48's and shot the tank-Infantry team forward with such speed that it trapped an Aggressor tank platoon. Under the cover of this blocking force, the Squadron reorganized and conducted successfully the final delay phase of the ATT.

Active Army evaluators expressed praise for the manner in which this situation was handled, and especially for the "endurance and professionalism" exhibited by the Squadron command throughout the grueling test.

The final adjectival grade of the 1/223d was "Satisfactory."

Obviously, much more had gone into the preparatory phase of the ATT than the paid training assembly and staff planning time available, even considering the additional periods provided under the SRF concept. For Colonel Goss and not a few others down to troop level, it had meant the virtual suspension of family life from April, or even earlier, until the Division's return from Camp Drum in July.

This was time given gladly, as an opportunity—for the first time in 20 years—to train under conditions in which lack of funds, equipment, authorized manpower and maneuver space did not constrict, or cripple, at every turn.

The Squadron's U. S. Army Adviser, Maj. Ed-

ward J. Day, Jr., and his Adviser NCO, MSGT Edwin J. Kuravieski, made a major contribution to the success of the ATT in the guidance they furnished the Squadron staff in regard to administrative and tactical problems of handling the attached Armor and Infantry.

While the circumstances changed from State to State, all of the Armor units of the Selected Reserve Force were confronted with the same tight schedule, and many of the same materiel, space and organizational problems as the 1/223d. Not only the ATT's, but the entire history of the SRF has been a test of everything the commanders, staffs and troop units concerned ever had learned in their Army careers. And that is not a bad thing.

There are few delusions among the tested units as to what has been achieved and what has not been achieved. But what was achieved was an entry into Advanced Unit Training, something even the most enthusiastic and optimistic Guardsmen had scarcely dared hope for prior to the organization of the SRF.

"Now," Maj. Gen. Frank H. Britton, then Deputy Commander, First U. S. Army told the 28th Division at Camp Drum, "you are faced with one of the most difficult challenges a military unit ever faces—retaining proficiency once it has been achieved, and raising the level of proficiency further."

Harking back to the experience of the Air National Guard in building "ready now" units, it can be shown that the decisive factors in this will be a continued high level of support and, above all, a high level of personnel stability.

In the Air Guard, long-term retention of key personnel was aided greatly by the provision of 36 additional paid drills each year for maintenance of flying proficiency.

In the Army Guard, long-term retention will be aided by the provision of additional paid drills. A major requirement, however, is authorization for a reenlistment bonus, pro-rated to the Active Army bonus.

The combination of additional drills and a reenlistment bonus would have the effect of enabling many Guard NCO's to drop civilian "moonlighting" occupations in favor of additional work in their military assignment. As things stand now, extra hours spent on non-paid Guard duty represent not only a contribution of time, but a direct, out-of-pocket loss of income that could have been realized pumping gas, or in some other secondary paid civilian job.

The long-term goal set by the Department of Defense for all Immediate Reserve divisions of the Army National Guard is a minimum of eight weeks of post-mobilization training to achieve readiness for deployment.

The SRF is blazing the trail toward this goal.

And so this great American devoted twenty years of his life to active, productive service to his fledgling country, often neglecting his family because . . .

HIS COUNTRY CALLED THE LOUDEST

By **COL THORNTON B. McGLAMERY**

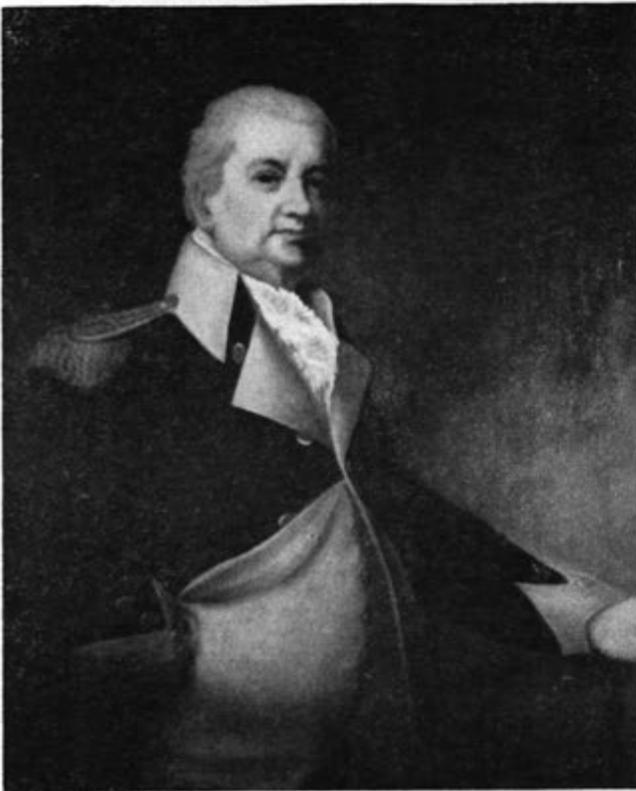
The Armor officer and soldier looks to Fort Knox as the home of his branch and the wellspring of Armor doctrine, but he knows little of the great American for whom the popular Army installation, the third largest community in Kentucky, the repository of our Nation's gold, is named.

In these modern times, true patriots seem to be at a premium. More and more often the liberties fought for and established by our forefathers are abused and thwarted by erring Americans applying well founded principles to their own misguided ideological advantages. It behooves us occasionally to look back to those dedicated young Americans in the early days of our Country and seek guidance and inspiration from their unquestioned determination and devotion to the accomplishment of those principles from which all of our national greatness today is derived.

Major General Henry Knox, Commander of Artillery in the American Revolution and Secretary of War in President Washington's cabinet, is one of those young Americans who shared in the responsibility of making our country great.

He was born in Boston on the 25th of July 1750. The 216th anniversary of his birth was recently

have



Major General Henry Knox, Commander of Artillery in the American Revolution and Secretary of War in President Washington's Cabinet.

celebrated in the quiet little town of Thomaston, Maine, where General Knox made his home in retirement and is buried. Annually on this occasion, an Award for Patriotism, in memory of General Knox, is given "to a living American considered an outstanding example of a true patriot and in recognition of a lifetime of devotion and unselfish service to our country." These words epitomize the full life and accomplishments of Henry Knox in service to his country during its founding stages.

The 1966 recipient, known well to all Armor officers, was General Bruce C. Clarke. Each armed service and the United States Military Academy was represented by national and organizational colors in the ceremony honoring the occasion. The tranquility of the small coastal Maine town was interrupted by the pealing of a Paul Revere Bell and the report of an artillery field piece. Knox paid Paul Revere \$625 for the bell which has been a part of the Knox Legend in Thomaston for so many years. The cannon salute was symbolic of the military branch he so eminently served. The music of a military band and the quick step of marching troops echoed through the tall elms, the old homes and the lovely old churches lining the village streets.

To Downeast inhabitants, Knox's accomplishments are well known. Montpelier, his restored

family mansion stands on a commanding hill in all of its magnificence as a constant reminder of the great contribution of its original master to the founding and building of our great country. But what does the average American know of Knox the Patriot? The story is worth telling once again to make all aware of the accomplishments of the great patriot for which the Home of Armor is named.

The Knox story is best told by Henry Thatcher Fowler, Ph.D., in his monologue on "General Knox and His Home in Maine, Montpelier"; therefore, full credit for this story is extended to Mr. Fowler whose words, with the permission of the Knox Memorial Association, for whom he wrote the story, are in part repeated here.

The ancestry of General Knox has been traced back to the year 1500, to William Knox, Laird of Gifford, who lived a few miles east of Edinburgh, Scotland. General Knox was not, as has sometimes been thought, descended from the Laird's younger son, John Knox the Reformer, but from the elder son, William, a merchant who traded at times in England and its colonies.

In the year 1729, his father settled in Boston where he was known as a shipmaster and wharf owner, but he passed away before the boy Henry, born in 1750, had reached adolescence. Whereupon the boy became an employee at an early age in a local bookstore. The owner of the store, a Mr. Bowes, took fatherly pride in training the boy in every conceivable aspect, morally as well as academically and culturally, the bookstore itself serving as the institution of learning.

Boston's Ancient and Honorable Artillery Company has existed from 1638 to the present day. At the age of eighteen, the bookseller's clerk joined this already ancient militia company; thus reading and practice supplemented each other in developing his military interest and knowledge. When a new artillery company was formed in 1772, young Knox, 22 years old, was made second in command. According to the local chronicle of the time, he was "a splendid figure in uniform."

Young Knox eventually opened his own bookstore in Boston Town and prospered well. The shop soon became "a fashionable morning lounge," described as "a great resort for the British officers and Tory Ladies."

One of the ladies was Lucy, daughter of Thomas Flucker, Secretary of the Province of Massachusetts Bay, styled "a high-toned loyalist of great family pretensions." Despite family opposition, the willful Miss Lucy, shortly before her eighteenth birthday, was married to Knox, the handsome young patriot.

She had been warned that, "while her sisters were riding in their coaches she would be eating the bread of poverty."

Lucy Knox was quite a strong character in her own right. General Knox was with General Washington in nearly all his battles, and Mrs. Knox was constantly with her husband. It is said that her stronger personality dominated even that of Martha Washington in many ways, and that the wife of the first President was accustomed to seek the advice of the wife of the Secretary of War in many matters of ceremony.

One year to a day after the wedding, just before the battle of Bunker's Hill, the young couple fled by night from British-held Boston. The doughty young wife carried the sword, which her husband was to wear throughout the war, quilted in the lining of her cloak. Temporary refuge was found for Mrs. Knox in Worcester, and thus it was that Henry Knox, born and bred in Boston, was first known to General Washington as "Mr. Knox of Worcester." Large promises had been held out to the young man to induce him to follow the Royal standard; but, as soon as he had escaped to Cambridge, he was with the patriot forces, engaged in reconnoitering service the night before the Battle of Bunker's Hill, and then as a private citizen, helping to plan the defenses for the forces infesting Boston. It was but three days after Washington arrived and took command at Cambridge that he inspected and praised Knox's defensive works at Roxbury.

Sometime later, General Washington, writing to Governor Trumbull of Massachusetts on the want of competent engineers, said: "Most of the works which have been thrown up for the defense of our several encampments have been planned by a few of the principal officers of the Army, assisted by Mr. Knox, a gentleman of Worcester." Six days later, the Commander-in-Chief wrote to Congress recommending the civilian Henry Knox, for the command of the artillery, saying he knew no person better qualified to succeed Colonel Gridley, a veteran of the French War, now incapacitated for active service. Aside from Lafayette, who was commissioned a major general before his twentieth birthday, Knox was years junior to the other prominent Revolutionary commanders of the time.

Two days before Congress acted upon Washington's recommendation and commissioned Knox a Colonel, he, still a civilian, left camp to carry out the daring plan he had conceived and proposed to the General for supplying the forces in Massachusetts with ordnance. Ethan Allen and his Green Mountain boys had surprised and captured Fort Ticonderoga in northern New York, on the western shore of Lake Champlain, where the stream from Lake George debouches into the larger body of

water. On the 5th of December, 1775, Knox reached Ticonderoga with full authority from Washington to take the munitions and employ transport. Some sixty tons had to be transported across tempestuous Lake George, over mountains, through roadless woods, down the valley of the Hudson to Albany, and then over the Berkshires and across the entire State of Massachusetts. What were then called gondolas had to be provided for water transport and forty-two "exceeding strong sleds" with "80 yoke of oxen to drag the 60 tons of cannon and howitzers and the 23 boxes of lead as far as Springfield" where it was planned to get fresh cattle.

It was this artillery that compelled the British General Howe and his forces to sail away from Boston on the 17th of March, 1776. With them sailed hundreds of the loyalist families of the city, including the family of Mrs. Knox; so the proud Royal Secretary of the Province was not there to see his son-in-law ride with the Commander-in-Chief and the colonial troops down the long avenue in Boston town now known as Washington Street.

A century and a half after Knox's exploit, the Legislatures of New York and Massachusetts would appropriate many thousands of dollars to provide for tracing out and marking the route by which this young man brought the guns from Ticonderoga to Cambridge. Now, appropriate granite monuments with bronze tablets indicate the principal points of the route through two great and prosperous states.

As Washington, with much of his force, moved from Boston to New York, Knox was employed in planning fortifications for Newport and New London, while the artillery and stores under his charge were being transported to New York. On a part of this trip, his wife accompanied him. It was at this time that their eldest child, Lucy Flucker, was born. For safety, Mrs. Knox and the tiny infant were left in Connecticut, but that fearless young woman could not be kept long away from the man for whom she had given up all. She soon joined her husband in New York City and insisted on remaining at his headquarters, at what is now known as Number 1 Broadway, until from the hall window where they were breakfasting they saw the British ships coming through the Narrows, with a wind and tide that promised to bring them to the city in a half hour. Knox described the circumstances in a letter to his younger brother who had remained in Boston: "You can scarcely conceive the distress and anxiety that she then had. The city in an uproar, the alarm guns firing, the troops repairing to their posts, and everything in the height of bustle; I am not at liberty to attend her, as my country called the loudest. My God, may I never experience the like feelings again! They were too much; but I found a way to disguise them, for I scolded like a fury at her for not having gone before."



Montpelier
Restored home of
Major General Henry Knox in
Thomaston, Maine.

Notwithstanding repeated threatening movements of his ships, Lord Howe had really come hoping to secure peaceful submission rather than a battle. So it happened that Colonel Reed and Colonel Knox were sent down the bay to meet the Captain of the British man-of-war *Eagle* bringing a letter from Lord Howe, addressed to "George Washington, Esq." Knox wrote a most humorous description of the meeting and of Col Reed's refusal to admit that there was any such person, reminding the British officer that he was aware of the rank of General Washington; then he tells how they bowed and parted "in the most genteel terms imaginable." A few days later he wrote of a subsequent visit of the British Adjutant General, one Colonel Paterson, who came with a letter addressed to "George Washington, Esq., etc., etc.," which the Adjutant General said, "Implied everything." "It does so," said George Washington, "and anything." Knox sums up the interview: "Colonel Paterson appeared awe-struck, as if he were before something supernatural. Indeed I don't wonder at it. He was before a very great man."

If Lord Howe knew that the Continental Congress had taken the irrevocable step of signing the fateful Declaration of Independence ten days before the former of these two attempts, he should have known that in simple honor, Washington must insist upon the validity of his Commission from Congress as rigidly as any British General would maintain his own status by Royal appointment. The Colonies had now gone quite too far for any submission except it were surrender after struggle to the uttermost.

When two months later, the British success on Long Island and their landing above the city made the evacuation of New York inevitable and already extremely hazardous, Knox, who had remained behind removing the ordnance and stores, barely escaped capture. When he had seized a boat and made his way thus to Harlem, he was received with a shout of welcome from the troops and an embrace from the Commander-in-Chief. Four days later he wrote: "I have not had my clothes off o'nights for more than forty days."

The battle of Harlem Plains brought some encouragement to the patriot cause at this distressing time; but Knox was feeling deeply the army's lack of competent officers and wrote his younger brother again, to whom he ever poured out his heart: "We ought to have academies in which the whole theory of the art of war shall be taught." The previous May, it is said, he had suggested such an institution, and in October the Congress passed a resolution appointing a committee to draw plans for "a military academy of the army." "Some steps were taken to carry out these plans during the course of the war, but it was not till near the close of Knox's term as Secretary of War that he was able to see his dream more fully realized in the official establishment of a "school for artillerists, engineers, and cadets of the corps." "Today America's famous United States Military Academy at West Point stands as one of the monuments of the foresight of the young Colonel of Artillery who was privileged to realize his vision after eighteen years."

The late fall and early winter following the evacuation of New York were marked by the heart-

breaking retreat across the Jerseys and beyond the Delaware, the decision of Congress to increase the artillery to a brigade and the appointment of Knox, at the age of twenty-six, as Brigadier General to command it, the heartening turning back of the over-confident enemy, with the notable victories of Trenton and Princeton. In all of this, Knox and his cannon had played an important role. It was his great voice that could make the Commander's orders heard above the roar of storm as they crossed the Delaware that fearful Christmas night. To him fell the superintending of the passage, bringing safely over some twenty-five hundred or three thousand men and eighteen field pieces, when, as he wrote to Mrs. Knox, "The floating ice in the river made the labor almost incredible. "The night," he wrote, "was cold and stormy; it hailed with great violence." It was those field pieces that quickly cleared the streets as the soldierly Hessians, suddenly awakened from their sleep, sought to form in the light of the early morning. The letter of vivid description closes: "His Excellency, the General, has done me the unmerited great honor of thanking me in public orders in terms strong and polite. This I should blush to mention to any other than to you, my dear Lucy."

But there is another side to war than the pomp and glory of victory or the heroism of defeat bravely borne. This the victor keenly felt. Writing a few days later, the other side was weighing on his spirit: "The attack of Trenton was a most horrid scene to the poor inhabitants. War, my Lucy, is not a humane trade, and the man who follows it as such will meet his proper demerits in another world."

With the Army in winter quarters at Morristown, New Jersey, Knox was sent to New England to see to the casing of cannon and the establishment of laboratories. The founding of the great national arsenal at Springfield, Massachusetts, resulted from the mission.

The following summer (1777), Washington had occasion to express his estimate of Knox's services to the President of Congress. He styled him "one of the most valuable officers in the service, who, combating almost innumerable difficulties in the department he fills, has placed the artillery on a footing that does him greatest honor," and further described him as "a man of great military reading, sound judgment and clear conceptions."

Knox's early conquest of the French language, while employed in Mr. Bowes' bookstore, must have stood him and his country in good stead when the French alliance was consummated. Lafayette and he accompanied Washington for the conference at Hartford with Count de Rochambeau and Admiral de Ternay who had landed at Newport.

In the summer of 1781, word came of the arrival of the fleet of the Comte de Grasse. Washington

abandoned the siege of New York to unite with the French forces against Cornwallis in Virginia. Knox was with the Commander and the French officers, Rochambeau, Castellux, and Duportail, at the conference on board de Grasse's flag ship.

The success of Knox in getting his peripatetic artillery south, numbering fifty-nine field and siege pieces with all their equipment, is counted an accomplishment only second to his achievement in bringing the guns from Ticonderoga, almost six years before. Washington now reported to the President of Congress, recommending Knox for promotion to Major Generalship, declaring "the resources of his genius supplied the deficit of means." Knox has written of himself after Trenton: "All the merit I can claim is industry." Washington called it the "resources of genius." Years after Yorktown, a Major Shaw wrote Knox: "I remember the honorable testimony of the gallant Lafayette amidst the thunder of our batteries on the lines at Yorktown. 'We fire,' exclaimed he, with a charming enthusiasm, 'better than the French' (and faith we did, too). To this I made a suitable objection. His reply was, 'Upon honor, I speak the truth; and the progress of your artillery is regarded by everybody as one of the wonders of the Revolution.'"

With the surrender of Cornwallis the war was virtually over, but it was two years before peace was actually consummated. King George found it hard to acknowledge the failure of which he had been so often warned by the ablest and best statesmen of his realm. At last, when the British troops withdrew from New York, Knox rode into the city at the head of the Continental Forces, hard upon the heels of the departing British, anxious lest there might be an interim of looting and disorder. A little later, Washington and Governor Clinton, with their staffs, entered the city, and a few days thereafter, the affecting farewell of Washington to his officers took place in Faunce's Tavern. Alonzo Chappel, in his familiar painting has pictured the moment when Washington, after his words of farewell, turned first to Knox, grasped his hand, and kissed him while tears flowed down the cheeks of each.

Before this parting, Knox made provision for perpetuation of friendship among the officers. It was he who had conceived and planned the Society of the Cincinnati, taking the name obviously from the Roman General Cincinnatus, who left the peaceful furrow to deliver his country and then returned to fruitful industry. Branches were organized on both sides of the Atlantic to keep active the friendships welded in the fierce fire of the allied struggle. After almost two centuries the Society of the Cincinnati, as originally planned, is in active existence, with organizations in each of the thirteen original states and in France. The succession of membership

passes regularly to the eldest living male descendant of the original officers.

To Knox, in command at West Point, the post-war military headquarters, fell the difficulty and delicate task of disbanding an army made exceedingly ugly and desperate by the fact that they had not received their pay and were in destitute circumstances. Knox, the men knew, had done all within his power to bring Congress to effective action, and his efforts now overcame difficulties and accomplished the task of quiet disbandment, at the opening of the year 1784. Only after complete inactivation of the Revolutionary forces was he at liberty to retire with glad relief from his active military career, at the age of thirty-three.

Returning to Boston, his services were soon employed by the General Court of Massachusetts to treat with the Penobscot Indians over the occupation of land along the river in present day State of Maine, which still bears the name of that tribe, and also to try to settle the boundary between Maine and Nova Scotia. Maine, we may recall, was then a part of Massachusetts.

But Knox's abounding energies were not allowed to expend themselves for long in these useful but occasional services. The following spring, Congress chose him to be Secretary of War, an office which he was to fill, at first under the Confederacy and then in Washington's administration, for almost ten years.

In the early part of this period, Washington asked Knox's opinion as to a plan of general government. His reply suggested a plan including "an Assembly, or Lower House, chosen for one, two, or three years; a Senate, chosen for five, six, or seven years; and the Executive, as well as a Judiciary, to be appointed by the Executive." In these and some other features, Knox's outline notably anticipated the lines on which the Federal Government was finally established.

It is not strange that when the Government was organized Washington should have invited Knox to become a member of his Cabinet. In her reminiscences, General Knox's daughter recalls her father's happiness in being thus associated with General Washington "to whom he had become strongly attached in an eight years' war, in which he was ever near his person." Washington, she looks back upon as "the best and greatest of men, take him for all in all, the most faultless character of ancient or modern times."

In the midst of many social duties, sedate and gay, the Secretary devoted himself with great zeal to departmental affairs which included both Army and Navy and much that now devolves upon other cabinet offices. Washington's official family included at the start only Jefferson, Hamilton and Knox.

As far back as 1783, Knox had communicated to Washington his ideas upon a militia system and in the first year of Washington's administration, with the cordial approval of the President, he presented to Congress an elaborate plan for organization, with summer training camps. He was a bit ahead of his time in this latter detail. It was not until the threat of the World War I that Knox's training camp plan had a real chance to demonstrate its efficacy.

In fact, Knox had a way of being ahead of his time. While Secretary of War, for example, he had a survey made for a canal through Cape Cod. When the Cape Cod Canal was at last dug in 1914, it followed almost exactly the route which the first Secretary of War had had surveyed in 1791.

To his vision, too, was due the creation of a Navy for the young nation. Near the close of his service as Secretary, Congress at last, after much insistence from him, authorized six ships, and Knox had the satisfaction of seeing their construction begun before his retirement. It was one of these, the *Constitution*, that came to be known as Old Ironsides through her spectacular victory over the *Guerriere* in the War of Eighteen-Twelve.

About the year 1730, Mrs. Knox's maternal grandfather, Brigadier General Waldo, had acquired title to most of the Muscongus Patent, a great territory lying between the Penobscot and Kennebec Rivers and extending from the Atlantic coast far northward toward the neighborhood of the present City of Bangor, Maine. It included a large part of what now constitutes the counties of Lincoln, Knox, Waldo and Penobscot in the State of Maine. General Waldo had exerted himself in the development of this property, inducing Scotch and German settlers to come and had begun the industry of lime burning which has continued in active operation to the present day. Mrs. Knox's mother had inherited one-fifth interest in this domain and her father, Mr. Flucker, had purchased another two-fifths. This combined interest fell to Mrs. Knox, and her husband bought the rest from the other heirs. Back in 1785, Knox had written to Washington: "I have dependence upon an unwieldy estate of Mrs. Knox's family, and upon the public certificates given for my services; but neither of these is productive, and require a course of years to render them so."

During the latter years of his service as Secretary he erected on this "unwieldy estate" a notable mansion where he could live as he developed the agricultural, mineral, and maritime resources of the great property. Correspondence now deposited in the library of the Massachusetts Historical Society shows how largely Knox's thoughts were occupied with building plans during the years 1793 and 1794. It was the 1st of June 1795 that Knox and his family left Philadelphia for Boston and thence

for Maine where they found their new home ready for occupancy on the sloping bank of St. George's River.

And so this great American devoted twenty years of his life to active, productive service to his fledgling country, often neglecting his family because "his country called the loudest."

To culminate this stirring story of a life dedicated to that for which our country stands, it is well to review and enumerate a few of the accomplishments of the young man, Knox the Patriot.

It was Knox who became the first Chief of Artillery by employing the cannon he brought from Ticonderoga which played such a tremendous part in all the decisive battles of the Revolution ending with the surrender of Cornwallis at Yorktown.

It was Knox also who suggested and founded a training school for the education of young men to be officers in the army at West Point, New York.

It was Knox who drew up a plan for a Citizens Military Training Camp to teach officers to command units, to organize battalions, regiments and divisions, a plan that lay forgotten in the archives of the War Department until World War I, when for the first time in the history of the United States Army, it was established on lines laid down by Knox in the days of the Revolutionary War and under which thousands of officers were trained in World War I and again in World War II, which gave us thousands upon thousands of trained officers from civil life who contributed in a large measure to our success in both wars.

It was Knox who commanded the Revolutionary Army when it marched triumphantly into New York as General Lord Howe sailed with his troops out of New York through the narrows and the last British troops left forever the soil of the United States.

It was Knox to whom Washington turned after bidding his officers farewell at Faunce's Tavern, at Wall Street, threw his arms around his neck, kissed him as tears rolled down his cheeks.

It was to Knox that Washington turned to disband the army, a discontented, ragged, hungry army whose hundreds of comrades died at Valley Forge and in all the battles of the Revolutionary Army, unpaid and clamoring for assistance.

It was Knox who called the officers and troops together and said to them "You have sacrificed much, suffered much, gone through deprivation of all comforts and freed our soil of English rule. You know the government has no money, that I have gone through all that you have endured and am left in debt, but I know that a grateful nation, when we have established a stable government, will make such provision for you that you will be satisfied. Go to your homes and as loyally as you fought, help build up that government to be a power among

the nations of the world." The Army quietly disbanded.

It was Knox who early in the war established an arms factory at Springfield, Massachusetts, which has played a great part in providing arms and munitions for our armies since that day to the present time.

It was Knox who, on return to civil life, served in the legislature of Massachusetts, served on the Boundary Commission between the United States and Canada, retired to his home in Thomaston, Maine, and devoted talents to building up its industries, its shipbuilding, which sent its fleets to every one of the Seven Seas and helped establish our commerce with the nations of the world.

It was Knox who, when Washington wrote asking him to frame a form of government to be adopted at the convention to be held in Philadelphia to turn the loosely held Confederation, known as Congress, into a stable government, answered Washington's inquiry by proposing for the first time in history a form of government composed of a lower house elected for two to three or five years, a senate or an upper house elected for seven years, a judiciary or supreme court appointed by the President, approved by Congress and impeachable only by the President or by Congress, and a Chief Executive or President, which form of government was adopted and is now our form of government unchanged and unchangeable.

It was Knox who urged Washington to attend the convention to which he reluctantly consented after Knox's repeated letters urging him to do so and saying if he did attend, his presence would result in the adoption of a stable form of government and, as Knox wrote, "you will become twice the Father of your Country." Washington finally yielded to Knox's persuasions, did attend and became the first President of the United States and Knox's plan for a form of government was adopted.

It was Knox who surveyed and laid out a plan for a canal across Cape Cod, a plan that more than a century later actually materialized affording a safe inland waterway for commerce and ships of war.

The memory of Major General Henry Knox, patriot, soldier, statesman, husband, father shall live forever in the small town and surrounding community of Thomaston, Maine. It is hoped that this story, told once again, may serve to perpetuate the memory of a Great American and serve as an inspiration to all Americans who each in his own enjoys the potential of becoming also a Great American. But in particular, it is hoped the accomplishments of Knox the Patriot will be told and retold among the citizenry of Fort Knox, among the school children of the Post as a constant reminder of the greatness for which their home stands as a National symbol.

**UNITED STATES ARMY
THE CHIEF OF STAFF**

TO THE OFFICERS AND MEN OF ARMOR

On behalf of all members of the Army, I extend congratulations and best wishes to the officers and men of Armor on the occasion of its 190th anniversary.

As you approach the second full century of service in our mobile arm, you have new and greater opportunities to contribute to decision on the battlefield. Air mobility, new tanks, and new concepts of firepower, mobility, and shock action offer exciting dimensions for improving Armor's historic role as the maneuver force in combat. You may justly take pride in your part in our modern Army and in the significant contribution you are making to the security of the free world.

All members of the Army join me in expressing pride and confidence in Armor as you complete another year of dedicated service to the Nation.

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

THE ARMORED CAVALRY PLATOON COMBAT READINESS CHECK¹

By LIEUTENANT COLONEL JOHN G. COOK (Ret.) and
DR. ROBERT A. BAKER

Human Resources Research Office, The George Washington University

Senior Armor personnel responsible for the field training of tactical units have often pointed out the difficulties of conducting effective combat training for Armored Cavalry personnel, the need for improving both the amount and quality of Armored Cavalry training, and the importance of developing for such units a practical and meaningful standard of combat readiness.

To help meet these needs and to aid in the solution of other complex training problems, Headquarters, USCONARC, in 1963 established the requirement for a training research task and assigned the mission of improving Armored Cavalry training techniques to the HumRRO Division No. 2, Armor Human Research Unit at Fort Knox.

The overall mission of this Research task RECON was to develop sound, reliable and objective training program guidance, as well as training methods, instructional aids, techniques, and management procedures for the armored cavalry platoon—including the individual soldier's skills as well as the team skills of the squad, section, and intact platoon.

The research team began the work with a survey of the available and pertinent training literature. Next the teams interviewed experienced Armored Cavalry Unit Commanders and line and staff personnel in all of the Armored Cavalry regiments in the 7th Army—the 2nd, 11th, and the 14th—and

Dr. Robert A. Baker, a frequent contributor to ARMOR, received his BS and MS degrees from the University of Kentucky and his Doctorate from Stanford University. During World War II he served in Europe with the US Army Air Corps. Subsequently, he was a research scientist at Lincoln Lab, MIT. He is now a Senior Staff Scientist at the U.S. Army Armor Human Research Unit, Fort Knox, Kentucky. Since 1954 he has been conducting research on Armor training. Dr. Baker has published more than 50 articles in professional journals as well as two collections of scientific humor. Along with Colonel Cook, he is also co-editor of the **Tank Commander's Guide**.

Lieutenant Colonel John G. Cook, retired. Served with the 4th US Cavalry in 1932. He was a Tank Platoon Leader and Company Commander during World War II in Europe with the 714th Tank Battalion, 12th Armored Division. During Korea, he served as S3 of the 89th Tank Battalion. In May, 1952, he was assigned as an instructor in the Command and Staff Department, The Armor School, and, in 1955, became Operations Officer of the Department. He retired in 1956 and since this time has served at the U.S. Army Armor Human Research Unit as a Military Advisor. His major decorations include: Distinguished Service Cross, Silver Star, Bronze Star (Valor), and the Purple Heart. He, with Dr. Baker, is a co-editor of the **Tank Commander's Guide**.

the 3rd ACR at Fort Meade as well as several of the Armored Cavalry squadrons organic to the Infantry Divisions. Observations of Armored Cavalry units during FTX's and Army Training Tests were also made.

As a result of the interviews with unit commanders additional training requirements were uncovered and some need priorities were established.² Although the lack of adequate training areas, excessive personnel turnover, and the need for better trained junior officers were frequently reported, all of the commanders stressed the need for criteria which would reliably evaluate the combat-ready status of their units and would furnish the kind of information that could be used as a basis for concerted action and would lead to concrete, specific, and worthwhile improvements.

Most of the unit commanders also noted that conducting realistic training tests for cavalry units larger than the platoon is almost impossible.

Finally, many of the officers noted that a large number of the duties and skills peculiar to the personnel of the Armored Cavalry Platoon had not been spelled out in enough detail in the existing literature to provide the guidance needed by the untrained and inexperienced.

In view of all of these problems it was decided the commander's needs could best be served by carefully defining the critical combat duties and skills of each member of the Cavalry Platoon.³ Using these requirements, the research team, next would prepare detailed job descriptions that is, "how-you-do-it-in-step-by-step-fashion" outlines or, in military terms—combined Army Subject Schedules and Lesson Plans for each of the critical platoon jobs and MOS skills. Then, when the job descriptions were complete, they would be presented in the format of an objective, step-by-step, performance proficiency test. This

Armored Cavalry trainees undergoing individual weapons check (Phase I) of the Armored Cavalry Platoon Combat Readiness Check.



plan was adopted because a similar procedure, used to develop a combat readiness check for the tank platoon, had proved to be quite successful.^{4,5}

The development of a similar test for the Cavalry platoon, it was believed, would not only reveal specific weaknesses and deficiencies at the individual, crew, and section levels but would also provide a broader measure of the capabilities of the entire platoon. Such a test should also provide a useful research tool for the evaluation of the effectiveness of any new training methods and techniques. It should be understood, however, that the development of such a test was not intended to replace any of the current cavalry ATT's. Such a test, instead, would serve as an additional, or supplementary, index of combat readiness.

DEVELOPMENT OF THE AC READINESS CHECK

Using the above plan the research personnel reviewed Armor and Armored Cavalry manuals as well as other literature pertaining to the duties, skills, and activities of Armored Cavalry platoon personnel. Material from these sources and from interviews with experienced Armor personnel was used as a basis for preparing tentative lists of job requirements for the platoon leader and platoon sergeant, and for personnel of the scout, tank, rifle, and support units making up the platoon. These lists were reviewed by selected personnel of various departments of the Armor School for accuracy of content and adequacy of coverage and were then modified to reflect their comments.

The lists were next submitted to senior platoon, squad, and section leaders in 13 Armored Cavalry squadrons in USAREUR and CONUS for evaluation. Each respondent reviewed the list applicable to his own job and to other specified jobs under his supervision. Using a five-point scale, the respondent judged each job requirement in terms of its importance for combat. From these data, the essential requirements of each job for combat—were obtained.

Next, a survey of the current ATT's Armored Cavalry training programs, and FTXs used by 12 armored cavalry squadrons was made. On the basis of an analysis of these tests and the job requirements, test items covering the 14 types of jobs, representing 5 MOS's and 16 particular MOS descriptions were prepared. These test items were then assembled in the form of performance tests called "reaction checks." When the initial version of each of these checks was completed it was reviewed by the appropriate departments of the Armor School, revised and improved, and resubmitted.

On the basis of the Armor School evaluation and approval, a field performance test of combat readiness *The Armored Cavalry Platoon Combat Readiness Check*—suitable for administration at the ar-

mored cavalry platoon level, is now being tested and evaluated by units in the field. If the evaluation is favorable, USCONARC plans to recommend the checks be included in the appropriate DA publications.

DESCRIPTION OF THE COMBAT READINESS CHECK

This check was written with the assumption that measures of individual skills, crew and section skills, and intact tank platoon skills are needed to maximize the usefulness of the final product. The check was therefore, divided into three phases: (1) The Individual Phase; (2) The Squad and Section Phase; and (3) The Intact Platoon Phase. Each of these phases, known as a "Reaction Check," is a complete unit containing detailed instructions for administration.

Phase I, the *Individual Phase*, covers the following common skill areas:

1. Weapons viz. caliber .45 submachine gun, caliber .45 pistol, caliber 7.62 M14 rifle, M79 grenade launcher, caliber 7.62 (M60 and M73) machine gun, and caliber .50 (M85 and/or M2 or M2 modified) machine gun.
2. Radio telephone Procedure viz. phonetic alphabet, phonetic spelling and pronunciation, and radio procedures.
3. Radio Operations (Putting radio sets AN/VRC 25, AN/VRC46, and AN/VRC12 into operation)
4. Observation Post (Occupation of, and observing and reporting procedures)
5. First Aid (Treatment of wounds, shock, fractures, and use of tourniquets)
6. Dismounted Combat Movements (stealth and security, rushing, crawling, walking)
7. Range Estimation (Flash and sound ranging, estimation by eye, binocular and mil relation, and maps)
8. Map reading (Map scales, symbols, orientation location, resection, intersection, coordinates, elevation, distance measurement, azimuth, back azimuth, and identification)
9. Artillery Adjustment (Adjustment of 4.2 inch supporting fire to include range determination, deflection changes, sensing, etc.)
10. CBR (Use of the protective mask, self-aid, and nuclear protection procedures)

Phase II includes checks for the scout squad and section, tank crew and section, rifle squad, and support squad. The skills and knowledges measured are:

1. Vehicle stowage

2. Before-, during-, and after-operations maintenance
3. Vehicle driving
4. Reconnaissance operations (squad and section)
5. Methods of mounted movement (squad and section)
6. Live firing of vehicle-mounted weapons
7. Live firing of weapons dismounted (rifle squad)

The emphasis in this phase is on the crew interactions required in order to insure a smooth-working team, and on crew member responsibilities. Also incorporated, for those squads and sections containing more than one vehicle, are platoon member intervehicle coordination and responsibilities.

During Phase III the individual squad and section jobs are meshed into an intact platoon combat field exercise. The primary purpose of this phase is to "check" the platoon leader's skill in command and control and to "check" the skill of the platoon in responding appropriately. In this phase, both the platoon and the platoon leader are checked in the following troop leading and command and control activities:

1. Issuance of the leader's "Order of Execution."
2. Order of movement to Starting Point.
3. Route reconnaissance and adjacent terrain.
4. Movement to a screening area (change of mission and direction)
5. Occupation and the organization of a screen.
6. Preparation for movement to a blocking position.
7. Movement to, and occupation of, blocking position.
8. Conduct of action at blocking position.
9. Preparation for, and movement to, initial delay position.
10. Occupation and organization of initial delay position.

A sample page from the score sheet used in this phase is shown in Figure 1.

The concept of the test is a "county fair" procedure and, thus, requires the establishment and use of testing stations. The conduct of each station and substation is carefully elaborated in the test manual in order that all of the administrative duties will be clearly understood. To accomplish this each "check" includes:

1. A diagram of the organization and layout of the station and all substations.
2. A listing of the materiel, equipment, and personnel requirements for each station

(based, of course, upon local SOP's, policies, and safety requirements).

3. A scenario providing step-by-step operating procedures, including briefings, explanatory remarks, scoring instructions, and trainee requirements.
4. A score sheet designed as both a solution and as an instructional supplement.

All of these procedures are written in a manner designed to assist the commander and the instructors in the making of an objective, standardized assay of the skills and knowledges of all members of the armored cavalry platoon.

Figure 1

A Sample Page From The Intact Platoon Phase (Phase III) of the Armored Cavalry Platoon Combat Readiness Check

PLATOON LEADER'S NAME.....			
PLATOON.....			
Issuance of Platoon Order		Score	
		(✓)	(0)
1. Assembles Section and Squad Leaders.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
a. Ensures that all maps are oriented.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Selects a vantage point from which to issue the order.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Points out their present position.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Makes certain all can hear him.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Has plan written out in detail.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Issues his order orally, and mentions:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
a. Aggressor forces are scattered.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Aggressor reported in vicinity of and	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. No aggressor resistance encountered in last 12 hours.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Mentions the Friendly Situation, including:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
a. Troop attached to	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Troop mission is to reconnoiter routes to (northeast).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. (Brigade) to seize at	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Troop has <i>no</i> attachments or detachments.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

ADVANTAGES OF THE ACPCRC AND SUGGESTED USES

Although there are a number of armored cavalry platoon training tests and exercises the *Armored Cavalry Platoon Combat Readiness Check*, it is believed, offers several significant advantages over the tests currently being used. These advantages are:

1. **Comprehensiveness.** Most of the critical requirements for combat operations at the platoon level are represented.

2. **Objective Scoring.** Each item in each of the checks is constructed in such a fashion that the umpire's and scorer's judgments and opinions are minimized; that is, a clear-cut decision as to suitability of the performance can be readily made. For most items, the performance is so outlined that the scorer need only note whether or not the act was performed. The individual trooper, the crew, section, or platoon is scored as either right or wrong and receives full credit or zero on each point tested.
3. **Identification of Training Needs.** Because of the manner of construction and scoring, the test identifies specific deficiencies at the individual, crew, section, and platoon levels, thus making specific corrective action possible.

As a result, the test can be used by commanders of cavalry units to provide:

- a. A comprehensive and realistic measure of combat readiness at the cavalry platoon level.
- b. A detailed picture of individual, crew, section, and platoon strengths and weaknesses. Moreover, those areas in which retraining or additional training is needed are also pinpointed exactly.
- c. An end-of-cycle evaluation of training achievement before training at the troop or squadron level is begun.
- d. A proficiency standard by which the cavalry platoons of a given troop, or selected platoons from several troops can be compared.

In these checks it should also be noted that none of the individual items is weighted. Obviously some of the items are more important than others. Yet, at

Armored Cavalry trainee undergoing the Map Reading Check, Phase I, of the Armored Cavalry Platoon Combat Readiness Check.





Instructor administering the Vehicular Reaction Check in Phase II of the Armored Cavalry Platoon Combat Readiness Check.

the present, no criterion adequate for the purpose of assigning weights to specific items has been established by armored cavalry command personnel. Therefore, since there are no clear-cut, specific, unambiguous criteria for establishing the relative importance of the items, it was decided best to give all items equal weight.

In evaluating combat readiness, it must be remembered that any failure of personnel to complete any test item of an essential combat skill is a serious matter requiring corrective action. Similarly, no ratings of Superior or Inferior, and no scoring standards, have been established. Since the commander is responsible for the training of his troops, he, of course, desires that proficiency be as high as possible under existing circumstances. It is believed that he is more concerned with specific strengths and weaknesses in individual, crew, and team skills than he is with meaningless numbers or grades.

Nevertheless, should weighting of items or ratings of performance in terms of letters, grades, or descriptive adjectives be desired, the test does not preclude their addition by any commander.

Although the primary purpose of the ACPCRC is to provide a measure of training achievement and readiness for combat, the ACPCRC, unlike many other tests, can also be used in the role of a training vehicle. Due to the unique format of the check lists, their comprehensiveness, and step-by-step coverage of the details of each critical skill (See

Figure 2), they also can be used as lesson plans for the presentation of a unit of instruction, as self-teaching devices, or as supplemental study material.

Figure 2

Sample of The Score Sheet For The Individual Weapons Phase

In the Combat Readiness Check Individual Phase (Phase I) the scoring statement, "Clears the weapon correctly," for example is broken down into 25 independent SCORING POINTS, each scoring point being a PRECISE and CORRECT step in the CLEARING of a WEAPON.

An extract from one of the scoring sheets is shown below.

MACHINE GUN, Cal. .50 (M85)

The Scorer will check (✓) each item accomplished by the soldier; the Scorer will place a zero (0) opposite each item which was not accomplished. If the soldier does not know the action to be taken, the Scorer will tell the soldier what to do, and request the soldier to do it. The items completed in this manner will be scored zero (0) but the soldier will have gained a measure of knowledge.

SOLDIER'S NAME RANK
SOLDIER'S UNIT

First Requirement Item (Disassembly)

- | | |
|---|---|
| 1. Check SAFETY to ensure it is in the | Score |
| | (✓) (0) |
| "Fire" position | <input type="checkbox"/> <input type="checkbox"/> |
| NOTE: The SAFETY is in the "Safe" position (See para. 2 q). Located on left side of RECEIVER. | |
| a. Places SAFETY in the "Fire" position | <input type="checkbox"/> <input type="checkbox"/> |
| 2. Grasps HANDLE of the HAND CHARGER ASSEMBLY | <input type="checkbox"/> <input type="checkbox"/> |
| a. Pulls HANDLE all the way to the rear | <input type="checkbox"/> <input type="checkbox"/> |
| b. Locks the BOLT in the rearward position | <input type="checkbox"/> <input type="checkbox"/> |
| 3. Places the SAFETY in the "Safe" position | <input type="checkbox"/> <input type="checkbox"/> |
| 4. Grasps the COVER LATCH KNOB | <input type="checkbox"/> <input type="checkbox"/> |
| a. Uses THUMB and FOREFINGER of the LEFT HAND | <input type="checkbox"/> <input type="checkbox"/> |
| b. Rotates the COVER LATCH KNOB all the way forward | <input type="checkbox"/> <input type="checkbox"/> |
| c. Holds the COVER LATCH KNOB forward | <input type="checkbox"/> <input type="checkbox"/> |
| d. Raises the COVER to the vertical position | <input type="checkbox"/> <input type="checkbox"/> |
| (1) Uses the RIGHT HAND | <input type="checkbox"/> <input type="checkbox"/> |
| 5. Lifts FEED TRAY to the vertical position | <input type="checkbox"/> <input type="checkbox"/> |

The commander, of course, is free to utilize the check lists in any manner he desires. For example, they may be used to determine the capabilities of crew members in positions *other than* those to which they are assigned. Further, the various checklists may be used *separately*—without regard for continuity—to train crews, squads, or sections in specific areas of deficiency. Should a platoon leader be “weak” in “setting up a screen,” for example, then the Screen Check could be separately utilized to increase the officer’s knowledge and skill in this particular type of security operation.

Finally, it should be emphasized that the three phases of the ACP Combat Readiness Check are

both *interrelated* and *flexible*. They may be used singly or in combination. Also they may be tailored specifically to suit any particular Commander’s training requirements since they were, in the final analysis, specifically designed to aid him in the planning and execution of his training mission and to help the platoon reach a high level of combat skill.

Additional information and details concerning either the theory, construction, or the envisioned application of the ACP Combat Readiness Check can be obtained by writing either of the coauthors at HumRRO Division No. 2 (Armor), Fort Knox, Kentucky 40121.

FOOTNOTES

¹The research reported in this paper was performed by HumRRO Division No. 2 (Armor), Fort Knox, Kentucky, under Department of the Army contract with The George Washington University. The contents of this paper do not necessarily represent the official opinion of the Department of the Army.

²A formal report of this work may be found in Cook, John G. “A Survey of Problems In The Tactical Training of The Armored Cavalry Platoon,” Research Memorandum, HumRRO Division No. 2 (Armor), Fort Knox, Kentucky, Jan. 1963 (FOUO).

³This work is described in detail in Warnick, W. L. and Baker, Robert A. “Determination of Combat Job Requirements For Armored Cavalry Platoon Personnel,” TR 92, Human Resources Research Office, Alexandria, Va., Dec 1964.

⁴“The Tank Platoon Combat Readiness Check,” Baker, Robert A. and Cook, John G., *Armor*, Vol LXXI, No. 3, pages 20-23, May-June 1962.

⁵“Tank Platoon Combat Readiness Check,” Tuggle, Lewis M., *Armor*, LXXIV, No. 1, Pgs. 12-15, Nov-Dec 1965.

AUTHOR'S NOTE

Training the Armored Cavalry Platoon poses unusual problems because of the diversity of its elements and of the combat missions assigned to it. The complex nature of the training needed is evident from the fact that 14 types of jobs, representing five MOS's and 16 MOS descriptions are included in the table of Organization for the Armored Cavalry Platoon.

After determining the critical combat duties and skills of each member of the platoon a series of tests or “reaction checks” were developed. These objective “checks” are grouped into three phases: Phase I, INDIVIDUAL PHASE; Phase II, SQUAD and SECTION PHASE; and Phase III, INTACT PLATOON PHASE. Each reaction check is a complete unit with instructions personnel and materiel requirements, scenario, and score sheets.

Taken together, the three phases form the Armored Cavalry Platoon Combat Readiness Check (ACPCRC). The ACPCRC was prepared for the specific purpose of helping the commander determine the precise level of a soldier's skill and knowledge. The ACPCRC may also be used to furnish guidelines for training prior to the unit's participation in Army Training Tests or as lesson plans in the presentation of instruction. The ACPCRC may also be used as self-teaching or in any manner the commander may desire.

R A N G E R-A R M O R

By CAPTAIN JAMES K. McCROREY



For the last several years young panzer leaders have rappelled off cliffs of the Blue Ridge mountains of Georgia, and traversed the inundated areas of northern Florida. During this time not too few of these tankers found themselves pondering the usefulness of it all. And, if they didn't have any doubts then, they were sure to obtain some two and three years later.

And today, it is not only an individual concern. It is evident among our Armor and Cavalry units who need these young officers as soon as the Armor School can train them.

It is at this point that we should ask ourselves some questions.

Is it of any real value for an Armor officer to be Ranger qualified?

Captain James K. McCrorey, Armor, graduated from USMA in 1962. After completion of the Armor Officer Basic Course and Airborne and Ranger Training, he was assigned to the 3d Squadron, 8th Cavalry in Germany where he served as a platoon leader and S-1. Upon return to CONUS in 1964 he was assigned to the 4/37th Tank Battalion where he served as company executive officer and later as Aide-de-Camp to the Assistant Commandant, U. S. Army Armor School. He attended the Armor Officers Career Course in 1965-1966 and is presently assigned to Fort Knox.

Do the young Ranger qualified officers who come to the tank battalions and cavalry squadrons perform any needed function?

Or, do they merely come with a badge and another school in their file as far as Armor Branch is concerned?

Some answers to these and other related questions on the value of Ranger training have been discussed many times at all levels. Whether what is presented here sways your thoughts to any degree, or merely reinforces your present opinion, the objective of providing a few more views to this inadequately understood problem will have been attained.

THE ACADEMIC AND HISTORIC APPROACHES

For the purpose of brevity, some of the opinions on Ranger and Armor operations are condensed into the area of either historical or theoretical development. The historical area is concerned with examining the growth of the Rangers and contrasting it with that of Armor. The theoretical outlook combines an analysis of the similar missions of Ranger's and Cavalry, an examination of the techniques and doctrine of employment, and a comparison of the diverse interests of both ar-

mored cavalry and tank battalions, in this area of Ranger operations.

The Pro Outlook

According to the affirmative outlook on the Ranger-Armor concept, a review of the historical development of the Rangers indicates similarities in some of its past employment and doctrine with Armor, mainly in the field of cavalry operations. It is believed that the particular techniques and methods used in the past are something more than just purely recurring coincidences.

As early as the American Revolutionary War, a Ranger element was led by Francis Marion, the "Swamp Fox." Marion's men were good riders and expert shots. They kept close watch on the British, and struck them blow after blow, surprising and capturing small groups of soldiers. As mounted parties, they continually raided outposts and lines of communication. This organized partisan activity was most successful against an enemy of superior forces and discipline.¹

The U. S. Army Cavalry was abolished in 1815 because of its cost. As time passed, the Indians, mounted on their war ponies, became a grave threat to the expansion of the United States. The

government organized a battalion of mounted Rangers to cope with this new problem. This mounted battalion did not exist for long and was soon abolished and some of the Rangers joined the newly formed 1st Regiment Dragoons.²

The Civil War was again the occasion for the creation of special units such as Rangers. The Confederacy quickly capitalized on the advantages of this type of organization by authorizing the formation of partisan Ranger units. It was not until the summer of 1863 that the Union forces employed Ranger tactics, and then only on a limited scale.

The Colonies, territories, and early American states throughout our history formed Ranger units. They were activated to meet a crisis and deactivated for the most part immediately after the crisis had passed. The Connecticut, Texas (Thomas Knowlton's), Arizona Rangers and the Mississippi Rifles, were some of these famous units.³

Another prominent Ranger Unit was the Cavalry squadron organized and led by General John Hunt Morgan. One of the most famous raids of Morgan's Rangers during the Civil War started in July 1863. With a command of 2,400 men, he captured a garrison at Lebanon, Kentucky,

Ranger classroom in a flooded swamp in the Florida Ranger Camp.





Ranger candidates cross a stream as part of the confidence course at Fort Benning.

continued to the Ohio River near Brandenburg, and crossed the river on two captured steamers after dispersing hostile troops on the far side. Following a course roughly parallel to the Ohio River, bypassing Cincinnati, Morgan's men came with a day's ride of Lake Erie—the deepest penetration of any Confederate force during the war. However, close on his heels was a Federal Cavalry force, and near the end of July in the vicinity of East Liverpool, Ohio, Morgan was forced to surrender.⁴

John S. Mosby, a master of the swift and skillful use of cavalry, was one of the most outstanding Confederate Rangers. He believed that by resorting to aggressive action he could compel his enemies to guard a hundred points while he waited to attack any point he chose.

Mosby built his force to 800 before the end of the war, but the largest force he ever assembled for a raid scarcely exceeded 350 men. Usually his forays were accomplished with a dozen to eighty men, because these small groups could be more easily concealed and moved about as necessity demanded.⁵

And finally, in November 1944, General Patton assigned the 5th Ranger Battalion to XX

Corp and a force consisting of the 6th Cavalry Group and the Ranger battalion had the mission of screening the XX Corps' southern flank.⁶

So from this brief glance at some of the more overt Cavalry Ranger operations, the affirmative group visualizes a certain amount of similarity in employment, missions and at times environment between Cavalry and Ranger units.

Also, it is pointed out that a look at the missions of Ranger and Cavalry demonstrates another similarity, one of natural counter-employment.

The Armor School states that Armored and Air Cavalry units are organized to perform reconnaissance and to provide security for the unit to which assigned or attached and to engage in offensive, defensive, and delaying action as an economy of force unit.⁷ Whereas the Infantry School describes Ranger employment as operations by highly trained units to any depth into enemy held areas for the purpose of reconnaissance, raids and general disruption of enemy operations.⁸

From a look at these missions it is apparent that Cavalry and Ranger units are natural opposite forces. Examples of this would be rear area security vs. a long range raid, protection of the MSR vs. ambush patrol, screening force vs. an infiltration operation, etc.

At this point the affirmative view asks—what is the best anti-Ranger weapon? A like Ranger unit, or a Ranger-educated one? With economy of force and mobility required in the conduct of security missions, Cavalry units seem to be a reasonable choice. So it is no surprise that Armored Cavalry units today normally find themselves assigned anti-Ranger and guerrilla missions during field training exercises. Also, since the Ranger units have been deactivated, it could be alleged that Ar-

mored Cavalry units could continue to remain immediately available to deal with the Ranger threat to today's division.

Concerning this lack of Ranger units in the U.S. Army today, Capt. J. W. Nicholson in an unpublished paper, "Bring Back the Rangers," brought out another need. With the use of the Cuban Crisis as his vehicle, Capt. Nicholson showed that there is a loss of this Ranger capability to the President as Commander-In-Chief of the United States Armed Forces today. From Special Forces, the Airborne units to the Marines, there was and is no force of specially trained and toughened soldiers capable of operating in small groups to conduct swift and devastating surprise raids in enemy territory on "exotic" missile sites, sophisticated communication centers, and surveillance equipment.

Notwithstanding any high level approval for reactivation of our Ranger units, the forces now in being will have to do. Here, Armored Cavalry might be again considered an available force for offensive Ranger-type missions not uncommon for Cavalry units in field training exercises today.

The final theme of the affirmative academic approach is directed toward the tank battalion. In considering the battalion, it is admitted that pure tank units have no previous alliance with the Rangers either in history or in missions. Even though its employment is mainly offensive in nature and conventional in environment, it still has something to gain from Ranger doctrine.

Armor battalions have two main requirements for knowledge of Ranger techniques. First, tank battalions habitually live on the FEBA (Forward Edge of the Battle Area) and are susceptible to enemy infiltration, patrols etc. Further, tank units are at times more liable at night to enemy detection than other units, due to their inherent problems of noise

discipline, and target acquisition. Secondly, tank units rarely consider, much less realistically train for dismounted operations. Patrolling, escape and evasion etc., are given certain hours of instruction, but these are only mandatory subjects and are normally not considered in light of their true value. Granted the tank is a very effective weapon on the battlefield, but no tank crew is really guaranteed one, and when their trusty steed is gone, they need to be able to fight, navigate, and survive without it.

The Con View (Armored Ranger Concept Discounted)

The opposing Ranger-Armor opinion views all the foregoing points with some interest but then frankly states there is no real historical connection between Armor and Ranger. The only meaning of the word "Ranger" which is relevant to a discussion of the modern battlefield is emphasized by this group as that of elite infantry. These troops are specialists trained and equipped for missions which are especially difficult.

The contra position believes the more realistic approach is to view Mosby, Marion, Morgan, and others, as leaders of partisan Cavalry whose strong points resembled most closely either the modern-day guerrilla (with his high degree of political motivation, maximum advantage of operating in familiar territory) or modern-day Armored Cavalry (with its superior tactical mobility). Basically, by appropriating the "Ranger" name in 1942, Col. Darby committed a theft from the Cavalry. By now, of course, the theft has the sanction of 25 years of usage; we still shouldn't let it mislead us into thinking that Ranger units of the World War II-Korea type can be employed properly according to Civil War Cavalry concepts, unless a great deal of selectivity is applied to these concepts.

Gen. Patton's Cavalry-type employment of Rangers in World

War II is described as a case of the Rangers being "kept busy" for want of any more suitable employment. Once the European War became a war of mobility, an Armor war, situations which called for Ranger employment were necessarily rare or non-existent. This view can also be seen by the Ranger History's own statement of the World War II Pacific operations.

The 6th Ranger Battalion, operating in the Pacific, was the only Ranger unit fortunate enough to have been assigned only those missions applicable for Rangers. All of its missions, usually, of task force, company or platoon size, were behind enemy lines, involved long-range reconnaissance and hard-hitting long-range combat patrols.⁹

Relating back to the Civil War forces, it could be said that they were at times organized in squadrons more as a means of transportation, rather than a Cavalry task organization. Only the particular techniques of Cavalry were employed for each situation, rather than its doctrine.

The point of individual training for a tank crew is not realistic in an Armor battalion. The tank battalion does not worry about dismounted actions at this time. The tank crew will have enough to do rather than to dismount and continue the attack at the raised pistol. The initial problems of medical evacuation, vehicle destruction, and resupplying other tank crews with crew members and equipment will keep the crew busy. Besides, the tank crew has only two submachine guns and four .45 caliber pistols,¹⁰ and is not really designed to close with and destroy the enemy as a fire team size force.

Finally, the contra view says the often repeated concept that a soldier must be capable of doing everything is nonsense. In this branch the bulk of time must be

put to the traditional move-shoot-and communicate training problems which become more of a task each year due to the personnel turnover, extra training commitments, and maintenance requirements. There are only so many available hours in a training day, and still there are not enough of these to adequately devote to the "Mission essential maintenance significant" Armor problem. Other aspects of the complete soldier—such as Ranger subjects—must be allocated less time, from pure necessity and by means of selective neglect.

At this point, in reviewing the two academic opinions it can be seen that from history the employment of Ranger units has been similar to Cavalry, most likely more from necessity than design; there is a void in the Army today for a unit capable of Ranger operations; and Armored Cavalry units are training daily on Ranger defense missions and might be susceptible in special situations for offensive Ranger-type operations. However, as shown by the dissenting opinion, the tanker's real problem is primarily remaining proficient in fighting the panzer, and they have some special problems to consider in this area before being training as the all around man.

Candidates climb landing nets in the combat conditioning course, Ranger camp, Fort Benning.



COMMANDERS' COMMENTS

Having reviewed some of the previous and current feelings Armor people have had on the subject, we should now turn our attention to the commanders' needs and views. The battalion and squadron commanders in CONUS and overseas can probably be considered as one of the most reliable sources today for evaluating Ranger operations in Armor. They are in a good position to evaluate the effect of the 1951 concept of dispersing the Ranger qualified personnel throughout the Army, especially from the standpoint of this branch and its units.

Before considering the commanders' comments, it should be stated that twenty-five inquiries were sent to the Armor battalions and reconnaissance squadrons in Korea, Europe, and CONUS. Of these twenty-five sent, fifteen were returned. In these questionnaires the armor field grade commanders were asked to give their feelings on the value of Ranger training for their young Ranger qualified officers. The following four questions to be answered yes or no were included in the questionnaire. (See Figure 1)

I would rather have had the individual here in the BN/Sqdn during the time spent in school. Yes or No.

On this first question the majority agreed it was not a loss to the unit or to the officer. However, some stated that the unit's own officer training program was sufficient and probably the most effective means of bridging the gap between the Armor School POI (Program of Instruction) and the additional knowledge needed for unit operations. Others thought it was valuable to have the officer exposed to a high standard of training for his own benefit and for possible subsequent presentation to the unit.

It also was mentioned that this background was of assistance to S3's and company commanders as

a source of information in the preparation of training related to Ranger-type operations. The value of the training compensated for the brief period away from his platoon while attending school. But one commander strongly felt lieutenants today were not spending enough time with the unit. This caused them to be in command positions with increased AGI/CMMI (Annual General Inspection/Command Material Maintenance Inspection) requirements, with a decreased amount of experience to cope with them. This experience he stressed, can only be sufficiently gained from association with his own people and equipment.

The next question of deriving more benefit in attending a maintenance course received more attention and wider controversy. **If he had to go to a school, would it have been of greater benefit to send him to a maintenance officers course. Yes or No.**

One school of thought advocated the following. Maintenance is the bread and butter of all Armor officers and its knowledge is needed everyday as opposed to a commando specialty. Maintenance management is the most frequently experienced area of leadership for an Armor officer, and the young officer should concentrate on becoming technically proficient in this area with all due speed—in fact ASAP wouldn't hurt. Any unusual or special requirements that might be encountered in training or combat can be learned from the appropriate sources or being an Armortype, the officer will be flexible enough to handle it.

The contra view is the maintenance course as an alternative to Ranger training took as its main approach that one is always learning and relearning the field of maintenance as an Armor officer. One commander stated that he would rather have a potential leader and train him in the maintenance field than have a "main-

tainer" and train him as a leader. The two months are put to better use preparing this young buck for combat by the realistic and demanding Ranger training program, an opportunity which he may not have again. Also in later assignments as we are now experiencing in MAAG or in the branch immaterial areas, this background will be a valuable aid.

Here then it can be seen the main consideration was training which would eventually benefit an officer versus training he could use immediately and more often in the battalions.

In further development of the need for some direct usefulness of the skills he acquired at the Ranger School as seen in respect to the officer and his unit, the third question found there was general agreement.

The individual has not and most likely will not have use for these particular Ranger skills while he is here in this unit. Yes or No.

It was noted that the Ranger qualified officer was immediately able to conduct training in the related subjects of patrolling, compass, hand to hand, physical training etc. Some commanders stated that during field work this officer tended to have a more realistic approach to unit security, the use of demolitions, and the employment of his or attached infantry. It was also considered to be generally true that this individual had a greater appreciation for night operations.

However, it was occasionally mentioned that one can go overboard on the praise of these skills. Eating snakes and other commando abilities do not assist him in qualifying his tank crews. And mountain and swamp techniques are operations in so called non-Armor terrain. If Armor is used in these areas, the Armor leaders' problems will be of somewhat a different nature than taught at the Infantry school.

Finally, one commander over-

seas stated that his local army area school provided a three week course where the particular regional Ranger methods were taught.

The fourth and final field for review by the commanders was the question of comparative confidence and leadership. This point also had two opposing views.

No great amount of confidence or leadership was exhibited by these officers over the regular Armor School trained officer. Yes or No.

The affirmative position contended that the Ranger course in addition to teaching leadership proved the young officer to himself: that he could be depended upon to keep himself and his men going. And the individual tended to have greater understanding of the need for detailed planning and coordination than expected for his age and experience.

The dissenting opinion was forced to admit that if any time was wasted by the officer in reacquainting himself with the hardware, or if any of his platoon's confidence in him had been lost while he had to relearn the Armor tactics and problems it was not noticeable. However, no great amount of confidence and leadership was exhibited by these officers over the regular Armor Officer Basic Course graduate. One commander stated that the benefit of the Ranger Course varied greatly with the individual. And occasionally there was the candid point of "Follow-Me—type leadership won't help him get that first round hit or keep the panzers rolling."

In addition to these four questions, the commanders submitted additional points. The commanders of the 1st and 2d squadrons of the 17th Cavalry stated that confidence in their people was no factor since all of their officers were Airborne qualified. The 101st view was that Airborne training was a "bona fide alternative" to the Ranger Course both in time to administer and use-

fulness of the military skill acquired. On the other hand, the 1st squadron of the 82d Airborne pointed out in its case, the lack of track vehicles made them highly susceptible to operations in which Ranger training was especially valuable, "and had proved this value in the Dominican Republic."

Another special mission benefit was brought out by the 2d battalion 34th Armor at Fort Irwin, California, which found that its three Ranger types were very able to assist in counter-insurgency, counter-guerrilla, desert survival, and land navigation training.

Still another group of commanders stressed that the Armor Officer Basic Course was not enough to instill the discipline, devotion, and seriousness of purpose required by the newer generation of officer. Any school (Airborne or Ranger) that is demanding in discipline and self-reliance would greatly assist not only the new officer but the unit receiving him, if nothing else at least from a soldiering point of view.

As can be seen, overall, the

commanders' votes were split, with a general majority approving of the Ranger training for their officers but in different and in varying degrees. There was strong feeling in favor of Ranger training for its maturing effect on the young officer. There was also a general preference for Ranger training over Airborne training in the regular Armor units, while in the two Airborne Divisions there was a distinct difference of opinion on this. One Airborne squadron commander indicated a preference for Airborne training as an "acceptable alternative," while the other squadron commander desired it to be emphasized because of the "likelihood" of future stability and counter-insurgency operations.

Although not evident from the statistics on Figure 1, but brought out by the individual comments, cavalry squadrons were generally more appreciative of the additional capability of the new officer, while tank battalions agreed that the main areas of this officer was a qualified frogman. They still required this officer to give a good day's work for a day's pay as

A Ranger leads a patrol through South Florida swamp during training at Florida Ranger Camp.



a tanker.

So, thus far, both the theoretical and the practical approaches have revealed some clear and opposing views as seen by the people within the Armor branch. Now let us take a brief look at Department of the Army level.

POSSIBLE FUTURE DA POSITION

The third and final area to consider—what might be the Department of the Army's future policy. The Haines Board's position on this subject was as follows:

"The Ranger course is designed to develop an officer's leadership and decision-making qualities and his skill in small unit operations in a simulated combat environment involving sustained mental, physical, and emotional stress. Although not primarily branch oriented, it has a strong Infantry flavor and provides a valuable foundation for all officers who participate in the course. Normally coming in the first few months of an officer's career, the course instills the know-how and confidence that are needed most at this point in time. In the Board's opinion, it would be difficult to overestimate the value of the course.

"Officers commissioned upon graduation from the United States Military Academy are currently required to attend the Ranger course and may volunteer for airborne training. All other Regular Army second lieutenants of the combat arms and the Military Police Corps are required to take either Ranger or airborne training and may volunteer for both, subject to the availability of quotas.

"The Board believes and is recommending in its report that Ranger training should be mandatory for all Regular Army officers. It is regrettable that the course does

not have sufficient capacity for all non-Regular Army officers as well."¹¹

Here the outlook is directed toward the officer's career rather than to his first five years of branch material assignments. The opportunity is denied the officer who intends to stay in service for two years because this time is taken away from his unit. Whereas, for the career soldier, his tour starts when he is assigned to the battalion. Although he does arrive later due to the additional schooling, the unit will still retain him for the full length of his assigned tour. And it is assumed that when this individual arrives, he is generally a better qualified officer and, in professional competence, will soon pass the man who arrived three months earlier.

DISCUSSION

At this point it seems that in the midst of all the controversy there is a common line of agreement. The historical and academic views and the commanders' comments are in disagreement with the Haines board position in application only. No view advocates denying Ranger training to Armor officers or that the branch as a whole ought to have nothing to do with it. But rather the contention is to limit, define its purpose and have a specific use for the training.

It should be noted that throughout the discussion that the tank battalion received a relatively small amount of attention, as compared to the cavalry aspects of this subject. Nevertheless, it should be seen from the statistics that four of the six tank battalion commanders generally fell in the position of support for Ranger training for the Armor officers in their unit. Also, several returnees from Vietnam today said that they were placed in infantry units and even Ranger battalions. These officers also stated that the ARVN (Army Republic of Vietnam) and U. S. armor units are

presently receiving unusual missions such as convoy security, bridge and town security etc. And that non-Ranger qualified individuals have expressed the desire to have had the training before going over there.

However, there were also unusual and infantry type missions in the Korean War such as tank-infantry raids and reconnaissances, ambushes, patrols and the maintaining of patrol bases behind enemy lines. But Major General W. G. Dolvin, the commander of several Armor task forces in the first year of the conflict, believes that the main problem for our young Armor officers today is to learn Armor subjects quickly. He stated that maybe only the people going to special units should receive jump or Ranger training.¹²

One other school of thought, of a somewhat growing following, is that Armor by and large today is resting on its laurels of World War II. Its equipment, doctrine, and attention are still on the rolling plains of Europe. Generally, the counter argument to this point is that Armor is so largely deployed in Europe because of the heavy nuclear and armor threat there. Here another point might be raised. Armor branch, by sending some of its officers to the areas and schools with the unconventional warfare slant is solving this problem in the personnel field. These people can employ armor in new ways whenever practical and feasible.

In reviewing the general progress of this discussion, it has been seen that there are a number of views on both sides concerning the value derived from Ranger training for Armor officers. Future indications are that the present policy of sending armor officers to attend Ranger schools will not only remain the same but might be increased. It would seem at this point that Armor branch should conduct a study of the best way to implement such

a policy if it were to be established. But a far more reaching approach would be to conduct a study to determine if we are using what we have now. As has been seen previously, Ranger qualification is not solely a personnel action, but rather it should be a capability of some assistance to the individual officer, his unit, and the branch. It is submitted that there is an area of some underdeveloped possibilities in the doctrine aspect. And that now is the time for a thorough examination to see if armor can derive some material benefit from the program. Otherwise, with the present random dealing of this matter we stand a chance of having the tail wag the dog in those

areas brought out by the commanders in the field.

If the decision is made by Department of the Army to increase this program as recommended, it seems that it would behoove Armor and the other branches to examine their own fields to see if military history has indicated that thinking, which believes that its doctrine is past the point of improvement, can not only be misleading but also disastrous. Could it be that this type of thinking has shown itself again in this area of Ranger employment since 1951?

FOOTNOTES

- ¹FM21-50, 1962, P. 322-324.
²*Ibid.*, P. 327.
³*Ibid.*, P. 328.
⁴*Ibid.*, P. 327.
⁵*Ibid.*, P. 324-326.

⁶*Ibid.*, P. 329-330.

⁷US Army Special Text 17-36-1, P. 1.

⁸*Op. Cit.*, FM 21-50 forward.

⁹*Ibid.*, P. 331.

¹⁰TOE 17-37E, P. 12-13.

¹¹Letter of Lt. Gen. R. E. Haines, Jr., 7 December 1965.

¹²Note of Maj. Gen. W. G. Dolvin, 21 January 1966.

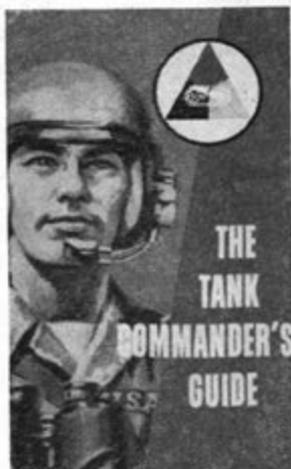
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THE COMMANDERS' RESPONSES TO THE QUESTIONNAIRE

Units	Question			
	1	2	3	4
	Rather have man in unit during the time spent in Ranger school	Maintenance Course instead	Probably won't use skills	No great amount of confidence or leadership was displayed
Recon Sqdns				
2	No	No	No	No
2	No	Yes	No	Yes
1	Yes	ABN Instead	Yes	Yes
Tank Bns				
5	No	No	No	No
2	Yes	Yes	Yes	Yes
1	No	Yes	No	No
2	Had no Ranger qualified officers in the battalion in the past year.			

The Tank Commander's Guide



Compiled and edited by William L. Warnick; Lt. Col. John G. Cook, USA, Ret.; and Dr. Robert A. Baker, of the U. S. Army Armor Human Research Unit, Fort Knox, Kentucky.

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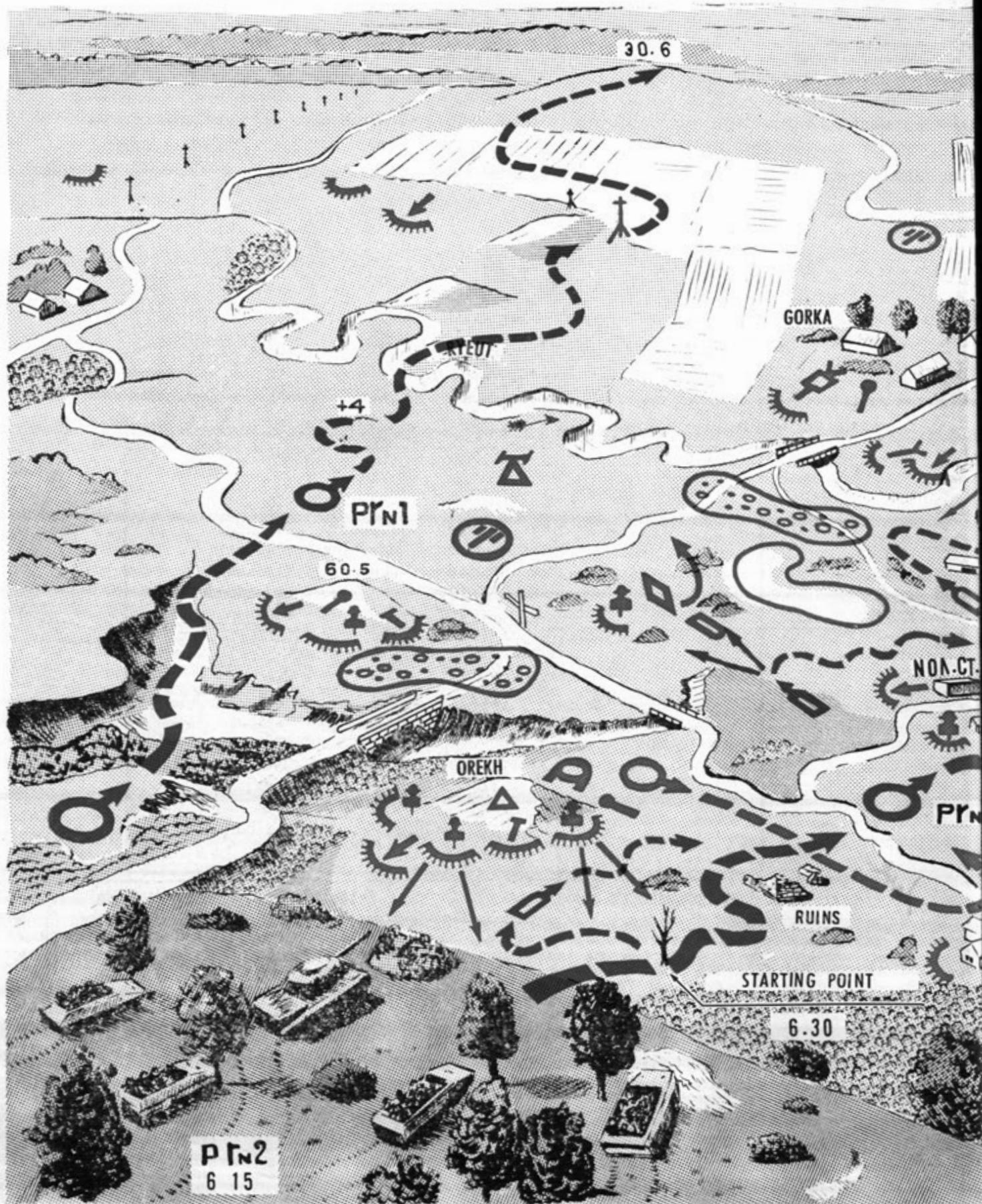
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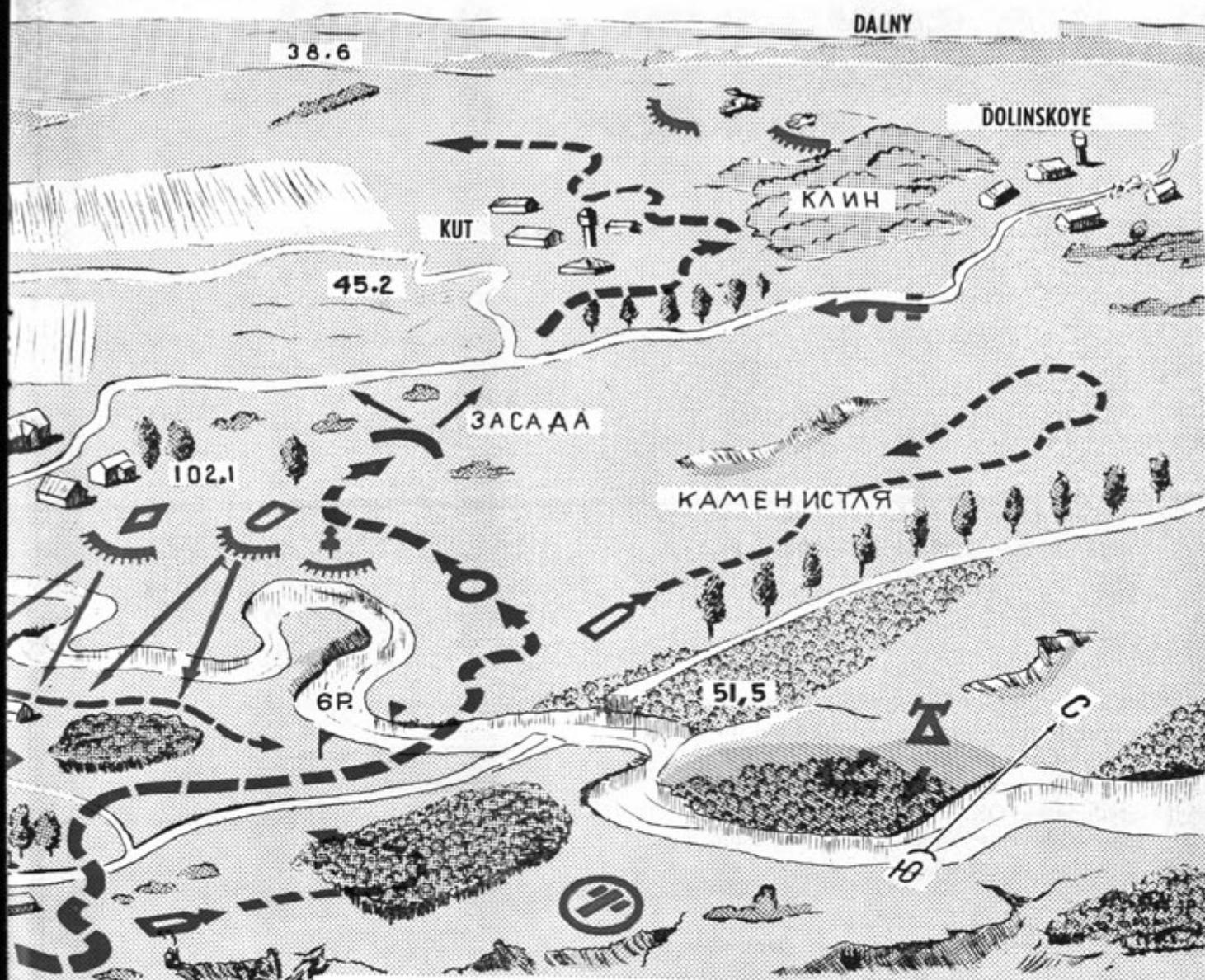


By Brier, Moore, and Bahnsen

This is a nuts-and-bolts booklet. It is at its best in discussing those detailed items of administration which are not found in any other publication. The title indicates that it is a company commander's guide, however, it is just as useful for the new lieutenant reporting for his first assignment and can be used as a practical guide for the management of platoons and companies\$1.25



(See text, p



**УСЛОВНЫЕ ОБОЗНАЧЕНИЯ:
MILITARY SYMBOLS**

- П
У
Д
- ПУРС
COUNTER-MORTAR RADAR
- Б
У
Д
- БРОНЕТРАНСПОРТЕР
ARMORED CARRIER
- Р
У
Д
- РЕАКТИВНОЕ ПТ РУЖЬЕ
TACTICAL ROCKET LAUNCHER
- Н
А
Б
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- НАБЛЮДАТЕЛЬНЫЙ ПУНКТ
OBSERVATION POST
- Г
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- ГРАНАТОМЕТ
GRENADE LAUNCHER
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- Артиллер. радиолок. станция
COUNTER-BATTERY DIRECTION CONTROL CENTER

Масштаб: в 1 см — 250 м.
Scale: 1 cm = 250 m

A SOVIET "How Would You Do It?"

By MAJOR RAYMOND E. BELL, JR., and
MAJOR E. JOE SHIMEK, III

The Senior Sergeant looked up from his map. Had he considered everything and prepared for all eventualities? Once again he mentally covered the details of his impending combat mission. It seemed as if everything was OK.

He reported his conclusions, based on an estimate of the situation, to the officer-in-charge of instruction.

"Carry on Good luck!", was the reply.

"Comrade Sergeant; the senior scout, tank commander and section leaders are all present!" reported Corporal Riabokon.

"Fine, give me your attention. Here is the operations order:

"Elements of an enemy motorized infantry battalion are conducting a hasty defense along the following line: the southern edge of the village of SADOVOYE-Hill OREKH-Hill 60.5. Enemy reserves are moving up from the direction of DALNY Forest and the village of DOLINSKOYE. An encounter with them is possible along the RYEUT River.

"The 2nd Platoon of BRDMs with one amphibious tank, one section of engineers and a motorcycle is designated "Recon Group 2," and has the mission of performing reconnaissance in the direction of the eastern edges of Hill OREKH—the bivouac—Hill 102.1—KUT-DALNY Forest; and will determine:

COMMENTARY

Contrary to many people's belief, Soviet armor doctrine is available for study, but unfortunately the Russian language discourages detailed analysis. This translation shows how a Soviet reconnaissance group would accomplish a mission. The basic article was taken from the March, 1966 issue of the Soviet military magazine "Starshi Serzhant" and was presented as a "How Would You Do It?"

The column to the left gives the translation of the "approved solution" operations order. This column is a commentary. Follow the order on the map (p. 32-33) as the Soviet sergeant in command briefs his section leaders.

The Soviet sergeant, given a training problem to solve, issues it to the leaders of his group.

The sergeant uses a standard format for his order, the first element of which is the "Enemy Situation."

An amphibious tank of the PT-76 or PT-85 type is the tank in this reconnaissance group.

The BRDM is used primarily for recon and command.

Here is a difference between the US and Soviet order format. We would indicate task organization before the order was issued. Also, there is no information about friendly forces on the flanks.

"(1)—the disposition of enemy strong points in the vicinity of SADOVOYE and Hill OREKH; existence of gaps between these points and locations of minefields.

"(2)—by 1000, the availability and condition of crossing points along the RYEUT River in the sector between Hill 51.5 and GORKA; with what enemy forces the northern bank is occupied and the location of strong points.

"(3)—disposition of atomic weapons; firing positions of artillery and mortars and armor assembly areas.

"(4)—composition of appropriate reserves, direction of their advance and the assembly areas with special attention in the direction of DOLINSKOYE and GORKA.

"Starting point is the dead tree-cross at 0630." There are no friendly forces on the right. On our left, Recon Group 1 from our company is carrying out a reconnaissance along the axis; western slope of Hill 60.5—topographical tower—Hill 30.6.

BRDM No. 50—commander: Sergeant Shelyukin—will move from SP along ravine in the direction of the ruins. Report the results by radio. Then move out from the edge of the underbrush with halts for observation. Move out for the SP at 0615.

"Reserve elements: BRDM No. 52, tank and motorcycle.

"At 0600 the reconnaissance group will form at the road on the edge of the forest, head of the column towards the SP. order of march: Motorcycle—BRDM No. 53 (command vehicle)—BRDM with the engineer section—tank—BRDM No. 52.

"Security while in column: motorcycle and crew of BRDM No. 53—to front; tank crew—all round; engineer section—to the right; crew of BRDM No. 52—to the left and rear.

"Communications on the march: by radio. At the halt—voice and radio, immediately report appearance of the enemy.

"My second-in-command will be Corporal Riabokon.

"Sergeant Shelukin, repeat the order!"

We would normally assign missions (3) and (4) to long-range patrols, with the feeling that an armored unit would be easily seen or heard in a deep penetration role.

Unless the dead tree is the only one in the vicinity, imagine the confusion that could result if it is still dark at 0630 when the lead scout is trying to find the SP and cross it on time.

Here the situation on the flanks is given. Note the similarity of elements in order despite the arrangement.

The lead scout's task is explained in some detail. Either the recon group leader is not going to give his subordinates much free rein, or else he feels it necessary to remind them of basic scouting techniques.

It appears that the entire reconnaissance task will fall on BRDM 50 and the rest of the group will support.

Details of security are usually included in our SOP, but here it may well be necessary to include them when different elements are assembled for a specific mission.

Obviously little attention is paid to radio discipline as radio silence is not observed. "Command and Signal" appear here in the same place as in our order. "Administration," however, is lacking.

The sensitivity of Sgt. Shelukin's task probably makes it wise to make Corporal Riabokon second-in-command.

This exercise points out not only the differences but also the similarities in the format of US and Soviet operations orders at platoon level. It also shows what types of missions are given to Soviet armored reconnaissance units. This problem was a senior Soviet sergeant's. If you were in his boots, how would you solve it?

By MAJOR RAYMOND E. BELL, JR., and
MAJOR E. JOE SHIMEK, III

SOVIET RECONNAISSANCE

Soviet tactical ground reconnaissance does not differ radically from that of the United States Army and its allies. There are, however, certain elements of Soviet reconnaissance doctrine like organization, equipment and employment that are worthy of consideration. These elements will be examined in this short survey.

ORGANIZATION

Soviet armored reconnaissance units consist either of TO&E maneuver elements specifically assigned to perform reconnaissance missions, or specially organized reconnaissance formations.¹ The Soviets, however, consider that each combat unit is responsible for its own reconnaissance and security, and every soldier is expected to be skillful in the techniques of scouting and patrolling. Indeed, it is considered a primary duty of every officer to train his men in reconnaissance techniques.²

The largest divisional reconnaissance unit is the reconnaissance battalion with about 300 men. It is composed of one company each of tanks, mechanized infantry and scouts equipped with motorcycles and scout cars. The battalion commander, upon receiving his order, organizes components of these companies into "reconnaissance groups" (*razvedivatel'nii dozor* = RD) or patrols. A group may consist of a tank platoon reinforced with mechanized infantry carried in BTR-50Ps, or BTR-60Ps and motorcycles. Light reconnaissance groups are

organized around scout elements mounted on BRDM recon vehicles and PT-76 tanks.³

EQUIPMENT

The PT-76 is a reconnaissance tank with a crew of three; a driver, tank commander and a gunner who also loads the main weapon. The tank can swim and is very lightly armored. It mounts a 76 mm cannon and a 7.62 mm machinegun.⁴

Since the mid-fifties, the Soviet Army has acquired numbers of sophisticated wheeled armored cars. Among these is the four wheeled amphibious BRDM reconnaissance car which has a water jet propulsion system for crossing water barriers.⁵ There are two models, one with the motor in the front and the other motor behind. A unique feature of the vehicle is the addition of two pairs of retractable wheels. Three or four anti-tank rockets of the SNAPPER or SWATTER variety have also been seen mounted on the vehicle. Normally, however, the BRDM has only a vehicular mounted machinegun.

The T-54 and/or T-55 tank platoons are generally held in reserve to assist light reconnaissance units in accomplishing their mission.⁶ The tank weighs approximately forty tons, can attain speeds of up to 30 mph and has a cruising range of 250 miles.⁷ It mounts a 100 mm gun, a 12.7 mm anti-aircraft machinegun and a 7.62 mm coaxial machinegun. Although not amphibious, it has the capability of driving along the bottom of a river when equipped with a schnorkel. This device allows the vehicle to travel submerged at a depth of four and a half meters.

The standard personnel carrier is the BTR-50P. This full-tracked amphibious lightly armored vehicle is used primarily by reconnaissance units but is also assigned to mechanized infantry units. It is

Major Raymond E. Bell, Jr., and Major E. Joe Shimek are assigned to the Department of Languages, United States Military Academy. Major Bell has been a frequent contributor to *ARMOR* and he and Major Shimek have another contribution in this issue the "Soviet How Would You Do It?" which features a translation from the Russian and a commentary.



Russian reconnaissance personnel charge out of an open top personnel carrier found in Soviet reconnaissance battalions.

equipped with a 12.7 mm machinegun and carries two squads of infantry. The BTR-60P, which has the same capacity, is an eight-wheeled open-top vehicle that is also lightly armored. Infantry, however, can fire from the carrier when a protective top is fitted over the crew compartment. The BTR-60P also has a 12.7 mm machinegun.⁸

EMPLOYMENT

In the accompanying problem, a light reconnaissance group organized around the PT-76 and BRDM vehicles has been given a long range patrol mission. The BRDM platoon has been reinforced with a motorcycle and an amphibious tank plus attached CBR personnel. Had the need for more firepower been anticipated, T-54 or T-55 tanks would have been integrated into the group. The addition of

The Soviet BRDM reconnaissance car traverses a water barrier. This vehicle is found in Soviet reconnaissance battalion and has a water jet propulsion system.



CBR personnel with their equipment is frequently made, especially where nuclear demolitions can be combined with natural obstacles to impede the advance of enemy forces.

Another example of organization for combat is one given by Lieutenant Colonel Turner in his article on Soviet river crossings in the September, 1966 issue of *Military Review*. A reconnaissance group is assigned the mission of determining the conditions of three river crossing sites and to seek out locations of nuclear delivery units, communications installations and contaminated areas. The group is formed with three PT-76 amphibious tanks, two BRDMs and two motorcycles plus CBR personnel. To simultaneously reconnoiter the crossing sites the group is further divided into three patrols.⁹

The Soviets employ patrols much as we do. They have, however, special types of patrols that are formed to accomplish specific missions. One type is the "officer patrol," which is a reconnaissance unit led by an officer. This patrol is employed in the initial stages of combat and also in rapidly changing situations such as a delaying action. The officer patrol leader is not necessarily a unit commander, but may often be an experienced staff officer who is capable of making rapid and correct decisions.¹⁰

Another type of patrol is the independent patrol. It has certain features of our long range patrol. This patrol can be drawn from all types of combat units, but divisional reconnaissance elements are usually selected. These patrols are generally employed on open flanks and during the battle. They reconnoiter by employing observation, signal intercept, search operations and when necessary, by conducting ambushes and taking offensive action.¹¹

It is interesting to note how small elements are detached from their companies and parceled out here and there to accomplish different missions. This attachment of elements alone or in pairs is

a facet of employment that we do not subscribe to.

We have designed our reconnaissance units to accomplish a variety of missions, which include reconnaissance, rear-area security and delaying actions. Attachment of a tank or infantry squad to a reconnaissance type platoon is seldom made. In the 1950s, however, we adopted the so-called integrated armored cavalry company. This company consisted of two platoons of light gun tanks, one scout platoon and an armored infantry platoon (less the machinegun squad), which were sub-divided to form integrated task groups tailored to accomplish specific missions. The organization was dropped after exhaustive tests in favor of the integrated platoon, of which there are three to a troop. The integrated reconnaissance platoon, battle tested in Korea, consists of a tank section, a scout section, an infantry squad and a 4.2 inch mortar squad. The Armor School's Armored Cavalry Group concluded in 1956 that:

"The integrated platoon should continue to be the standard basic organization. . . . This will provide reconnaissance elements suitably organized to perform all missions normally assigned. Training the platoon as a combined arms team through all training phases enhances its ability to function as a team under any and all combat conditions."¹²

In light of our experience, then, the Soviet concept of attaching and detaching small and diverse elements to accomplish a mission is open to inquiry. In the example, one of the most noticeable features of the sergeant's operations order is its inordinate amount of detail. Reconnaissance troops who have trained and operated together should be able to execute a mission with less detailed guidance than that given in the sergeant's order. The repeating of routine items such as details of security also give a

how
Soviet PT-76 amphibious tank.



hint as to how unfamiliar attached elements may be with the core unit's SOP.

There is no doubt that Soviet reconnaissance units are flexible organizations. In theory, the ability to organize a unit to accomplish a specific mission by bringing together a team of experts is excellent. But in practice one wonders what happens to logistical support, control means and measures, netting of radios, etc. when single tanks, motorcycles, BRDMs, etc. (or pairs of these vehicles) are strewn over the battle-field on a division front.

The Germans rate Soviet reconnaissance as being outstanding and attribute many Soviet successes in World War II to the Soviet's excellent reconnoitering.¹³ With its versatile equipment and flexible organization Soviet reconnaissance certainly has the potential for achieving spectacular results on the battlefield. But, on the other hand, it would be unwise to over-estimate the capabilities of the Soviet Army's reconnaissance troops, particularly when considering that these troops have not seen battle in over twenty years.

FOOTNOTES

¹"Sowjetische Panzeraufklärer," *Soldat und Technik*, Heft 7 (July, 1965), 372.

²Fedor F. Lisitschko, "Schlechte Aufklärung als Ursache der Niederlage," *Die Taktik der sowjetischen unteren Führung*, II, 25.

³"Sowjetische Panzeraufklärer," p. 372. Hereafter cited as "Panzeraufklärer."

⁴*Ibid.*

⁵Richard M. Ogorkiewicz, "The Need for a Wheeled Armored Vehicle," *Armor* (March-April, 1965), 11.

⁶"Panzeraufklärer," *op. cit.*, p. 372.

⁷CPT Wayne Laverty, "Soviet Tanker," *Armor* (November-December, 1963), 28.

⁸"Bewaffung und Ausrüstung der Armeen des Warschauer Paktes," *Soldat und Technik*, Heft 3 (March, 1965), 139.

⁹LTC Frederick Turner, "Soviet River Crossing," *Military Review*, (September, 1966), 39.

¹⁰Lisitschko, *Die Taktik der sowjetischen unteren Führung*, 145.

¹¹*Ibid.*

¹²LTC James T. Burke, "Armored Infantry and Recon Unit Organization," *Armor* (July-August, 1956), 15.

¹³Lisitschko, *op. cit.*, p. 11.

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SWISS ARMOR

By RICHARD M. OGORKIEWICZ

The Swiss have been renowned for centuries as infantrymen. In recent years, however, they have also gained prominence in the field of armor. This has come as a result of the creation by the Swiss Army of an effective armored force which is now partly equipped with battle tanks designed and built in Switzerland.

The development of Swiss Armor is still relatively recent and, as yet, all too little known. The background to it does, however, extend over a number of years and is worth considering as a preliminary to any discussion of the current state of Swiss Armor.

As in other cases, the interest of the Swiss Army in tanks goes back to World War I. In fact, as early as 1917, it acquired from France one Renault F.T. light tank. This became the most popular tank of the immediate post-World War I period and it was purchased from France or copied by several countries, one of the copies being the U.S. Six Ton, M 1917, the standard U. S. Army light tank during the twenties.

The acquisition of the Renault F.T. did not, however, lead to anything so far as the Swiss Army was concerned, except for evaluation tests. Military opinion during the post-World War I period was not convinced of the general utility of tanks and, being regarded solely as a means of offense, their value appeared particularly questionable in

the light of Switzerland's traditionally defensive posture.

In consequence, nothing more was done about tanks until 1934, when the Swiss Army purchased from Britain four Vickers Carden Loyd light tanks. These tanks were designed by J. Carden and were manufactured by Vickers Armstrongs Ltd., and they represented a major step forward in mobility. As a result, they were purchased and copied by several countries and their mechanical performance gave a new impetus to the use of tanks.

Four more years had to pass, however, before the Swiss Army began to create its first tank units. This followed a decision taken in 1938 to provide the reconnaissance units of Swiss infantry divisions with light tanks. The tanks themselves were to be of a type developed by the Czech firm of Cesko-moravska Kolben Danek. The choice was wisely made as this type of tank was one of the best of its day: similar tanks were later very successfully used by the German Army as the Pz.Kpfw.38t and they were also manufactured under license in Sweden, by the Scania Vabis Company, as the Strv m/41. Among others, the Pz.Kpfw.38t formed a major part of the tank strength of Rommel's 7th Panzer Division during its spectacular dash across Northern France in the 1940 campaign.

The tanks ordered by the Swiss Army were to be assembled in Switzerland from components manufactured in Czechoslovakia, except for the engine which was a Swiss-built Saurer diesel, and were to be called Pz.39. But when only 24 had been completed the flow of components from Czechoslovakia ceased, as a result of it coming under German control. In consequence, when

Richard M. Ogorkiewicz, is a frequent contributor to ARMOR, this article being his 41st contribution. Mr. Ogorkiewicz is a well-known British authority on Armor, a lecturer at the Imperial College of Science, London, England and a consulting engineer.

World War II broke out in 1939, the Swiss Army had only a handful of Pz.39's and while Switzerland maintained its policy of strict neutrality it was unable to import any more. At the same time it was not in a position to start manufacturing tanks itself, even though one or two experimental armored vehicles had been built toward the end of the war.

In consequence, it was only after World War II that the Swiss Army was able to begin to create an armored force. As a first step in this direction, it ordered from Czechoslovakia, before that country came completely under Soviet control, 158 tank destroyers. The tank destroyers were actually ordered in 1946 and 1947, and were of the Jagdpanzer 38 type. This had been developed toward the end of World War II to the requirements of the German Army, which based much of its mobile anti-tank defense on it, and its production was continued in Czechoslovakia for some time after the end of the war.

Due to its combination of an effective 75 mm gun, low silhouette and mobility the Jagdpanzer 38 was, at the time, a very effective vehicle. It met, therefore, the immediate need of the Swiss Army for mobile anti-tank weapons and as the G.13 tank destroyer it became the first armored vehicle to be used in quantity in Switzerland. It is interesting to note in passing that the chassis design of the G.13 was derived from that of the Pz.Kpfw.38t. The G.13 was related, therefore, to the light tanks which the Swiss Army started acquiring in 1938.

Another and much bigger step forward was taken in 1951. Then, in keeping with the world-wide revival of interest in armored forces which followed the outbreak of the war in Korea, the Swiss Army decided on a major tank procurement program, to increase its defensive strength.

The first order went, in 1951, to France for 200 AMX 13, the Swiss being among the very first to recognize the value of this well armed and yet highly mobile light tank. When the AMX 13 arrived in Switzerland it was designated the Pz.51 and was furnished, on the strength of its high performance 75 mm gun, to tank destroyer units.

The next order went, in 1954, to Britain for 100 Centurion Mark 3. Due to their 83.4 mm 20-pounder guns firing very high velocity APDS ammunition these were, at the time, the world's best armed medium tanks and their delivery was followed in 1956 by an order for another 100 Centurions of the improved Mark 7 type. In Swiss service this became known as the Pz.57, while the earlier Centurions were designated the Pz.55. A hundred more British-built Centurions, of the Mark 5 type, were purchased from South Africa in 1960.

Thus, the Swiss Army built an effective force of battle tanks, which were organized into six battalions and formed the armored core of three

mechanized divisions created at about the same time.

Tank units equipped with Centurions are still the basis of Swiss armored strength and their effectiveness has been maintained by replacing the original 83.4 mm guns with more powerful 105 mm guns of the same type as the gun fitted in the U. S. M60 and the German Leopard, as well as the upgunned British Centurions. In the meantime, however, the Swiss Army had developed a battle tank of its own, a tank as well armed as the 114,000 lb. Centurion but considerably lighter, more compact and more mobile.

The development of the new Swiss battle tank stems from the basis of studies commenced by the Technical Section of the Swiss General Staff in 1951. By 1953 these studies had led to a specification whose fulfillment was entrusted to the Federal Construction Works at Thun, the principal Swiss ordnance establishment with more than one hundred years experience of manufacturing field guns and other military equipment. There, under the direction of T. W. Ludwig, the tank was actually designed and subsequently built.

The first prototype was completed in 1958 and the second in 1959. In the meantime, in 1957, it had been decided to produce a pre-production series of ten tanks. Like the first prototype, these were armed with a 90 mm gun and were designated Pz.58. But, by the time the delivery of the ten pre-production tanks was completed in 1961, the Swiss General Staff decided in favor of a more powerful, 105 mm gun. In consequence, the tank which was ordered in 1961 was not the Pz.58 but its upgunned version, the Pz.61. One hundred and fifty Pz.61 were actually ordered and their delivery commenced in 1964.

The Pz.61, which is now in service with Swiss armored units, is well up to the contemporary standards in battle tank design. Moreover, it contains several original features which do credit to its designers and it is all the more remarkable for having been designed and produced without the benefit of experience with earlier designs.

One of the most noteworthy characteristics of the Pz.61 is its combination of powerful armament with a relatively light weight. In fact, it carries the same type of 105 mm gun as the M60, the Centurion and the Leopard but it is lighter than any of them since fully laden it weighs only 37 metric (41 U. S.) tons. This relatively light weight gives it, of course, a significant advantage so far as overall mobility is concerned.

The 105 mm gun, which is of Swiss manufacture, is backed by a fire control system with a 155 cm base split-image coincidence type range finder operated by the tank commander. To save its ammunition against primary targets, the 105 mm gun is

Lowell



Pz 39 Light Tank



G-13 Tank Destroyer



Swiss Centurion with 105mm gun



Pz 58 Battle tank prototype

mounted coaxially with a 20 mm Oerlikon automatic high-velocity cannon which can be used at up to 1,000 metres, as well as being effective for close-in defense. There is no coaxial machine gun but there is an externally mounted 7.5 mm machine gun operated by the loader. In this respect the Pz.61 differs from most other tanks where machine guns mounted on tops of the turrets are, of course, operated by tank commanders. The arrangement adopted in the Pz.61 is based on the sound argument that tank commanders should concentrate on their proper functions, instead of being reduced for much of the time to the role of machine gunners. This view is not, obviously, shared by everybody but it is of interest to note that similar ideas prevail in the Soviet Army where externally mounted machine guns are also operated by loaders and not by tank commanders.

The turret of the Pz.61 is cast, as on almost all other battle tanks, and so is the hull, which is far less common. In fact, one-piece cast hulls have only been used so far in U. S. tanks and anyone familiar with the difficulties encountered in the production of such hulls for the M48 will realize that the successful production of cast hulls for the Pz.61 is no mean achievement.

At least two other features of the Pz.61 deserve special mention. One is the independent suspension of its road wheels, each of which is sprung by means of a stack of Belleville washers. This unique form of springing is compact and relatively light and lends itself to an external installation, so that it does not take up any of the valuable space inside the hull.

The second noteworthy feature is the transmission which incorporates a sophisticated double-differential steering system with a hydrostatic steering drive. This gives continuous and progressive steering control and makes the Pz.61 delightfully easy to drive, as the writer was able to find out for himself during a recent visit with the Swiss Army.

The engine is the only major component of the Pz.61 which is not of Swiss manufacture. It is, in fact, a German-produced Daimler-Benz V-8 water-cooled compression-ignition engine which develops 630 b.h.p. and gives the tank a maximum road speed of 31 m.p.h. Except for having fewer cylinders, the engine is very similar to the V-10 engine of the German Leopard, which is one of that tank's outstanding features and whose development benefitted from the earlier orders for the V-8 version placed by the Swiss Army.

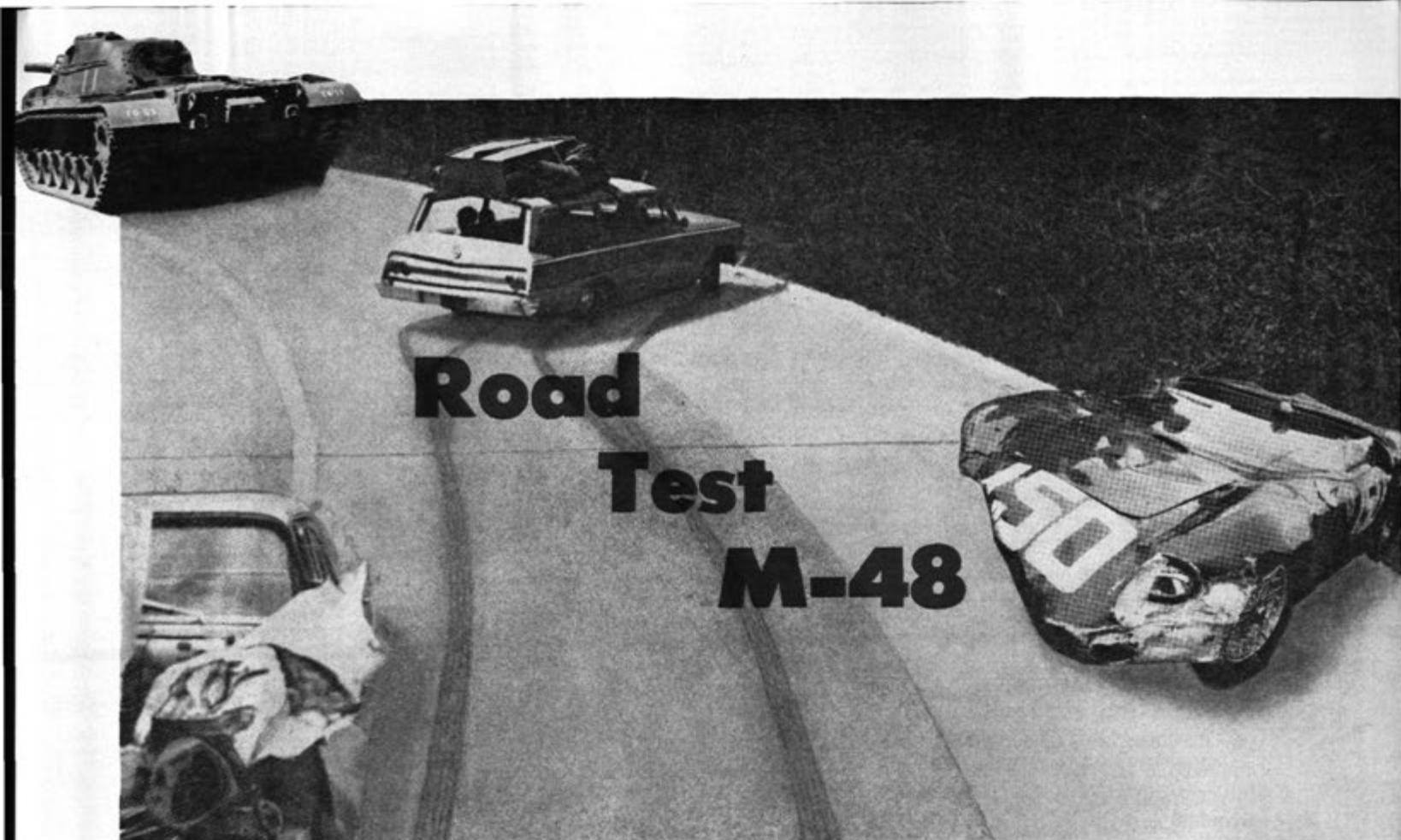
Other armored vehicle developments have also benefitted from the initiative taken by the Swiss Army. One of the most important instances of this are the orders placed in the mid-fifties with three different Swiss companies for prototypes of armored personnel carriers. The carriers were the TTL built by the Hispano Suiza Company of Geneva, the Pirat built by the Mowag Company of Kreuzlingen and the Tartaruga built by the Adolph Saurer Company of Arbon.

As it happens, none of the three carriers was adopted by the Swiss Army which, for economic reasons, purchased instead U. S.-built M113 armored personnel carriers. But the three Swiss experimental armored carriers represented a significant advance on equipment which had been available for armored infantry until then. Moreover, the Hispano Suiza carrier, in the HS 30 form, became the standard vehicle of the Panzer Grenadier units of the German Army while the Mowag Company has advanced from its original armored personnel carrier to the prototype of a new and very promising mechanized infantry combat vehicle.

Thus, in spite of the relatively late stage at which it took up the development of armor, the Swiss Army has already made more than one important contribution to it and by creating an effective armored force it has significantly increased its defensive strength.

Pz 61 Battle tank





Road Test M-48

By **RON KLEIN** and **ERIC ERICKSON**

After years of testing sports cars, sedans, personal cars, racing cars, limousines, station wagons, phaetons, broughams, classics, convertibles, both foreign and domestic, we believe we have found the ultimate mode of travel for the all-around, all-American sportsman who has a highly refined taste for powerful and truly distinctive transportation and no qualms about paying for it. This exceptional vehicle is the M-48 Town and Country Sports Saloon. Conservative in design and functional in appointments, the M-48 possesses a classic elegance. As with other vehicles there have been design changes over the years; today's M-48 is lower and longer than its 1920 counterpart and performance is up, but its basic utilitarian configuration is virtually unchanged.

As we examined this model closely on the showroom floor, we noticed a few disadvantages to this particular body style. The engine components are not readily accessible, and the four cupola-type entrances require some healthy gymnastics to negotiate. In keeping with its basic conservatism, the exterior shows little embellishment. In fact, the manufacturer provides a rather unimaginative color scheme: everything is painted olive green. Custom paint jobs are available on special request, but

these are limited to polar white and two-tone jungle green.

The only possible description of the interior design is functional. There are two types of seats in the M-48. The driver is provided a deep, comfortable bucket seat (bottom only) similar to those found on early vintage farm tractors. The passengers have somewhat more austere accommodations: a seat similar to a small, flat bar stool. We have found that this stool is capable of supporting approximately one-half of the average derriere at a time making it necessary to alternate rather frequently. The absence of ashtrays and a glove compartment further demonstrates the parsimonious attitude of the designer when it comes to providing the niceties of passenger comfort. Curious cylindrical tubes and sheet metal boxes serve as footrests and backrests if semi-reclining positions are desired. Roof insulation and upholstery were of fine quality steel plating several inches in thickness.

Luggage space is plentiful if one happens to own distinctive luggage. There is no trunk per se, but there are four score or more tubular containers about two feet long and four inches in diameter which are handy for storage. Elsewhere throughout the interior one can find places for suitcases of

various sizes although loading and unloading is rather awkward since everything must go in through the sun roof, or hatch, as it is called in this model.

We tested the riding qualities of the M-48 on various road surfaces, and noted a minimum of squeaks and rattles. This is obviously due to the vehicle's solid construction and the fact that the manufacturer has been free with sound-deadening materials, such as six-inch steel plate. The suspension system, consisting of 12 torsion bars and shock absorbers, merits the highest praise. The resulting ride is not unlike that in an overstuffed rocking chair. On a cross-town run, sidewalk curbs, traffic islands, and an itinerant Volkswagen or two passed virtually unnoticed under the massive treads of the M-48. We can state without qualification that this vehicle has no equal on or off the road today when it comes to riding qualities. Further, traction and control are not a problem on rough roads. It is felt that the weight (50 tons) of the M-48 goes a long way in providing a positive relationship between the ground and the treads.

The model we tested was equipped with power steering, a feature that should be a must on every buyer's list of options. Turning was effortless, and from lock to lock the steering wheel required only $\frac{1}{2}$ turn. The M-48 corners with extreme agility, and there was literally no lean or sway. The only drawback in cornering at high speeds was a tendency to plow rather deep furrows in the asphalt paving. Because of this we hope that the public-spirited individual who is fortunate enough to own this machine will limit his hot-rodding to unimproved roads or the dirt track. Another highly desirable maneuvering characteristic of the M-48 is its neutral steer capability. That is, while the vehicle is stationary and the transmission is in neutral, the M-48 can be made to turn within its own length by turning the steering wheel either right or left and depressing the accelerator. This maneuver is very effective for parking but has an unfortunate tendency to level anything alongside, such as parking meters and telephone poles.

The noise level inside the M-48 was high, as we had anticipated, and of course the single-cast steel hull produced considerable resonance. But then the M-48 has never claimed to be a car in which the loudest noise is the ticking of the clock.

With the driver's hatch, or sun-roof, open, the driver has truly amazing forward visibility; he is provided with a 180 degree panorama without as much as a windshield to obstruct the view. Since the driver's seat is located in the center of the vehicle, maneuvering through heavy traffic becomes child's play. Rearward visibility, on the other hand, is not so good, as the passenger compartment limits all aft vision, and no rear-view mirror is present. However, the average driver will not find this to be

a particular disadvantage. He would soon adopt a completely indifferent attitude with respect to what is behind him, realizing that it makes very little difference in the end.

We felt that the two-speed automatic transmission offered on this model was more appropriate for ladies' day at the supermarket than for rugged town and country driving. A four-speed box would be more to our liking and offer the kind of performance a man would expect from this type of machine. We found it impossible to break the track loose while digging out from a standing start. However, on one occasion we were able to detect slippage while accelerating from a standing position, and that was in trying to pick up speed for an uphill climb from a bridge crossing. Even then the tracks did not lose their grip; the bridge was pulled from its supports.

The M-48 is powered by a Continental V-12 air-cooled engine of about 825 horsepower. The cylinders are individually replaceable units. Overhead valves with rocker arm assemblies are actuated by a camshaft along each bank. Two mechanical fans provide cooling air around cylinders and oil coolers. Power is transmitted to the final drives through a cross-drive transmission, which is a combined transmission, steering, and braking unit. The brakes are of the wet, multiple disk type.

The engine lies beneath a six-foot square grating which makes up part of the rear deck. Care must be taken in walking on this deck while the engine is running, since during rapid deceleration, three or four-foot sheets of flame sometimes sweep across the deck from the exhaust which is located just behind the passenger compartment.

This model may present some maintenance problems to the do-it-yourself enthusiast. Although major assemblies such as engine and transmission can be uncoupled and removed in an amazingly

The M48 can move with gracious deliberation through any society.



short time, one may have some difficulty in accomplishing their actual removal. For the engine, a hoist of at least 8000 pounds capacity is desired. The transmission is comparatively light, equal to the curb weight of a couple of Volkswagens, at most.

Fuel consumption in the M-48 is, as we expected, high—approximately one-third of a mile to the gallon under ordinary driving conditions. Also, general preventive maintenance is somewhat more expensive than average; an oil change in both the engine and transmission runs about a hundred dollars. But the M-48 is not, after all, designed for the man who was to watch his pennies.

Finally, we cannot ignore the fact that the M-48 is made to order for the sportsman. This is one of the very few Detroit production models that comes equipped with a built-in big-game rifle. Whether hunting moose in British Columbia or rhinos in Africa, the sporting enthusiast has at his fingertips at all times the wherewithal to keep the family larder stocked with delicacies. Furthermore, Detroit could take a major step forward in solving the problem of congested highways by making this standard equipment on all production models.

Allow us to re-emphasize the fact that the M-48 is not the vehicle for everyone. The mother with young children will find its indestructability praiseworthy, but she will also find that disembarking presents an embarrassing problem, especially while wearing a tight skirt. The young man whose goal is security and social status will hardly find this vehicle conducive to his best interests—career-wise, social-wise, and girl-wise.

But for the all-around hearty male type who can afford it—for the man who lets nothing stand in his way—the man with outdoor interests and lots of enemies—we say this is IT!

The conservative elegance and functional beauty of the M48 Town and Country Sports Saloon is appreciated by patrons and artists alike.



ROAD TEST M-48

Dimensions

Wheelbase, in	250
Over-all length, in	293
Width, in	143
Height, in	121
Equivalent vol, cu ft	2300
Tread	
Width, in	22
Length, in	670
Weight, lb	2000
Frontal area, sq ft	95
Ground clearance, in	16
Steering ratio	
Turns, lock to lock	1/2
Turning circle, ft pivot	25
Hip, room, in	
Front	18
Rear	10
Pedal to seat back, in	35
Floor to ground, in	19

Speedometer Error

30 mph	29.4
60 mph	na

Fuel Consumption

Normal range, mph	1/3
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Capacities

Gas tank, gal	325
Crankcase, qt	92
Transmission, qt	72

Specifications

List price	\$130,801
Curb weight, lb	105,000
Test weight, lb	99,000
Brake swept area	600
Engine type	12 cyl V
Bore and stroke	5.74 x 5.75
Displacement, cc'	29,400
Cu in	1790
Compression ratio	6.35:1
Bhp @ rpm	825 @ 2800
Torque, lb-ft	1670 @ 2200
Equivalent mph	23.4
Grade ascending ability, %	60

Performance

Best time run, mph	38
Top governed speed	30
Max allowable	
Second gear	32
First gear	10
Reverse	5

Acceleration

0-30, sec	20.1
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Calculated Data

Lb/hp (test weight)	120
Mph/1000 rpm (high gear)	10.4
Engine, revs/mile	5477
Piston travel, ft/min	5750
Rpm @ 2500 ft/min	2608
Equivalent mph	28.3

BLITZKRIEG in the WEST: 1940



By DR. SHERWOOD S. CORDIER

Few events of the Second World War so shook the foundations of the western world as the dramatic and lightning conquest of France and the Low Countries in May and June of 1940. It is true that Poland, Denmark, and Norway had already fallen before the onslaught of the German juggernaut, but the precipitate collapse of France, then a major European power possessing a far-flung global empire, left the world

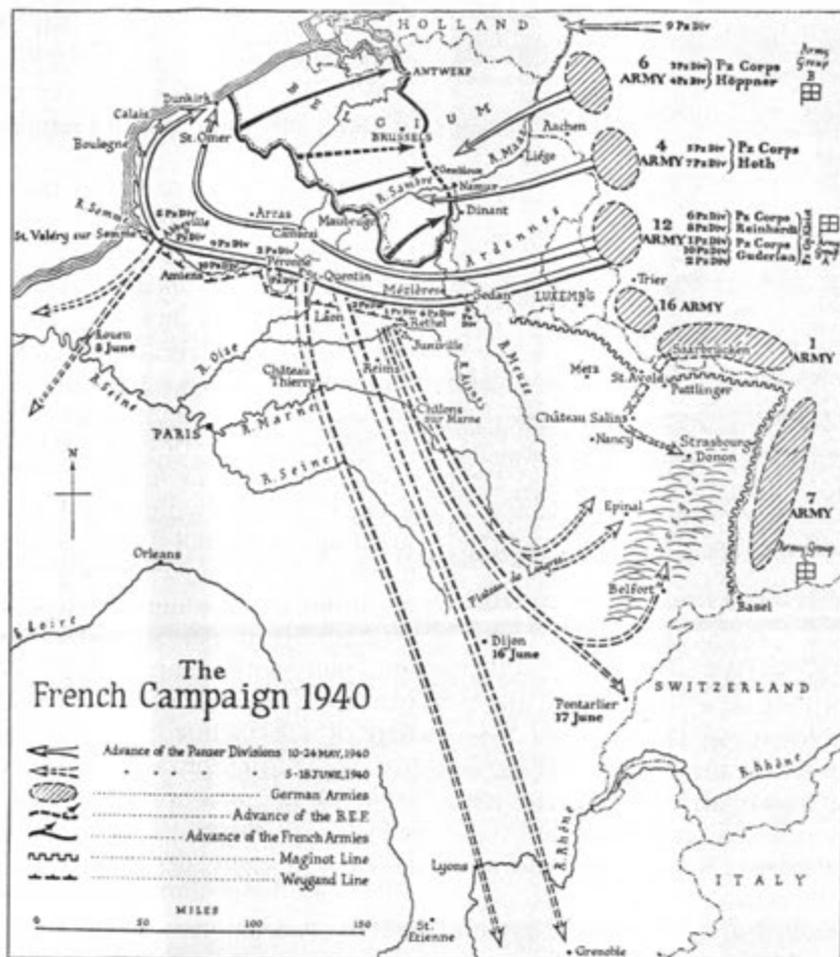
stricken and incredulous. The brief period following immediately upon this triumph represented the zenith of German fortunes in the war.

Numb with shock, those peoples opposed to Nazi tyranny stood for the moment in the slough of despair and hopelessness. It is not easy now to recapture the somber mood of that summer. The conviction expressed by the defeated French High Command that Great Britain would shortly "have her neck wrung like a chicken" reflected a viewpoint far more widely shared at that time than would ever be subsequently admitted. And the magnetic eloquence of Winston Churchill had yet to galvanize Englishmen to the resistance which would glow so brightly in "their finest hour." It would require long years of immense toil

and the grim agony of war before the free peoples could muster sufficient strength to return to the continental mainland from which they had been so summarily evicted.

Moreover, the fall of France continues to cast long shadows upon the events of our present era. Defeat and occupation, humiliating and bitter, remain a searing memory to Frenchmen. Liberation, although greeted with wild rejoicing, entailed enormous destruction—unavoidable as it may have been—and underscored French impotence, dependant as she was upon others for her restoration as a free nation. Much of present French behavior stems from deeply wounded national pride. Few Americans realize the degree to which the statements and actions of De Gaulle are designed to rally French pride

Dr. Sherwood S. Cordier received his A.B. degree from Juniata College in 1950 and his M.A. from Yale University in 1951 and he studied next in Switzerland as a Rotary Foundation Fellow. He is presently an Associate Professor in the History Department, Western Michigan University. Dr. Cordier is a frequent contributor to *ARMOR*.



Map from "Panzer Battles," p. 10
By Major General F. W. von Mellenthin

and self-confidence in a nation where these essential qualities have suffered such traumatic impact.

The withdrawal of British airpower from the continent as the campaign disintegrated into chaos, and the epic evacuation at Dunkirk, albeit strategically mandatory, technically admirable, and heroic in execution, roused a deep-seated skepticism in the French about the value of allies and alliances. This experience highlighted the probability that allies, under dire circumstances, might well be driven to act in their national strategic interests, prior agreements and solemn pledges notwithstanding. Debatable as a military venture it may be, but the adamant determination of France to build an independent national nuclear force springs, in part, from the depar-

ture of her ally in 1940, leaving France to the mercy of her conqueror. The present French nuclear deterrent owes its inception, not to De Gaulle, but to the Socialist government of Premier Guy Mollet in the Fourth Republic. This policy may be a permanent feature of French national strategy, independent of the coming and going of various political regimes.

From the military point of view, this German campaign in the west is indeed a classic. It was imaginative and bold in strategic conception, meticulous in planning and organization, swift in execution, and crushing in the defeat inflicted upon the vanquished. Deception and surprise, salient principles of war, find a model in these German operations. And the campaign is a masterpiece of modern mobile

warfare. True, Poland had previously fallen in a sensational display by Panzer and Stuka. However, few reckoned Poland a major military power in 1939, despite her unflinching valor, and her strategic position, beset and devoured by both Nazi Germany and the Soviet Union, was palpably impossible. The Battle of France thus proved to be the crucial test of the new doctrines of armored warfare and of air support.

The strategic design for the destruction of the British and French armies emanated from Erich von Manstein, then a Major General and later to be widely acclaimed by his comrades as the best of all German commanders.¹ Briefly, the plan envisaged a spectacular invasion of the Netherlands and Belgium. This would lure the British and French, especially their crack mobile reserves, northeast into Belgium. Then, while enemy attention was focused in the north and their best troops committed in that area, the main German blow was to fall on a point where the allies utterly failed to expect it. The main fortifications of the famous Maginot Line terminated south of Sedan at Longuyen. From that point to the Belgian frontier it petered out into a series of Lighter positions known as the Maginot Line extension. The French High Command was convinced that the Ardennes Forest was impassable terrain for the movement of troops on a grand scale and even more difficult for the passage of armor in mass, "the terrain would defend itself."² Smugly complacent in this belief, Belgian and French commanders posted only 16 divisions to screen this area.³ Yet it was through this very spot that von Manstein, advised by the German genius in armored tactics, Colonel General Heinz Guderian, planned to hurl a massive army, spear-headed by a "flying wedge" of concentrated armored units. This army would then race north-

west to the channel coast, slashing the main body of the enemy armies in two and trapping the British and French forces cut off in Belgium.

Specifically, Army Group B with 28 divisions under Colonel General Fedor von Bock was to flaunt the toreador's cape in Holland and Belgium.⁴ All airborne formations operated with this Army Group. Only three Panzer divisions were allotted to von Bock. The decisive role was to be played by Colonel General Gerd von Rundstedt's Army Group A. Forty-four divisions were massed for this main punch. Seven Panzer divisions were grouped in three Panzer Corps. Lieutenant General Georg-Hans Reinhardt, leading 6th and 8th Panzer Divisions, and Guderian, commanding 1st, 2nd, and 10th Panzer Divisions, were entrusted with the key attack. They were to thrust across the Ardennes and leap the Meuse River at Monthermé and Sedan. To the north, the 5th and 7th Panzer Divisions under General Hermann Hoth were to cover the southern Panzer Corps' right flank and force a crossing of the Meuse at Dinant in southern Belgium. To the south, Army Group C under Colonel General Wilhelm Ritter von Leeb compelled French forces in the Maginot Line to remain fixed in their positions.

On May 10, 1940, the German offensive opened. von Bock's army put on a splendid show in Holland and Belgium, paratroops starring in the performance. To the high glee of their German opponents, the British and French gulped the bait "hook, line and sinker." Within 48 hours 26 allied divisions streamed north into Belgium.⁵ Then, to the amazement of the allied high command, the powerful German thrust dashed through the Ardennes, brushed aside the covering troops, and raced for the Meuse crossings.

Brigadier General Erwin Rommel's 7th Division, in the van of



von Manstein

Hoth's Corps, rushed up first to the Meuse at Dinant. But Rommel found the bridges blown and the newly-arrived French 18th Division entrenched in light fortifications. Early in the morning of the next day, May 13, Rommel launched a river crossing assault. French infantry and artillery stubbornly contested the German attack.

Rommel brought up all his tanks to serve as mobile covering artillery. He took personal command of the assault battalions and led the attack, clearing out the foe on the western bank. Determined to get his tanks across the 120 yards of water, he personally supervised the construction of pontoon ferries, working in water up to his waist under enemy fire.

During the afternoon of the same day, Guderian successfully crossed the Meuse at Sedan. Continuous dive bombing by wave of Stukas kept defending French troops constantly under cover and unable to meet the German stormboats with effective fire.⁶ Guderian's leading assault infantry were very ably commanded by Colonel Hermann Balck. Reinhardt's men also fought their way across the river at Monthermé after two unsuccessful forays, and

grimly clung to a narrow toehold on the bank.

Why did the Allies fail to crush or seal off these vital German bridgeheads? The British and French did possess more tanks than their opponent. Some 700 English machines were committed to the continental theatre.⁷ In the battle area on the northeast front were approximately 3,000 modern French tanks. Only 2,570 German tanks confronted this Allied array. Nor was Allied armor inferior in quality. The French Somua medium tank featured an excellent 47 mm. cannon hurling a 3.8 pound armor piercing projectile at a muzzle velocity of 2,805 feet per second.⁸ The first tank with all cast hull and turret, it boasted armor protection of 1.4 inches on the front, 1.6 inches on the side, a turret front of 2.2 inches and a turret side of 1.8 inches. This machine had a maximum road speed of 29 miles per hour and a radius of action of 161 miles on roads or 80 miles cross-country. Vision and sighting equipment included 3 episcopes in the hull for the driver, 2 episcopes and a telescopic sight mounted in the turret, and episcopes in the counter rotating commander's cupola. Two radio sets were fitted for communication. The fighting and engine compartments were provided with fire fighting equipment. Some 410 of these tanks were available in the Northeast sector of the front.⁹

The French heavy tank, the F.C.M. B1 Bis, possessed the 47 mm. gun mounted in the turret and a short barreled, low velocity 75 mm. weapon in the hull.¹⁰ Armor thickness ranged up to 2 1/4 inches. Maximum road speed was 18 miles per hour, radius of operation was 130 miles, and the machine could ford four feet, ten inches of water. One radio set was provided. Three telescopic sights, 4 episcopes, and 2 periscopes comprised the sighting and visual equipment. Gasoline tanks

were self-sealing and compartments fireproofed. Approximately 325 of these heavy tanks were committed to the main battle arena.¹¹

Only the German PzKw (Panzerkampfwagen) IV proved a real match for the best enemy armor.¹² It carried a short barrelled 75 mm. cannon in its turret, firing a 15 pound armor piercing shell at a 1,263 foot per second muzzle velocity. The nose and turret front were protected by 1.2 inches of armor, while armor on the side, including the turret, came to a thin .8 of an inch. Radius of action was 124 miles on roads or 78 miles cross-country and top road speed was 26 miles per hour. Visual and sighting arrangements as well as radio equipment were excellent. But not more than 278 of the prized PzKw IVs were employed by the Germans.¹³

But the British and French failed to organize armor properly or employ correct armored tactics. Out of the impressive mass of Allied armor, the French had organized but six armored formations on the divisional level and the British only one.¹⁴ Allied tanks, for the most part, were dispersed in small and widely scattered units, parcelled out among the infantry divisions and limited to the subordinate role of infantry support. German armor, in marked contrast to its antagonist, enjoyed the close support of field artillery, antitank, and dual purpose anti-aircraft weapons, a vital factor in the triumph of the Panzers.

Stunned and paralyzed by the speed and surprise of the German advance, the Allied High Command blundered fatally. General Maurice D. Gamelin and his key subordinate commander on the Northeast Front, General Alphonse Georges, failed to counter-attack at once, during the crucial hours when German assault infantry, unsupported, clung to the footholds across the Meuse. Nor

did they assemble the armored divisions that were at their disposal for a concentrated and powerful strategic counter blow. French armored units were committed to the fray one by one. And the Allied commanders were disastrously ensnared by the doctrines of static warfare. "A continuous front is all-sufficient," the famous Pétain had written in 1939, "and all thought of offence is to be carefully nursed until the circumstances should be exactly right for it."¹⁵ No counterattack could be mounted until the enemy thrust had first been contained and the linear defenses restored. Allied forces were thus cast away in fruitless attempts to "contain" the foe and improvise new lateral "lines" in the path of the enemy advance, which the racing Panzers often vaulted before such barriers could even be formed.

Not until the morning of the 14th did so much as a single French tank battalion go into action against Guderian's bridgehead. But this battalion now encountered the entire 1st Panzer Division. Although the French tankers fought gallantly they were quickly overwhelmed.

Throughout the day British and French fliers made heroic efforts to destroy Guderian's pontoon bridge. But the Allied bombers turned out to be easy pickings for massed German anti-aircraft batteries, and the vital Panzer artery remained intact.

In the course of the day the 3rd French Armored Division did come dashing to the front. An élite formation, this unit was well equipped with heavy tanks and its men were eager to come to grips with the enemy. By late afternoon General Brocard's soldiers were deployed for the attack. But to their consternation and livid fury, they were ordered to "contain" the foe. The division was dispersed into armored strong-points, consisting of three tanks each, along a twelve mile front south of Sedan. In this manner, the French High Command ruined one of their finest units as an effective fighting force.

How did the French fare against Rommel in the bridgehead at Dinant? Not until the morning of the 15th did the 1st French Armored Division enter this sector. At mid-morning, as the formation lay refuelling and

Somewhere in France, 1940, German tanks en route to the front, pass marching German infantry.



awaiting orders, it was shattered by a vicious cross fire between the 5th Panzer Division to the north and Rommel's unit to the south. Although General Bruneau's tankers fought bitterly, many were forced to do battle with empty gas tanks, and by evening the division was virtually annihilated.

Guderian now brought all three of his units across the Meuse. Reinhardt expanded his foothold and successfully got his two formations through the narrow defile west of Monthermé. And both Panzers in Hoth's Corps were set to go. The race was on, as the German armored columns hurtled deep into the enemy rear and plunged toward the channel coast.

The Allied air forces tried to stem the onrushing armored phalanx. In numbers the first line fighter strength of the Allies, some 700 French machines reinforced by twelve squadrons of British fighters, did not fall far short of the 860 single engined Messerschmitt fighters employed by the Luftwaffe on this front.¹⁶ Moreover, the French were in the process of acquiring excellent new equipment. The extremely maneuverable and well armed Dewoitine 520 and the nimble, pleasant handling Bloch 152 interceptors proved a good match in combat against their German counterpart.¹⁷ And the new attack bomber, the Breguet 693, was extraordinarily sturdy, highly maneuverable, and speedy.¹⁸ A new medium bomber, the LeO 451, sleek and streamlined, endowed with very high performance, was acclaimed the best machine of its class at the time.¹⁹

But the French Air Force was caught in the midst of a comprehensive change in equipment. Its pilots had just switched from older types of aircraft to the new models, a difficult transition. Indeed, much of the new equipment only came into the hands of the aircrews in the course of the most critical fighting of the campaign.



French armor used in the campaign in 1940

In its panic, moreover, the French High Command compelled French interceptors to undertake low level attack missions for which they were not designed. Seventy percent of all French fighter losses were suffered in low level strafing operations.²⁰ Designed for the air combat and superiority role, these machines were not armored sufficiently to withstand the anti-aircraft weaponry with which German Army formations were lavishly equipped and which they employed to deadly effect.

However, the most crippling blow of all to Allied airpower was the rapidity with which the German advance swept over French forward airfields. French ground organization melted into chaos. Pilots returned, fuel and ammunition exhausted, only to fall sullen prisoners to German "welcoming committees" at the airfields. Under these circumstances, it is a remarkable record that French airmen etched, shooting down

778 German aircraft for the loss of 306 French planes in air combat.²¹ But, supreme irony, the French Air Force suffered defeat on the ground!

One of the Panzer units leading the dash to the west was, of course, Rommel's 7th. The screech of Stukas heralded the opening of Rommel's thrust on the 15th.

During the 16th and 17th he tackled the line of secondary fortifications which stretched along the French border to Belgium. These positions were breached in one stride from Philippeville through Avesnes to Le Cateau, a distance of 50 miles covered in twenty-four hours. Rommel attacked in the evening and all through the night his tanks clattered down the roads. Little wonder that Rommel nicknamed his division the "Ghost" or "Phantom" division!

The enemy fortifications penetrated, Rommel's initial dash came to a halt with the capture of Cambrai on the 18th. French tank

units along the way did give the Germans considerable difficulty. But the dispersion of French armor and the close support of German armor by field artillery, anti-tank, and dual purpose anti-aircraft guns made it possible for Rommel, like other German commanders, to surmount this crisis.

On the 19th the French bungled another abortive counter-attack. Two of the mechanized cavalry divisions that had been sent into Belgium were ordered to thrust south against the right flank of the German phalanx at Cambrai and St. Quentin. General Charles de Gaulle, commanding the 4th French Armored Division, planned to knife into the German left flank at Laon. But the mechanized cavalry units had by this time been fragmented in a vain effort to rescue infantry formations and could not be re-assembled. De Gaulle made a courageous but futile sally. Guderian covered his open left flank with Panzer anti-tank, artillery, and combat engineer units. The French assault was beaten off by these elements of the Panzer Corps.

"Hurrying Heinz" Guderian now spurred his tanks on to the sea. On the 20th, Lieutenant General Rudolf Veiel's 2nd Panzer Division surged into Abbéville in a sprint of more than 50 miles.

The previous day Rommel set off northwest toward Arras. Again the "Phantom" division rolled forward under the cold and eerie light of the moon. In an attempt to break the iron ring that now throttled British and French forces trapped in Belgium, the allies, now under the supreme command of General Maxime Weygand, mounted a last foray. The British 1st Army Tank Brigade and the French 3rd Mechanized Cavalry Division were to attack in the direction of Arras.

On the 21st, 74 British tanks and 70 French Somuas fell upon Rommel with devastating impact. Rommel now encountered for the

first time the English Matilda tanks that were to be his foes in the African theatre. This tank was armed with a 40 mm. weapon firing a 2.4 pound solid shot at a muzzle velocity of 2,800 feet per second.²² Radius of operation proved to be 90 miles on roads and 56 miles cross-country. Top speed on the highway was limited to 15 miles per hour. Maximum armor protection was 3.15 inches on the hull front and 2.75 inches on the side, front turret thickness reached 3.1 inches and turret side 3 inches.

"It was an extremely tight spot," Rommel dramatically relates, for "the antitank guns which we quickly deployed showed themselves to be far too light to be effective against the heavily armored British tanks,

and the majority of them were put out of action by gunfire, together with their crews, and then overrun by the enemy tanks."²³ Shocked to see his 42nd Anti-Tank Battalion wiped out, Rommel sent his Panzer Regiment to attack the foe in the rear and flank. While his tanks carried out this mission. "Every gun, both antitank and antiaircraft, was ordered to open rapid fire immediately and I personally gave each gun its target."

Although the Panzer Regiment lost nine tanks in a clash that knocked out seven English machines, the German thrust into the rear of the foe did spread confusion. And, "Finally, the divisional artillery and 88 mm. anti-aircraft batteries succeeded in bringing the enemy armor to a

French armor destroyed by the Germans somewhere in France, 1940



halt south of the line Beaurains-Agny. Twenty-eight enemy tanks were destroyed by the artillery alone, while the anti-aircraft guns accounted for one heavy and seven light." The whine of Stukas rang down the curtain on this last major allied counterthrust. But German field artillery and dual purpose anti-aircraft weapons proved to be the decisive factor in this encounter.

Rommel now resumed his drive to Arras, thrusting 18 miles north to the canal line of La Bassée. At this point, von Rundstedt brought his Panzers to a provisional halt at about 6 o'clock on the evening of the 23rd.²⁴ Hitler visited von Rundstedt's Headquarters shortly before noon the next day, and personally ordered a halt along the Canal Line.²⁵

Many elements entered into this crucial strategic decision. Hitler and his top commanders were determined to defeat the French forces remaining in France decisively.²⁶ They refused to be diverted from pursuing what they conceived to be their main objective to a successful conclusion. Neither the British nor the Germans expected that many English soldiers could be evacuated. Even Winston Churchill initially estimated that not more than 45,000 men could be rescued.²⁷ Goering, in particular, was convinced that his Luftwaffe could prevent any British retreat by sea.²⁸ And the terrain around the Belgian ports, a maze of water-logged bogs, was anything but favorable for tank action. Even Guderian admitted that "A tank attack is pointless in the marshy country."²⁹ So the Germans relied primarily upon von Bock's infantry to mop up the enemy armies encircled in the north.

Not until the 25th was von Rundstedt authorized by the German Army High Command to cross the Canal Line.³⁰ Nor did he move until Hitler ordered the attack resumed on the 26th.³¹ Consequently British troops in

Belgium were able to make good their retreat to the port of Dunkirk.

Able led by General Prioux, the French First Army waged a hard-fought vigorous rear-guard action. A British patrol captured important German operations orders. With this information the British Commander, Lord Gort, plugged a vital gap in his northern flank. And the Dunkirk bridgehead turned out to be a natural fortress, covered by a network of drainage dikes with all roads flanked by ditches.

Although the Luftwaffe did wrest control of the air from the Royal Air Force, German planes bombed the wrong targets.³² Instead of concentrating on the vulnerable and essential British destroyers, the German Air Force scattered most of its bombs on sand dunes and the thick walled stone buildings of the town. Although the British were desperately short of destroyers, Admiral Bertram Ramsay, in a brilliant gamble, shuttled 40 of the precious vessels back and forth across the Channel loaded with troops. Under these circumstances, the British were able to pull 338,000 trained soldiers off the beaches by June 4.

When ordered to resume the advance, Rommel was held up by tough Cameron Highlanders behind the Canal at La Bassée. Overcoming dogged resistance, Rommel hurdled the Canal Line late on the 27th. Then his columns streamed north and east toward Lille. Mindful of the mauling he had suffered at Arras, Rommel now interspersed his tanks with 88 mm. guns, traveling well forward and ready for immediate action. Rommel's "Ghost" formation got astride the roads radiating out of Lille to the west and south. Consequently, half the gallant French First Army was cut off and eventually compelled to surrender.

On May 26, Weygand hastily formed a new defensive front

running south from Abbéville along the Somme River and then east behind the Aisne River to Longuyon, the northern terminus of the Maginot Line. Allied troops were to organize every village and town into a network of "hedgehogs." Even if cut off or encircled, British and French soldiers were ordered to fight to the finish in these all-around defensive positions. But the Allies, reduced to 66 French and 4 British divisions, no longer possessed the manpower needed to hold such strong-points. And allied armor had been frittered away until too little now remained with which to counterattack between the hedgehogs.

The German Army High Command now deployed its forces for the complete conquest of France.³³ The German troops were regrouped with amazing rapidity. Von Bock's Army Group B now took over six Panzer formations. The 5th and 7th Panzer Divisions under Hoth were concentrated at Abbéville. General Ewald von Kleist was in charge of two Panzer Corps. Ninth and 10th units stood at Amiens while 3rd and 4th Panzers took up positions at Péronne. Farther east, Army Group A under von Rundstedt possessed a Panzer Group concentrated at Reims under Guderian's command. First and 2nd Panzer Divisions and 29th Motorized Infantry Division made up one Panzer Corps while the other included 6th and 8th Panzers and 20th Motorized Infantry.

Briefly, the German design envisaged two consecutive offensives. Von Bock was to unhinge the Somme Line and force the enemy back to the Seine River. When this task had been accomplished, von Rundstedt planned to shatter the enemy front along the Aisne River.

Von Bock unleashed his attack on June 5. Kleist's Panzers encountered savage French resistance at Amiens and Péronne. The French Seventh Army, like the

First, fought magnificently. Led by General Frère, these troops inflicted heavy losses upon the foe and compelled the German High Command to withdraw the four Panzer Divisions into reserve.

To the north, Hoth's stroke carried the day for the Germans. Although the French had demolished all the road bridges over the Somme, two railroad bridges between Longpré and Hangest were left intact. These were discovered by Rommel and seized in a dash—*coup de main*. His engineer battalion promptly unbolted the rails and cleared away the sleepers. Tanks and vehicles then rumbled across the bridge under heavy French shelling.

The roads before the Panzers lay dotted with villages transformed into hedgehog defenses, barricaded, mined, serrated by deep anti-tank trenches, and buttressed with artillery. Rommel moved off the roads and lit out cross-country. Additional advantages were gained from such movement. Attacks could more readily fall upon the flanks and rear of the enemy. More opportunities arose to surprise the foe. The by-passed enemy strongholds were reduced by the artillery and infantry of the infantry divisions following in the wake of the hurtling Panzers.

A graphic account of the German advance flows from Rommel's pen: "Over a broad front and in great depth, tanks, anti-aircraft guns, field guns, all with infantry mounted on them, raced across country. . . . Vast clouds of dust rose high into the evening sky over the flat plain. The "Phantom" formations plunged . . . through hedges, fences and high cornfields." For such movement, the division deployed in extended order" . . . over a 2,000 yard front and a depth of 12 miles."³⁴

By the 8th Rommel's drive splintered the French Tenth Army in half. The next day saw his division reach the Seine River at

Elbeuf. On the same day the 5th Panzer Division under Lieutenant General Max von Walsporn, captured Rouen.

Hoth now swung his columns north to encircle the French Tenth Army and seize the seaports along the coast to prevent any repetition of the Dunkirk feat. Rommel then plummeted more than 60 miles on the 10th, reaching the Channel at Les Petites Dalles and cutting off any allied retreat to the seaport of Le Havre.

The next day Rommel set out for the port of St. Valéry-en-Caux where the 51st Highland Division was reported preparing to embark. When Rommel's entreaty to capitulate was refused, he concentrated all his divisional firepower upon the port section throughout the evening. On the following day Rommel shot his way into the port and finally broke the resistance of the stubborn Scots. Twelve thousand soldiers fell prisoners, 8,000 of them British.

Again, however, it was Guderian who struck the decisive blow. Under cover of heavy artillery cannonading, German assault infantry crossed the Aisne in a dawn attack on the 9th. Three bridgeheads were eked out west of Reethel. During the night a pontoon bridge reverberated to the clank of 1st and 2nd Panzers and 29th Motorized. Guderian had funnelled his armor across the river in good time to meet a desperate enemy counterattack. On the afternoon of the 10th a French armored division drove against the German flank south of Juniville. But the formation had just been scraped together, a hasty improvisation. And it had to contend with a Panzer Corps. A two hour tank battle ensued, in the course of which the French suffered defeat.

Guderian now expanded his perimeter to a depth of 12 miles and, all through the evening, the tanks and vehicles of 6th and 8th Panzers and 20th Motorized rat-

ted across the Aisne bridge. The next day, June 11, French tank battalions battled vainly to stem the tide of German armor. But they were scattered fragments contesting with an enemy phalanx of two Panzer Corps.

As Guderian overwhelmed French resistance, the German Army High Command hurled von Kleist's four Panzer Divisions into the fray. Guderian's Panzers now bypassed the enemy hedgehog defensive positions and charged across country. Reeling under the impact of German armor streaming through southern France, the French armies disintegrated and collapsed. By June 16 von Kleist reached Dijon. And Guderian whirled into Pontarlier on the Swiss border the next day.

Marshal Pétain was called to the post of Premier on June 16. A little after midnight he asked the German government for an armistice. Such an agreement was concluded on the 22nd. The campaign in the west was finished.

It is clear from these battles in the west that the Panzer Division, which had been developed and organized by the irascible and brilliant Guderian, was a team in which tanks were supported by motorized artillery, dual purpose anti-aircraft batteries, anti-tank guns, motorized infantry and engineers.³⁵ All were thoroughly trained and practiced in the closest kind of mutual support, exemplifying one of the basic principles of warfare—the co-operation of all arms in battle.

Furthermore, the Germans were the first to equip armored units with field guns and howitzers as heavy as 105 and 150 mm. In the motorized infantry of the Panzer units, such weapons as heavy mortars, anti-tank guns and 75 mm. howitzers were distributed down to the battalion level.

As the record of the campaign shows, German armored divisions were frequently grouped into Panzer armies and operated together

on the battlefield. German tank commanders were trained in the slangy precept of the crusty Guderian: "Boot 'em, don't spatter 'em."³⁷ In this way German armored organization and tactics made possible the most effective concentration of forces in the clash of contending armies.

The drive without limits along a given axis, the "line of thrust" or *Stosslinie*, was a tactical concept ideally shaped to provide the flexibility and speed demanded by modern mobile warfare. It contrasted vividly with the prevailing English and French linear doctrine of attack and defense.

Attack and movement across country and deployment in extended formation for that purpose were tactical features of this war in the west. Again Guderian and other Panzer leaders, as well as Rommel, rode roughshod through the countryside.

The Germans found a number of infantry infiltration tactics readily adaptable to the handling of armor. Weak spots in the enemy front were sought out and penetrated. Long thrusts struck deep into the rear of the foe. Concern about unguarded flanks and enemy units left bypassed in the rear was minimized.

The Panzer formations in a corps frequently covered each other's flanks. Little is heard about von Walsporn's 5th Panzer Division. But this unit protected 7th Panzer's open right flank while Rommel careened spectacularly through Belgium and France. To Rommel's left raced the two Panzer Corps of Reinhardt and Guderian. The French system of linear defense and widely scattered counterattacks proved particularly vulnerable to these German tactics. The Panzers would have had much tougher going against a defense in depth backed by a powerful and concentrated armored reserve.³⁸

Ironically, Guderian pays high tribute to the ideas of the noted British military thinker, Captain

B. H. Liddell Hart. The German Panzer leader states that it was "Liddell Hart who emphasized the use of armored forces for long range strokes, operations against the opposing army's communications, and also proposed a type of armored division combining Panzer and Panzer-infantry units. Deeply impressed by these ideas I tried to develop them in a sense practicable for our own army."³⁹

A prophet is indeed not without honor save in his own country!

Finally, the German triumph owed much to the deception and surprise, stunning and paralyzing in effect upon the foe, created by the Manstein strategic design. The degree to which these two fundamental principles of the military art were achieved in this campaign is a measure of the military intellect of Erich von Manstein, and his keen psychological insight into the flawed strategic assumptions with which his enemy was imbued. Among all the wide and varied array of factors contributing to the fall of France in 1940, the shattering impact of surprise may well have been the most singularly decisive.

FOOTNOTES

¹See Hans Adolf Jacobsen, *Fall Gelb: Der Kampf um den Deutschen Operationsplan zur Westoffensive 1940* (Wiesbaden: 1957), and Field Marshal Erich von Manstein, *Lost Victories* (Chicago: Henry Regnery Company, 1958), pp. 103-123, for full details of the plan.

²Colonel Adolphe Goutard, *The Battle of France, 1940* (New York: Ives Washburn, Inc., 1959), p. 85.

³*Ibid.*, pp. 88-89.

⁴*German Army High Command Directive*, 24:2:1940.

⁵Theodore Ropp, *War in the Modern World* (Durham: Duke University Press, 1959), p. 298.

⁶See Colonel Goutard, pages 130-131, for a scathing indictment of the French failure to employ their powerful medium and heavy artillery effectively. On page 106 of his memoirs, Guderian indicates his surprise at the paralysis of the heavy French guns and admits that "... the success of our attack struck me as almost a miracle."

⁷Richard M. Ogorkiewicz, *Armor: A History of Mechanized Forces* (New York: Frederick A. Praeger, 1960), pp. 160, 177, 180-182 indicate tank totals for Allies and Germany.

⁸U. S. Army, *Tank Data* (Aberdeen Proving Ground: U. S. Army Ordnance School, 1958), pp. 33-34, and Royal Armoured Corps Tank Museum, *Tanks of*

Other Nations (Bovington, Dorset: Royal Armoured Corps Centre, n.d.), pp. 29-30.

⁹General Roton, *Années Cruciales, 1939-1940*, cited by Goutard, *Op. Cit.*, p. 27.

¹⁰Royal Armoured Corps Tank Museum, *Op. Cit.*, pp. 30-32.

¹¹Goutard, *Loc. Cit.*

¹²U. S. Army, *Op. Cit.*, pp. 48-49.

¹³Colonel General Heinz Guderian, *Panzer Leader* (New York: E. P. Dutton and Company, Inc., 1952), p. 472.

¹⁴Ogorkiewicz, *Op. Cit.*, pp. 59, 66-67.

¹⁵Goutard, *Op. Cit.*, p. 19.

¹⁶"Who Lost the Battle for France?", *Royal Air Force Flying Review*, XV, Number 10 (July, 1960), pp. 21-23.

¹⁷William Green, *War Planes of the Second World War: Fighters*, Vol. 1 (Garden City: Doubleday and Company, Inc., 1963), pp. 26-30 and 45-49. See also "France's Finest Fighter," *Royal Air Force Flying Review*, XV, Number 10 (July, 1960), pp. 30-33.

¹⁸Pierre Leyvestre, "Too Few—Too Late!", *Royal Air Force Flying Review*, XVIII, Number 8 (May, 1963), pp. 33-36, 50.

¹⁹"France's Finest Bomber," *Flying Review International*, XX, Number 10 (July, 1965), pp. 65-67.

²⁰"Who Lost the Battle for France?", *Royal Air Force Flying Review*, XV, Number 10 (July, 1960), p. 21.

²¹General Vuillemin, *Bilan de la Bataille aérienne*, cited by Goutard, *Op. Cit.*, p. 34.

²²U. S. Army, *Op. Cit.*, pp. 9-10.

²³Erwin Rommel, *The Rommel Papers*. Translated by Michael Collins and edited by B. H. Liddell Hart (New York: Harcourt, Brace and Company, 1953), pp. 32-33 for this citation and others immediately following.

²⁴Major L. F. Ellis, *The War in France and Flanders 1939-1940* (London: Her Majesty's Stationery Office, 1953), pp. 138-139.

²⁵*Fourth Army Diary*, 24: 5: 40. See also *Directive Number 13 for the Conduct of the War*, 24: 5: 40.

²⁶*Directive Number 13* and Taylor, *Op. Cit.*, pp. 262-263.

²⁷Winston S. Churchill, *Their Finest Hour* (Boston: Houghton Mifflin Company, 1949), p. 100.

²⁸Field Marshal Albert Kesselring, *A Soldier's Record* (New York: William Morrow, 1954), pp. 58-59.

²⁹*Nineteenth Corps War Diary*, 28: 5: 40.

³⁰*German Army High Command Directive*, 25: 5: 40. See *Jodl Diary*, 25: 5: 40 and *Army Group A War Diary*, 25: 5: 40, as well.

³¹*German Army High Command Directive*, 26: 5: 40 and *Halder Diary*, 26: 5: 40.

³²David Divine, *The Nine Days of Dunkirk* (New York: Ballantine Books, 1959), pp. 263-266 demolish the myth of British air superiority and pp. 225-226 analyze the reasons for the failure of the Luftwaffe.

³³*German Army High Command Directive*, 30: 5: 40.

³⁴Rommel, *Op. Cit.*, pp. 49, 52, 50.

³⁵Guderian, *Op. Cit.*, p. 24.

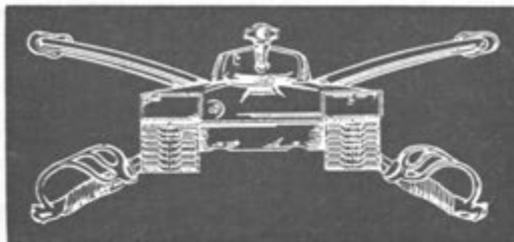
³⁶Ogorkiewicz, *Op. Cit.*, p. 49, 81-82.

³⁷Guderian, *Op. Cit.*, p. 316.

³⁸Ropp, *Op. Cit.*, p. 286.

³⁹Guderian, *Op. Cit.*, p. 20. See also the masterful résumé by Liddell Hart in the second volume of his work: *The Tanks* (London: Cassell and Company, Ltd., 1959), pp. 451-456.

Notes From Armor Branch Chief



ASSIGNMENT PREFERENCE STATEMENTS

Many inquiries are received in Armor Branch from officers desiring information on their next assignment. While the Branch can normally provide some prediction, increasing numbers of our requirements, particularly to Vietnam, are received less than three months in advance of initiation of TDY training or of movement. In general, officers due for reassignment to or within CONUS, and to most areas overseas, can expect to receive notification at least 90 days in advance of initial movement date.

In this regard, the Branch files of many Armor officers do not contain any current indication of their choices. The maintenance of a current DA form 483, Officers Assignment Preference Statement, is of material benefit to the officer in assignment actions. While assignments must match the officers' availability with valid requirements, frequently we learn, too late, that we could have assigned an officer more to his liking had we known of his preferences.

Officer Assignment Preference Statements should be sent to:

Chief of Personnel Operations
ATTN: Armor Branch
Department of the Army
Washington, D. C. 20315

AWARD OF THE VIETNAMESE ARMOR BADGE

Recent correspondence with the Armor Command Advisory Detachment, Training Directorate, MACV, states that officers now serving as advisors to elements of the Armor command are being awarded the Vietnamese Armor Badge. Authority

for acceptance and wearing of this badge is change 13, AR 672-5-1.

An incomplete roster of earlier advisors was compiled at Armor Branch and forwarded to Vietnam for consideration and issuance of necessary orders. These orders and accompanying certificates have been received; officers concerned have been notified and copies of the orders and certificates are now in the TAG and Branch files. Officers so notified need to request the proper posting of the field and Branch files.

At present, the Armor Badge is not available for purchase in the United States. Attempts are being made, however, to have an insignia firm manufacture them.

Officers who consider themselves eligible for award of the Armor Badge are requested to contact Branch. A list will be compiled and forwarded to Vietnam. Several months time will probably be necessary before an officer finally receives his certificate and orders. Patience, a virtue best known in the Orient, is therefore requested of those concerned.

The cooperation of the Armor officers now stationed with the Armor Command Advisory Detachment is greatly appreciated in this matter. Without their time and assistance it is doubtful that the award program could have succeeded.

ANNUAL ARMOR BALL WASHINGTON AREA

The Washington Chapter of the US Army Armor Association will hold its annual Armor Ball on Friday 28 April 1967 at the Bolling Air Force Base Officers' Mess. Facilities to accommodate the expected 500 persons will not be available at a time which more closely corresponds to Armor's 190th Birthday.

HOW WOULD YOU DO IT?

U.S. ARMY ARMOR SCHOOL PRESENTATION



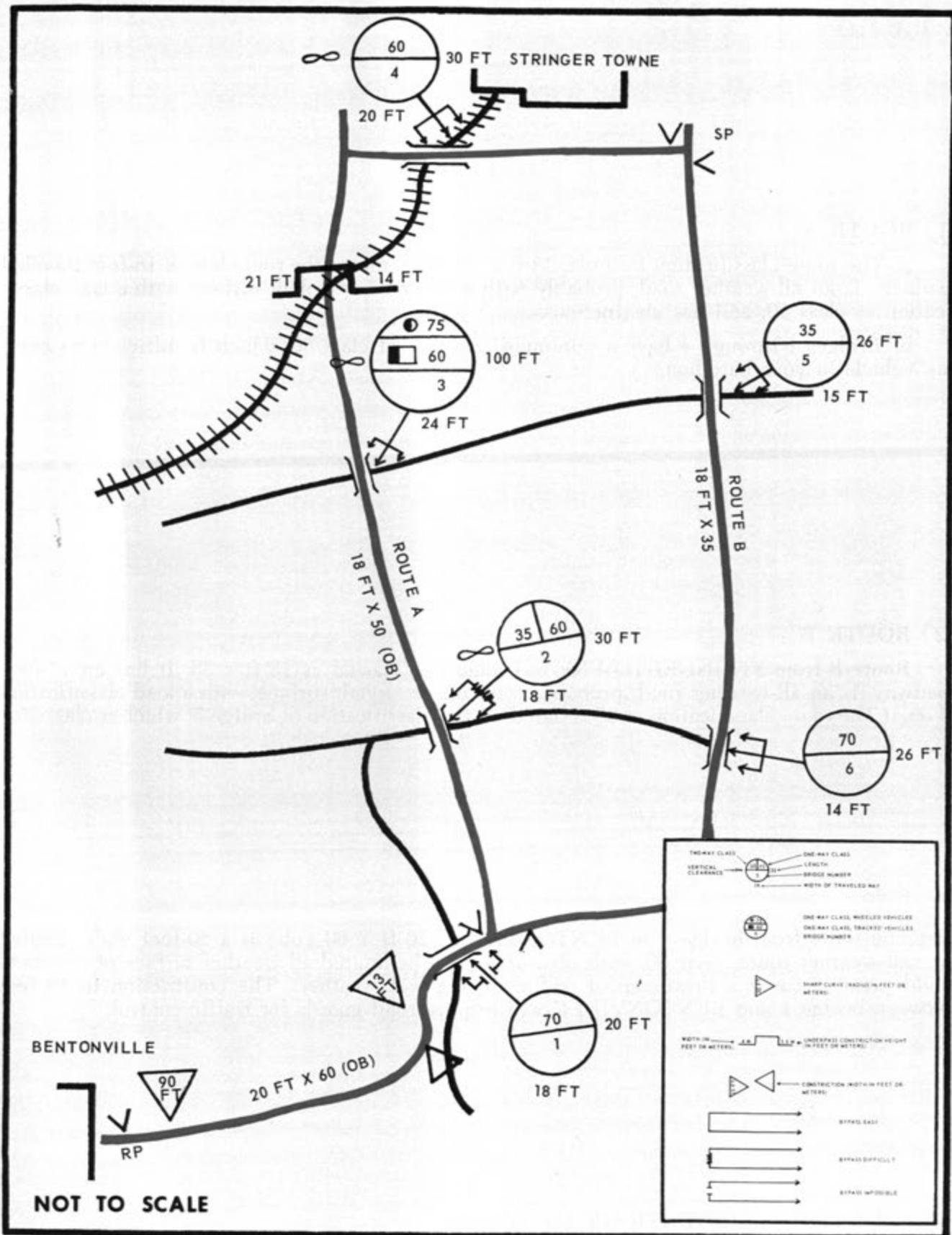
SITUATION

You are the leader of the scout platoon of a tank battalion. The battalion is in an assembly area vicinity STRINGERTOWNE and is preparing to move administratively to the vicinity of BENTONVILLE. Earlier in the day the battalion S3 had directed you to make a reconnaissance of the routes in the area, from the SP to the RP, and submit recommendations as to which of these routes the battalion should take in its move to the new area.

You had sent one of your scout sections out on the route reconnaissance mission and they returned a few minutes ago with the sketch report shown on the next page. You are now analyzing the sketch.

AUTHOR: MAJOR DODSON

ARTIST: G. A. DESMARAIS



PROBLEM

What route and conditions do you recommend to the battalion S3?

SOLUTION:

① ROUTE A

a. The route classification formula, 18 ft x 50 (ob), means the route has an 18-foot traveled roadway, is an all-weather road, probably with a concrete or asphalt surface, with a load classification of class 50, and has obstructions.

b. Bridges 1 through 4 have a minimum capacity of class 60, which is sufficient to carry any vehicle in your battalion.

② ROUTE B

Route B from STRINGERTOWNE to bridge 1 is classed as 18 ft x 35. It has an 18-foot roadway, is an all-weather road, probably concrete or asphalt surface, with a load classification of 35. (The route classification of 35 is based on the classification of bridge 5, which is class 35.)

③ The route from bridge 1 to BENTONVILLE, 20 ft Y 60 (ob) is a 20-foot wide, limited all-weather route, class 60, with obstructions. The limited all-weather surface of the route could possibly cause a slowdown of traffic during wet weather. The constriction to 13 feet between bridge 1 and BENTONVILLE will require road guards for traffic control.

④ YOUR RECOMMENDATIONS TO THE S3

- a. Use route A for all vehicles.
- b. Place road guards at the constriction between bridge 1 and BENTONVILLE.
- c. Use route B for infiltrating wheeled vehicles if necessary.
- d. With exception of bridge 1, all other bridges on routes A and B may be bypassed if necessary.

NEWS NOTES

'VIPER' UNCAGED

Lockheed Missiles and Space Co. announced recently that it test fired a new type of antitank assault weapon, Viper.

Advantages of this advanced concept field weapon over other shoulder-fired types will be its low cost, light weight, mechanical simplicity and extreme accuracy, the company said.

In the field, the 2½ foot-long Viper will be fired by direct-aim (line-of-sight) without wires or other complicated guidance systems. It will be unaffected by ballistic drop or wind-produced errors and will be supersonic.

"If you can see it, you can hit it; Viper flies straight to the target," are the mottoes of its developers.

Viper uses a main motor gyro to combine the primary propulsion system with its directional control mechanism. Another motor automatically counteracts all ballistic drag and cross winds during flight. Both propulsion systems are solid propellant rocket motors.

Viper can be armed with multipurpose warheads: armor penetration, anti-personnel fragmentation, and with fire-producing agents.

Studies on this improved and unique weapon have been under way at Lockheed since late 1963. Analysis and engineering design work has progressed on models of various payloads, ranges and velocities since 1964. Test flights and demonstrations have just begun.

NEW RECEPTION ROOM FOR ARMOR BRANCH

Under the approving eyes of a few score hard-shelled Armor 'types' recently, Major General Delk M. Oden, Director, Officer Personnel Directorate, OPO, Department of the Army, cut a ribbon dedicating a refurbished reception room for Armor Branch, Tempo A, Washington, D. C. The reception room is part of the offices of Armor Branch where active duty officers may come to look over their records and be counselled by Armor Branch officers.

Colonel John R. Barclay, Chief, Armor Branch, said that the room was designed and set up to reflect the traditions and spirit of Armor and to provide familiar and comfortable surroundings for those visiting the branch. LTC Robert Luck, officer in charge of the project also said that the branch was



An overall view of the new reception room, Armor Branch, dedicated recently by Major General Delk M. Oden.



Colonels Tracy B. Harrington, John R. Barclay, and Major General Delk M. Oden (l to r) admire crests of units participating in the Vietnam action. The crests are located in the new Armor Branch reception room, Armor Branch, OPD, Washington D. C.

interested in obtaining mugs and china cups with official crests from Armor units for display in the room. At the present time a few units have sent such cups and those commanders desiring to do so are asked to contact LTC Luck.

DIGITAL COMPUTER PROGRAM TO DESCRIBE COMPLEX THREE DIMENSIONAL GEOMETRIES FOR ARMORED VEHICLES

The U. S. Army, Aberdeen Proving Grounds, awarded a contract to the Mathematical Applications Group, Inc. Hartsdale, N. Y., for the preparation of a computer program capable of describing complex three dimensional geometries on the computer. The Army will use the program to describe armored vehicles for the purpose of investigating vehicle vulnerability from both conventional and nuclear weapons.

The program, scheduled for completion in late 1966 was to include geometric techniques that would permit the Army to describe in three dimensional detail an armored vehicle and its internal components. The program also will provide target description data from specified attack azimuth and elevation angles for evaluating conventional armor defeating ammunition and will be compatible with a monte carlo radiation transport code for nuclear evaluation.

In addition to providing cost savings over present methods, it will permit the Army to establish a standard geometry for a specific vehicle which can be made available to all groups within the Army interesting in determining various aspects of vehicle vulnerability. The techniques which will be used in the preparation of this program represents a significant advance in the state of the art, and lend themselves particularly well to real time display of complex geometries.

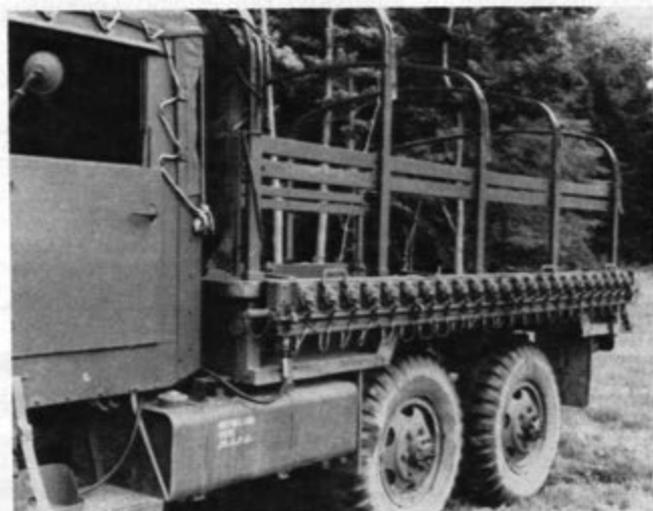


A highly versatile vehicle concept, SWAT (Special Warfare Armored Transporter) was put on display recently by Chrysler Corporation's Defense Operations Division. The 7½ ton SWAT has been designed to perform several combat roles including convoy escort, armored assault and armored infantry carrier. It is 20 feet long, eight feet wide, eight feet high and has independent suspension at all eight wheels. A total of 12 fully equipped combat troops can be transported by SWAT at speeds up to 65 MPH on primary and secondary roads. As a convoy escort vehicle, its armament includes a coaxially-mounted 7.62 machine gun and a 40MM grenade launcher in the turret, and a three-tube anti-personnel grenade launcher on each side.



The Army's new M17A1 protective mask enables the soldier to drink from his canteen without risking contamination.

In addition to this drinking device, the mask incorporates a flexible hose and attachment which makes it possible for the wearer to administer mouth-to-mouth resuscitation to a severe nerve agent casualty. It weighs less than two pounds and provides the same filtering protection as its predecessor, the M17. Focal point for the two new devices is the voicemitter, located directly in front of the wearer's mouth and nose, enabling him to speak and be heard.



Counterambush weapon system is mounted on both sides of a 2½ ton truck and consists of a board to which are mounted 23 miniature claymore mines each containing 73 spherical steel pellets. An electric impulse sets off the detonator which explodes the mines.

NEWS

DOCTRINE



PUBLICATIONS

U.S. ARMY ARMOR SCHOOL TRENDS

NEW ARMOR NONCOMMISSIONED OFFICER EXTENSION COURSES

The U. S. Army Armor School has announced a new nonresident course of instruction for the Senior Noncommissioned Officer in Armor.

The new program, called the Armor Senior Noncommissioned Officer Extension Course, is designed to increase the level of proficiency and managerial ability of the top Armor NCOs in troop and staff assignments through division level.

This new course is a blend of Armor and common subject subcourses totaling 181 credit hours of instruction. It is designed to be completed in approximately two years.

Included in the armor instruction are subcourses on map reading, Armor tactics, methods and basic nuclear fundamentals. Common subjects include command and staff procedures, administrative operations, effective writing, automatic data processing, civic actions, military law and counterinsurgency operations.

All E-8's and E-9's in Armor units or whose duties pertain to Armor are eligible to enroll in the new course. All E-7's in the same assignments who are graduates of an accredited noncommissioned officer academy, or who have successfully completed the regular Armor Noncommissioned Officer Extension Course, are also eligible to enroll.

Successful completion of this new course will qualify the student for enrollment in an advanced course of study for senior NCO's administered by the U. S. Army Command and General Staff College.

For further information write to:

NONRESIDENT INSTRUCTION DIVISION
Instructional Services Department
U. S. Army Armor School
Fort Knox, Kentucky 40121

CORRECTING FAULTY FUEL TRANSFER-PUMP OPERATIONS

Equipment operators on the M88 recover vehicle often complain that the refuel-defuel system

will not operate or fails to pump fuel at the rated capacity of the system.

Investigation of these complaints revealed that there was some uncertainty on the operation of the system.

Both the fuel transfer pump and the hydraulic impact wrench are operated by hydraulic power from the auxiliary hydraulic-system pump. This auxiliary pump is driven by the auxiliary generator and engine. To engage the fuel transfer pump, the operator must place the *system selector control lever* in the REFUEL position. But some operators often place the lever in the AUXILIARY position. With the lever in the AUXILIARY position, power is supplied to the boom and spade for emergency operation and the fuel transfer pump does not operate.

Investigation of another complaint found that although the system selector control lever was placed in the REFUEL position, both the hydraulic impact wrench and fuel transfer hoses were connected at the same time. The refuel-defuel system will not work properly when the hoses to the impact wrench are connected. Even though the wrench is not in operation, oil circulates through the wrench in sufficient amounts to keep the system from building up enough pressure to operate the fuel transfer pump. To remedy this problem, the operator need only disconnect one of the hydraulic lines to the impact wrench. This will allow the auxiliary hydraulic system to build up enough pressure to operate the fuel transfer pump.

NEW EQUIPMENT TRAINING, XM551, GENERAL SHERIDAN

The Armor School hosted new equipment training recently on the XN551 General Sheridan vehicle under the auspices of the U. S. Army Weapons Command. The training was divided into 3 cycles, each cycle being of 5 weeks duration. The course was presented to personnel representing the Infantry School, Armor Training Center, Ordnance School and Arctic Test Center. Its purpose was to provide an instructor base within responsible agen-

cies well in advance of receipt of the General Sheridan vehicle by these commands.

JUNIOR OFFICERS' PREVENTIVE MAINTENANCE COURSE

The Armor School has received many compliments from senior officers in the past few years on the Senior Officers' Preventive Maintenance Course. Many have asked if they could send some of their juniors to a similar course so that they could receive the same type of maintenance instruction; there was need to spread the word on preventive maintenance.

A new course has been designed to meet this need. The Junior Officers' Preventive Maintenance Course, started this year, is open to company and junior field grade officers and is keyed to brigade-level of maintenance.

Some junior officers had been permitted to attend the senior officers' course, but it was found that they could not always relate to the division-level maintenance problems being taught. In addition, most recommended solutions to maintenance problems were beyond the junior officers' command authority to implement.

The new course devotes more time to proper maintenance management through records. Classes in details of adjustments and use of diagnostic equipment have been added. Seventeen classes are programmed for this year.

OCS PROGRAM TO PRODUCE 3,000 LIEUTENANTS

The Armor OCS program which got off to a slow start a year ago is now going full blast with 14 classes in session at the end of November. At the peak of the academic year there will be 15 classes in session. Armor received approximately 200 lieutenants under the program last year and send another 929 candidates who had completed Phase I at Fort Knox to Phase II training at the Ordnance, Quartermaster and Transportation Schools.

The OCS program is now an "all Armor" one beginning this fiscal year. It has been revised to a straight 23-week course and all graduates will be commissioned in Armor. A total of 34 classes are programmed and it is expected that over 3,000 lieutenants will be commissioned by the end of the year.

TRAINING MANAGEMENT COURSE

The people at HUMRRO have been working closely with the Armor School to prepare an elective course on training management for the Advanced Class. The course will include lectures and practical work in such topics as job analysis, task and skill specification, determination of training objectives, application of training principles, and training program evolution. OCRD has approved the program

for pilot development at Fort Knox with an eye toward subsequent Army-wide adoption. HUMRRO will draw on its entire organization in selecting the staff to present the instruction.

INSTRUCTIONAL MATERIAL PUBLISHED IN NOVEMBER 1966

For one free copy of each unit of instruction listed, units should contact: Director, ISD, U. S. Army Armor School, Fort Knox, Kentucky 40121.

Additional copies, may be purchased from the Book Department of the School; check or money order only.

Material is listed by File No., Title and cost:

AK.A10403—Tracked Vehicle Characteristics (AS, LP, SUPPL MAT) **\$.08**

AK.B23209—Fuel Injection (AS, LP) **\$.03**

AK.B29003—Generators, AC and DC (AS, LP, SUPPL MAT) **\$.05**

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CSA.G0001—Field Artillery Support (AS, LP) **\$.24**

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CSR.G52301—Forward Area Defense (AS, LP, SUPPL MAT) **\$.08**

CSW.G60301—Air Defense Measures (AS, LP, SUPPL MAT) **\$.11**

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GDC.C20303—The Insurgency Problem (AS, LP, SUPPL MAT) **\$.09**

GDC.C20403—Fundamentals of Counterinsurgency Operations (AS, LP) **\$.08**

WE.M13510—Small Arms Weapons (LP) **\$.21**

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The pride of the Army. The pride of the nation. The whole sweeping pageant of a glorious history—when the Cavalry rode to the rescue! Twenty pages of period photographs and drawings—a big gift volume. (Sep 66)

EAST WIND OVER AFRICA—Red China's African Offensive by John K. Cooley **5.95**

From Cairo to Capetown, from East Africa to West, the tension increases. Africa, a sparse continent rife with political, social and economic uncertainty, has become the principal target for the revolutionary offensive of Communist China, an apparently monolithic giant of 650,000,000 people. In Africa the Chinese see an "objective revolutionary situation." They say that Africans face the choice between communism and capitalism, between freedom and neo-colonialism. They argue that only their own anti-colonialist and anti-Western experience of violent revolution is relevant to modern Africans, that their form of communism is the only viable model for African society. Their impact on Africa has given cause for alarm in many of the world's capitals—not the least being Moscow—and has enabled the Chinese to speak to the under-developed nations with growing authority.

THE MUTED REVOLUTION: East Germany's Challenge to Russia and the West by Welles Hangen **4.95**

The NBC correspondent maintains that the Berlin Wall has helped East Germany to hang on to its most valu-

able citizens and that its advance in industry has inspired a new national pride and a relaxation of controls. With 21 photographs. 256 pgs.

IRONIES OF HISTORY by Isaac Deutscher (Sep 66) **5.75**

One of the foremost experts on Soviet affairs examines communism today from various points of view. The topics of his essays are both political and literary, including such subjects as "Twenty Years of Cold War," "Maoism," "Dr. Zhivago," and "Russia and the West." 296 pages.

THE YELLOWLEGS: The Story of the United States Cavalry by Richard Wormser, Pub Date: Nov 4, 66. **480 pages. Illustrated 6.50**

"The Yellowlegs" tells the complete story of the United States Cavalry in terms of the major personalities and events from the Revolutionary exploits of Light-Horse Harry Lee to the day when Black Jack Pershing led his troops in an automobile.

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

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CANNONADE—Great Artillery Actions of History by Fairfax Downey (Nov 66) \$6.50

In 1453 a monster cannon—weighing nineteen tons and requiring thirty wagons to move it—appeared at the siege of Constantinople. First of the great guns, it was used by Ottoman Turks to fling a ¼ ton stone ball more than a mile. In 1953 a titanic 280mm atomic cannon was unveiled by the U. S. during the Korean War. Shipped to the Far East, it never fired a shot—but its very arrival in the theater of operations is credited with ending further hostilities. More than 500 years in the history of artillery are covered, tracing the development of cannon large and small. Stirring accounts transport the reader from Bohemia to Korea, Yorktown and New Orleans, Lutzen and Rossbach, Okinawa and Hiroshima, Luke's Castle and Porkchop. Illustrations and maps. 381 pages.

THE WEAPONS OF WORLD WAR III by J. S. Tompkins (Nov 66) \$5.95

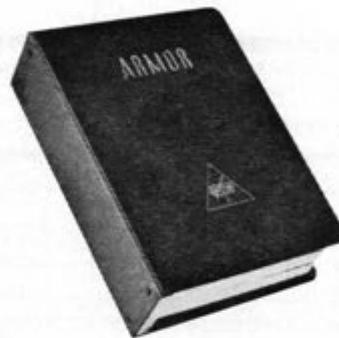
The Long Road Back from the Bomb. When Albert Einstein was asked, late in his life, what weapons might be used in WW III, he said: "I do not know. But I can assure you that WW IV will be fought with stones." We have not come to WW IV, but it is Tompkins' belief that we are already fighting the Third World War—made up of the small, dirty,

frustrating, war in which we are involved. And it is not getting fought with nuclear weapons, but with conventional arms, some more primitive than those used in WW II. The author describes many things developed to meet the "new enemy" in unfortunate situations: armored helicopters, new kinds of bullets, tiny "bombs" dropped from planes in thousands which strike with the impact of a .45 bullet, "think" groups of specialists and strategists, other weapons that are either now in use, or on the drawing boards. The author shows why and how the road back from the Bomb is a long and hard one. "We still have the Bomb in our arsenal," he writes, "and it offers, as always, the illusion of a simple and absolute solution in a complex world. Whenever we tire of the

fight in far off places, there are those who yearn for the final solution that the Bomb promises." 340 pages.

THE FIGHTING MAN by Jack Coggins (Nov 66) \$9.95

An illustrated history of the World's Great Fighting Forces through the ages. A comprehensive survey of the world's greatest armies and soldiers—from ancient times to Vietnam. Throughout the ages, one tribe after another, one nation after another, has taken up the sword, either to defend itself or to extend its political influence. Here is a full-scale examination of war as it has been fought through the ages by its most fundamental unit—the soldier. . . . in short, a detailed story of warfare. 200 illustrations. 372 pages.



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Patton Museum Progress

Every day the United States Army writes new pages of history with its actions, techniques, tactics and equipment. This history is recorded many times in many ways. One of the most vivid recorders of this history is the Patton Museum at Fort Knox, Kentucky.

It was intended that the museum should grow from a collection of World War II equipment into a complete chronicle of the development of mobile warfare. Toward that end, the museum has been more aptly renamed the Patton Museum of Cavalry and Armor, and houses tanks, armored vehicles, weapons and other memorabilia dating from 1914 to Viet Cong trophies of today.

Thousands of weapons ranging in size from trench knives to heavy tanks and armored personnel carriers representing many nations are on display. Uniforms, flags and other military equipment from many periods and wars are also arranged around the two major rooms and galleries.

Some of the favorite attractions at the museum include a tattered guidon that was carried by a troop of the old cavalry; German and American World War I and II vehicles, some carrying battle scars, and General Patton's personal effects, including his field van, personal sidearms, and the sedan in which he was riding when his fatal accident occurred.

Perhaps the major value of history is that it aids in understanding the present and predicting the future. With this in mind, the Patton Museum now has a display of weapons of the future in the form of murals that depict experimental designs and devices that may someday be in a mobile arsenal. Included in the illustrations are

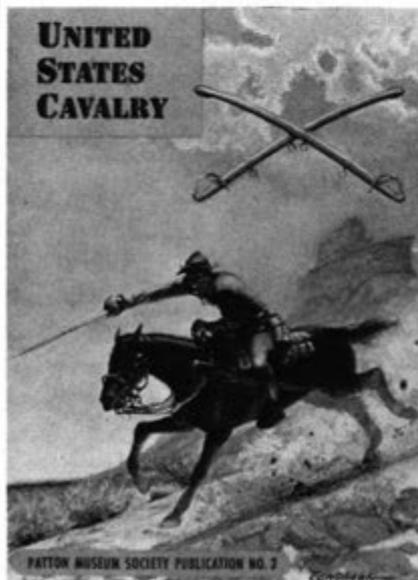
such items as jeep with jet motors to carry it over obstacles; an assault landing craft the size of a football field that travels on a cushion of air on land or water; and jet backpacks for carrying the individual soldier through the air on the battlefield.

Nearly 200,000 visitors from all over the world tour the museum every year. Many are veterans of the wars in which the articles displayed played such an important part. They bring their families to show them the weapons they fought with and against in times past. School buses filled with children on historical field trips unload their eager cargo at the museum throughout the year.

The Patton Museum is still housed in its World War II wooden building. It is incongruous to find such a museum, representing the proud heritage that it does, in such a structure. To correct this, a fund raising campaign is under way to build a new Museum on a rolling Kentucky hillside overlooking a lake at Fort Knox.

Besides housing the present collection of tanks and equipment, the new Museum will include exhibits depicting the chronological history and tradition of Cavalry and Armor. An area of 4,000 square feet has been set aside in the new Museum for a library to accommodate the thousands of volumes and documents that have been and today are still being collected. An auditorium for lectures and film showings is also included in the plans.

When sufficient funds are collected, the Patton Museum will be able to continue its recording of Armor history in a manner befitting the "Combat Army of Decision."



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 reminiscences.

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.

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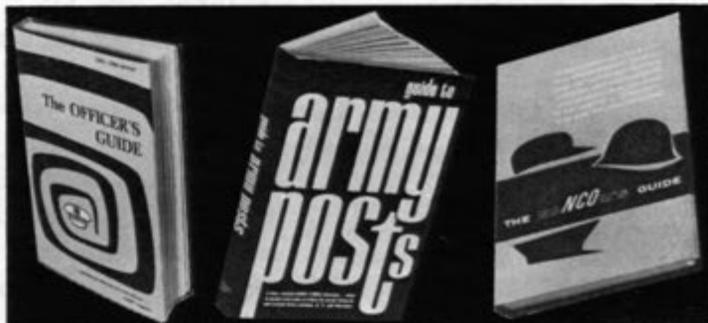
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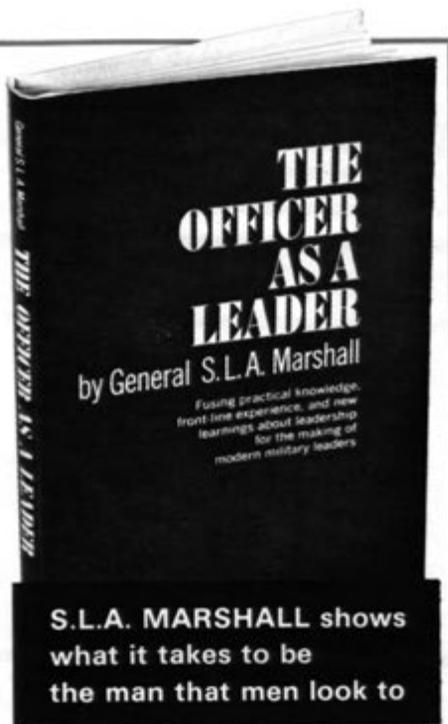
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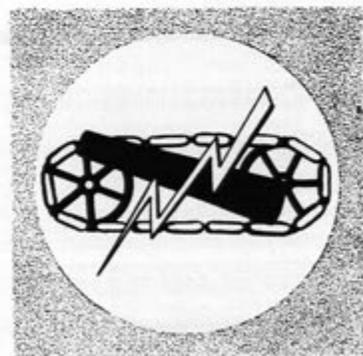
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ARMOR

The Magazine of Mobile Warfare

Volume LXXVI

March-April 1967

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LETTERS

to the editor

A Challenge to Armor

Dear Sir:

This is in response to the "Letters to the Editor" department in the January-February issue.

Major, Armor, of Fort Knox wrote that he did not want his "branch magazine cluttered with articles which have only a vague resemblance (sic) to Armor." I would like to refer this reader to the past two issues of ARMOR which contained such articles as "Airmobile Operations In Vietnam," "District Intelligence in Vietnam," and "Gyrojets Galore." Were these Armor oriented? In my opinion, these articles made the magazine more enjoyable. Without such articles, the reader might soon grow tired of "tank stories" originating on the plains of Europe.

Lieutenant, National Guard, after a passing dig at being assigned to an Infantry battalion, stated that he was proud to belong to a professional group with its own association.

I am presently assigned to an Armor group at Fort Knox. The majority of the officers assigned to the group are Armor. In one Armor battalion less than five percent of the officers belong to the Armor Association. In a second battalion approximately five percent are members. The Armor battalion with best record of Association membership has fourteen officer members. This represents only seventeen percent. The group Infantry battalion has seventeen members, including myself. As evidence of 'esprit de corps,' the Armor battalion membership figures seem pitifully small.

For the Armor Association to publish a professional magazine, it will take the support of the entire membership. Those sitting back and saying "keep up the good work so that our spirits stay high" are only fooling themselves.

For the magazine to be anything at all, contributions must continue to come from the rest of the Army as well as Armor. The reputation of the magazine today is due, in part, to excellent articles written by Infantrymen. Many of them, like myself, were required to write these articles while attending the Armor Officers Advanced Course.

Sincerely,
Captain, Infantry
Fort Knox

Honest Injun, we did not write this letter!

The Association records indicate that the author's statistics are substantially correct. Unfortunately, the situation he describes is not unique.

While we welcome all members and associate members, as defined in the Constitution and By-Laws, we believe that the primary source of support for the U. S. Armor Association logically should come from Armor officers, senior non-commissioned officers and units.

Now seems a good time for those proudly wearing the crossed sabres and tanks to accept the challenge and respond. A good way to do this is to check the status of membership among their colleagues and then move out fast to get all enrolled as members.

To the Infantry, and other branch members and authors we can only say that we are proud to have you with us and enjoy your comments any time.

The Editors

A Plaudit for Our National Guardsmen

Dear Sir:

My compliments to Major William V. Kennedy on his article "Armor and the SRF." (ARMOR, Jan-Feb 67)

This article describes so well what so many of us have been telling the employers and families of many members of our units who have been contributing selflessly the time and effort necessary to build a successful SRF unit.

Is it possible to obtain reprint copies in quantity or to obtain permission to reproduce the article locally? I would like to give each member of the troop a copy and also distribute copies to their families and employers.

ANDREW B. PASTOREK, JR.
1LT, Armor, PARNG
Commanding

Headquarters Troop
1st Squadron, 223d Cavalry
28th Infantry Division
Philadelphia, Pennsylvania 19141

We regret that we do not have sufficient extra copies or tear sheets to send along. However, permission to reprint is granted cheerfully. Please credit both author and ARMOR.

The Editors



ARMOR Salutes the individual American soldier, for upon his courage, integrity, faith in his country and belief in his mission, rests victory on the battlefield. He has proven himself the master of the most sophisticated military equipment in the world, and a genius of improvisation when forced to operate without it. Today as in the

past he remains the ultimate factor.

**UNIT ASSOCIATION 1967 ANNUAL CONVENTIONS,
MEETINGS OR REUNIONS**

- 1ST Armored Division Assn. 24-27 August, Sherman House, Chicago, Ill.
John W. McNutt, 12 Greymore, Chesterfield, Mo. 63017
- 2D Armored Division Assn. 3-5 August, George Washington Motor Lodge, King of Prussia, Pa.
COL R. F. Perry, Box 2115, Satellite Beach, Fla. 32935
- 3D Armored Division Assn. 20-22 July, Kentucky Hotel, Louisville, Ky.
Paul W. Corrigan, 38 Exchange, Lynn, Mass. 01901
- 4TH Armored Division Assn. 29 Jun-1 Jul, The Sherburne, Atlantic City, N. J.
LTC Ridsen L. Fountain, 4414 Volta Place, Washington, D. C. 20007
- 5TH Armored Division Assn. 10-12 August, Sheraton Park, Washington, D. C.
Mrs. Claire E. Watrous, 8549 Lowell, St. Louis, Mo. 63147
- 6TH Armored Division Assn. 26-29 July, Sheraton Jefferson, St. Louis, Mo.
Edward F. Reed, Box 492, Louisville, Ky. 40201
- 7TH Armored Division Assn. 17-19 August, Sheraton Schroeder, Milwaukee, Wisc.
Irving Osias, 147-28 72d Road, Flushing, N. Y. 11367
- 11TH Armored Division Assn. 17-19 August, Statler Hilton, New York City
Arthur Jacobson, 113-15 226th St., Laurelton, L. I., N. Y. 11413
- 16TH Armored Division Assn. 11-13 August, Holiday Inn, Baltimore, Md.
Lester Bennett, 5820 Recamper Dr., Toledo, Ohio 43613
- 1ST Cavalry Division Assn. 18-20 August, International Hotel, Los Angeles, Cal.
COL A. E. Stevens, Box 11201, Albuquerque, N. M. 87112
- 2D Cavalry Assn. Fort Jackson, S. C.
MAJ Louis T. Holtz, 726 Mancill Rd., Stratford, Pa. 19087
- 4TH Cavalry Assn. 18-19 August, Plains Hotel, Cheyenne, Wyo.
M. J. Loberg, Annandale, Mich. 55302
- Veterans Assn. 6th U. S. Cavalry, The Read House, Chattanooga, Tenn.
MAJ John A. Everett, Box 716, Virginia, Minn. 55792
- 9TH and 10TH Cavalry Regimental Assn. 28-29 July, Kansas City, Mo.
Charles E. Brown, 2901 East 35th St., Kansas City, Mo. 64128
- 817TH Tank Destroyer Battalion Assn. St. Louis, Mo.
Raymond Bank, 116 Laurel Ave, Ben Avon, Pa. 15202
- Announcements of other unit association meetings will be published when the details are received.

ARMOR

CAN
OPERATE IN THE DELTA

By MAJOR SERVETUS T. ASHWORTH III





A contrast of worlds.

Armor has been told for years that it has little or no role in Asia because the terrain is not suitable for its vehicles. This philosophy has prevailed down to today, despite proof to the contrary in the Korean Conflict. There, divisional tank battalions and regimental tank companies proved in battle the ability of Armor units to negotiate terrain previously considered non-trafficable.

Despite the successful employment of Armor in Korea, we continued to hear that we had no role in most of Asia. We not only heard it but came to believe it, at least in part, ourselves. The service schools, including our own, reflected this position by omission. No presentation of the successful employment of armor in Korea was included in Fort Knox units of instruction.

Now again we are engaged in a conflict in Asia, this time in Vietnam. Once more we hear that Southeast Asia is not Armor terrain, that the mountains, jungles, swamps and rice paddies are impassable for Armor vehicles, that Armor's only possible role is convoy escort, security of highways and populated areas.

Is this terrain really impassable to our vehicles? Or have we just lost that "Can-Do" attitude that lead Armor across North Africa, through the hedgerows of Normandy and the supposedly impassable mountains and rice paddies of Korea?

Major Servetus T. Ashworth III, Armor, has recently returned from the Republic of Vietnam where he served as the Senior Advisor to the 9th Cavalry (ARVN). A 1961 graduate of the Armor Officer Career Course he remained until 1963 as an instructor with the Armor Cavalry Branch of the Command and Staff Department. A former G-3 Armor Advisor and Squadron Executive Officer, Major Ashworth is currently on assignment to USACDCARMA.

The Vietnamese Army has been successfully employing Armor units for several years. Now, American tank battalions and armored cavalry units, to include a complete regiment, are being committed. Despite this, I encounter officers, including Armor officers, who are astonished when I tell them of the battle successes of the unit I advise. Their immediate reply is, "But the terrain—How can you?"

The truth is long overdue. It is time that those of us who have first-hand knowledge not only share it but disseminate it as widely as possible.

Vietnam consists of four distinctly different terrain areas—the coastal plain, the mountains, the central plateau, and the delta. I can speak for only that area with which I am personally familiar. Perhaps my doing so will encourage those of you who have been, or are now, with Armor units in the other areas to make your experiences known. Perhaps this article will help those of you who may soon operate with Armor in the Delta.

ORGANIZATION

The 9th Armored Cavalry Regiment, Army of the Republic of Vietnam (ARVN), is deployed in Vietnam's southernmost tactical area, under the operational control of the ARVN 21st Infantry Division. The regiment is composed of the normal Headquarters and Service Troop plus three M-113 troops. Each of these line troops consists of 15 M-113's organized into three line platoons of three M-113's each, a support platoon of four M-113's and a troop headquarters section with two M-113's. With a three-vehicle command section in the regimental headquarters, this gives the regiment a total of 48 M-113's.

The regiment is employed as a major striking force of the division, frequently controlling up to four infantry battalions on division search and destroy operations. On other occasions it conducts independent regimental-size Armor sweeps of the countryside. Troops support provincial and district operations by either participating actively in these, or by acting as a mobile reserve in the event major contact is established. Elements of the regiment are moved into areas that intelligence indicates are to be the target of stepped-up Viet Cong activity. Frequently, their mere presence is sufficient to forestall the threat. Roads are cleared, convoys secured and cut-off outposts relieved, resupplied and reinforced by elements of the regiment. In short, all of the normal missions of armored cavalry are performed, despite the terrain, thanks to the ingenuity of the commanders and the development of a few new techniques applicable to many parts of the world besides Vietnam. Before proceeding further, it is essential to discuss the terrain in which we operate and its effect on our employment.

TERRAIN-TRAFFICABILITY

Here in the very heart of the Delta are four distinctly different types of terrain—cultivated rice paddies, marshy bogland, mangrove swamps, and the U-Minh forest.

The entire area is criss-crossed by numerous canals, irrigation ditches and streams. Trafficability is affected by the season (wet or dry), the type of terrain and the water obstacles. Since water obstacles involve special techniques which have been developed locally they will be discussed separately in a later paragraph. The other trafficability considerations are:

a. *Cultivated Rice Paddies*: These are the most desirable type of terrain for rapid cross-country movement. Trafficability varies from excellent during the dry season to good during the rainy season.

b. *Marshy Bog Land*: Trafficability varies from generally good during the dry season to extremely difficult during the rainy season. Extreme care should be taken to avoid areas covered with large-leaved lily-type plants as they are usually a sign of an impassable bog hole.

c. *Mangrove Swamps*: Generally impassable by M-113's all year although narrow stretches may be crossed with difficulty using the water obstacle crossing techniques. During the height of the dry season some penetration of the outer edges is possible.

d. *U-Minh Forest*: Impassable all year.

WATER OBSTACLE CROSSING TECHNIQUES

Since the major obstacle to M-113 movement is the numerous irrigation canals and rivers, various techniques have been developed locally to get the M-113's quickly across. The initial reconnaissance and selection of the crossing sites (normally two per troop) determines the technique to be used. A major consideration is the trafficability of the bank at the obstacle departure point. It must provide firm traction for the pulling vehicles to tow all the vehicles in the unit out of the water. Satisfying this requirement often results in the departure point being up or down stream from the entrance point. The influence of the tides must also be considered.

All canals in the Delta are affected by two high tides and two low tides in each 24 hour period. Due to the heavy accumulation of mud in the canal bottoms, otherwise easy crossings become extremely difficult during low tides.

Proven techniques include:

a. *Run and jump method*: Many small canals can be crossed by backing off from the bank and making a running approach. The forward motion, combined with the lift gained in leaving the near bank will carry the M-113 past its center of gravity on the far bank. Normally, no more than three vehicles should attempt this method. If none are



successful then the "Push Board" method is used to complete the crossing.

b. *Push board method*: One M-113 in each platoon carries a section of aluminum balk approximately 5 meters long strapped on top. Normally this vehicle makes the initial crossing attempt on small canals. Once it bogs down the balk is slid off to the rear. Being aluminum it is light for its size and it floats. The cargo hatch is closed to prevent damage. The balk is braced either against the center of the lip running along the top of the stuck M-113's rear ramp or just above one of the tow hooks. A second M-113 is brought forward on the near bank to engage the balk against its front slope. On command, both tracks move forward in low gear, the rear one pushing until the front track is out on the far bank. At times, because of the poor trafficability along the banks, two pushing tracks in tandem may be used. Experience has shown this to be the maximum feasible number. Although the aluminum balk has proven to be the most satisfactory push board, almost anything of sufficient strength



and length may be used. (e.g. 6x6 planks, tree trunks).

c. "Choo-Choo Train" or "Daisy Chain": Once the initial M-113 is across a small canal, the cable of the next M-113 is hooked up and it is towed across. With two M-113's now on the far bank a third enters the canal and connects its cable to the two on the far bank. All the remaining M-113's on the near bank form a single line and hook up to the vehicle in front of them. After being hooked up, each M-113 backs off until there is no slack in the tow cables of the vehicles in the canal. Once all vehicles are connected, in train fashion, they move forward on command until the last one clears the canal.

Tow cables are an absolute must to movement in this terrain. In addition to the normal OEM cable, each M-113 should carry two, $\frac{3}{4}$ inch cables slightly longer than the vehicle itself. The cables are prepared with a loop in each end secured by three cable clamps. In the normal carrying position these cables are attached, one each, to the left and right front tow hooks, draped back along the top of the vehicles and secured at the rear with a quick-release type tie down strap. A designated crewman of a vehicle requiring a tow, quickly disconnects the tie down and runs the free end forward to attach it to the towing vehicle. In addition to these cables, each troop normally carries two extra long cables ($\frac{1}{2}$ " by 100') with the prepared loops in each end. Experience has shown that where the cable is attached to the towing vehicle is important. Normally the vehicle in the canal requires an up-and-out pull. To obtain this the cable is attached to the right or left lifting eye on the top rear of the towing vehicle. The quickest way to do this is to insert the cable loop over the eye and slide a track pin through the lifting eye to secure the connection. All vehicles carry extra pins for this and for linking together several cables quickly when they are required.

The requirement for equipment to enable an M-113 to winch itself out of a canal led to the locally-developed capstan and marine anchor kit. This consists of two aluminum drums which bolt to modified front drive sprockets of one M-113 per platoon, two rolls of heavy braided nylon rope and two commercial-type aluminum marine anchors. Full details on the minor modification required to install the kit and the stock number can be obtained by contacting Armor Command Advisory Detachment at USMACV Headquarters. Without these kits an M-113 unit loses considerable cross-country mobility in the Delta.

BATTLEFIELD RECOVERY

At the present time there is no recovery vehicle available which is capable of accompanying the M-113 cross-country in the Delta. Thus, battle-



field recovery is one of our major problem areas. All field recoveries of disabled or battle-damaged vehicles must be made by other M-113's. At times, as many as 14 M-113's are required to evacuate one vehicle cross-country to the nearest road. Frequently the towing M-113's will be hooked up in multiple pairs in order to gain sufficient traction and steering to control the direction of the towed vehicle. Once again, the method of connecting the cable between the disabled vehicle and the towing vehicle is most important. After attempts have failed to recover a mired down M-113 by towing, as frequently happens when operating in a swampy area, the never-failing method is what has locally become known as "the Army Track Method." Using an M-113 clear of the bog as a deadman, one end of the 1/2 inch 100 foot long cable is attached to it and the other end to either of the mired vehicle's tracks between the drive sprocket and the first road wheel. The simplest method of doing this is to insert the loop end of the cable through one of the track blocks and slide a track pin across the inside of the track block and through the protruding end of the loop. Frequently this arrangement proved hard to disconnect. As a result several variations of a self-disengaging clamp have been designed. One of these is shown in issue #160 of *PS Magazine*. The use of such a clamp is recommended. After the connection is completed, the mired M-113 is placed in low range and walked forward until the point of attachment reaches the compensating idler wheel. This process is repeated on the same side or on alternating sides until the vehicle has been "duck-walked" to where it can be towed or until it reaches firm ground and can again move under its own power.

MAINTENANCE

"A continuous 24 hour a day requirement" is the only way to describe maintenance in this environment. As a result of the constant cross-country movement with the suspension system submerged in mud, together with the numerous salt water canal crossings, all parts with rubber components have a short life. All types of seals deteriorate rapidly and must be continually inspected and replaced at the first indication of failure to prevent moisture from seeping in. Replacement parts requirements for track and suspension system components are nearly tripled. Thorough lubrication is essential after every field operation. Weapons must be continually oiled to protect them against the moisture. Communications equipment should be aired in the sun at every opportunity.

TACTICAL TIPS

While some operational techniques are different, basic Armor tactics are as applicable in Vietnam as anywhere. In fact more so, since in this type of war



Normal Road march interval is 100 to 200 meters.

the emphasis is on the basics of the military art. The following tactical notes have proven to be helpful to those newly assigned.

a. *Intervals Between Vehicles on Road Marches:* Due to the extremely flat terrain and limited vegetation in the Delta, it is not unusual to conduct road marches with vehicles 100-200 meters apart. The major consideration is that the crew is able to see the vehicles to the front and the rear. The resulting length of the column makes it virtually impossible for any major portion of it to be inclosed in an ambush.

b. *The Command Track is a Signature Vehicle:* Due to its additional radio antennas, the command track is easily identifiable by the VC. It is tempting prey for command detonated mines or snipers. Installing dummy antennas on other tracks and removing antennas not required on road marches helps to confuse the VC. The command vehicle's location in the column must be continually varied during a movement. Consistently following the first platoon or second platoon in column has resulted in the command-detonated mining of many troop command tracks.

In the attack, the command group's best security is to intermingle with or follow very close behind the assault elements. The VC quickly will place a heavy volume of indirect or recoilless rifle fire on a small group of two or three vehicles moving laterally to the rear of the assault elements. A pattern of location must never be established by commanders.

c. *"Don't Waste Lives:"* American commanders normally require personnel to ride inside the M-113. Here in the Delta, we ride on the outside of the track, as experience has shown that on hitting a mine personnel will be blown clear with only slight

injuries. Those inside the track more often will be killed or seriously wounded.

d. *How to Avoid Mines:* With the VC emphasis on mines, the only way to avoid them completely would be to fly. However, experience has shown that mine casualties can be reduced by avoiding obvious breaks in trees or vegetation along canal lines or streams and by staying away from old crossing points on canals and old track ruts across the paddies. Returning over the same route, or crossing at the same sites, when departing an opera-

tional area are also invitations to trouble. Freshly dug dirt, clumps of grass and brush in roads and trails are danger signs. Whenever the terrain or the situation prevent avoiding potential VC mines, the area should be thoroughly swept by mine detectors. A thorough check for anti-personnel grenades and booby traps must be made prior to sweeping. As an additional precaution, after sweeping old crossing sites, all unnecessary personnel should be cleared from the vehicles and moved well back from the crossing site while the crossing is made.



Mines present a constant danger in Delta operations.

e. *Air Support:* Frequently it is difficult and time-consuming to locate the best route or the best canal crossing sites by map reconnaissance. Therefore, it has become habitual for an O-1, Light Observation Airplane, with an Armor officer as an observer, to work with the M-113s. We have found that in many cases the observer can detour the unit around unsuitable terrain and canals. When this is not possible, he locates and marks with smoke the most likely crossing sites.

f. *Captured Mines, Explosives or loose ammunition should never be carried out of the operational area in the M-113's:* Experience has shown that such material is frequently deteriorated or highly unstable. Destroy it in place, or you may lose a vehicle and its personnel.

g. *Land Navigation:* Because of the lack of terrain features, the average American has difficulty navigating when he first arrives in the Delta. This problem is further complicated by the erratic wandering necessary to travel a route suitable for the M-113's. By constant reference to his map, frequent use of a compass and binoculars, and by utilizing the major canals as reference points, he will learn to overcome the difficulties of navigation in this flat terrain.



near side and the riflemen the far side of the canal. Once a sufficient number of M-113s are across, they move to reinforce the dismounted riflemen. The last element to cross is the support platoon which has remained in position to support the crossing by fire. During the crossing operation, tracks remain well dispersed and facing outward until ordered to the actual crossing site.

(2) Advance to contact: Due to the terrain found in this area, the M-113 units normally find themselves advancing between two large lateral canals with wooded jungle banks. As a result, the troop normally advances in a troop column prepared to react to fire from either flank.

(3) Approaching objectives or suspected areas: Normally the troop will approach objectives, wooded areas, villages or other likely points of resistance with two platoons on line, followed by a third platoon in column prepared to react to either flank if flanking fire is received. If resistance is met, the support platoon halts, takes up firing positions, and prepares to support the action. The troop headquarters will normally move with the two lead platoons, although a definite pattern should be avoided.



Despite obvious handicaps Armor can operate in the Delta.

h. *Tactical Formations:*

(1) Canal crossings: As a canal is approached, the support elements take up positions to cover the advance and the two lead platoons move into line formation, dismounting their riflemen. The riflemen secure the near bank and then move across to clear and secure the far bank. While the two or three capstan vehicles begin the crossing itself, the remainder of the unit forms a circle of security around the crossing points. The M-113's secure the

THE CONCLUSION:

Experience in the southern part of the Delta has shown that there is no canal the M-113 equipped Armor units cannot cross and little terrain they cannot negotiate. Some of the obstacles just take longer than others to negotiate. As always, aggressive leadership is the prime requirement. Armor can operate in the Delta!

SQUADRIMENT

A NEW CONCEPT

by

EDMUND S. GLENN

It is customary in TO/E questions to begin with tactical requirements, then proceed through points of organization to problems of equipment and materiel. There are times however, when the capabilities of existing equipment are of a nature to strongly suggest improvements in organization and even tactics.

A starting point for this discussion is provided by the 4.5-ton Panhard light armored car which is currently produced in two versions for the French Army. One is armed with a low-recoil, 90mm anti-tank gun with rocket assisted ammunition and a single coaxial machine gun while the second edition possesses a 60mm breech-loading mortar and two machine guns. A standard five car platoon is equipped with both types.

Clearly, the point of interest is the unique combination of armaments and the inclusion of a high-angle anti-personnel weapon

designed primarily for direct fire missions. For reconnaissance or light armored cavalry small unit operations, such a weapon—a super grenadier on wheels—appears to have considerable superiority over classical indirect-fire mortar in platoon support despite the caliber and power superiority of the latter.

U. S. Army Ordnance currently (now) has under development a weapon of the same general type as the French vehicle-mounted mortar and which at least on paper, appears superior for direct anti-personnel fire missions. This is the XM-129, an electrically operated, belt-fed launcher with a rate of fire of 350 rounds-per-minute.

Another interesting piece of materiel is the Cadillac-Gage "Commando" armored car. Although a larger and heavier than the Panhard, it possesses two significant advantages. It is amphibious and supplementing its regular weapons system is the squad size infantry group it carries.

When the "Commando" armored car, breech-loading mortar or grenade launcher, and the

90mm low-recoil gun are functionally integrated the result is a two vehicle section carrying its own infantry support. One of the vehicles is armed with a turret mortar and coaxial machine gun thereby giving it low and high angle rapid anti-personnel fire. This vehicle is ideal for independent action and for rifle squad support. The other vehicle has a low angle anti-personnel fire capability and antitank and anti-fortification direct fire capability.

Some critics will automatically object at this point that further discussion is useless as no requirement for wheeled armored vehicles really exists. The question of wheels versus tracks for light combat vehicles is one which needs periodic re-examination in the light of prevailing tactical and strategic demands. A basic question centers around the kind of enemy against whom such vehicles are likely to be employed.

It is revealing to note that the French light armored car, whose armament prompted this discussion is used to equip units deployed for the "defense of territory," or more specifically against vertical envelopment, infiltration

Edmund S. Glenn is Special Assistant to the Chief, Division of Language Services, Department of State. Mr. Glenn has translated many of the features on foreign armor which have appeared as center spreads in *ARMOR*.



"The advantages of functional integration must be considered."

and insurgency. Tactically this amounts to a requirement for small units able to act independently or semi-independently against hostile forces operating in relatively lightly-armed and widely dispersed units.

Counter-infiltration and counter-insurgency are not the only situations requiring of friendly

forces, the potential for dispersed and semi-independent action by small units. Nuclear warfare is still another one. The concentration of strike-forces on the nuclear battlefield can be carried out only in concealment, behind a deep screen of widely dispersed, independently operating friendly forces.



"A basic question centers around the kind of enemy against whom such vehicles are likely to be employed."

It is clear that the scout-rifle-armored section as briefly outline above seems ideally suited for both requirements although the first reaction of the ardent tracked-vehicle protagonist still might be that no amelioration has been achieved. Let us therefore examine the wheeled versus tracked question in these specific contexts.

Initially it should be recalled that many types of terrain—jungle and mountains for example—severely limit the use of any mechanized units and that in such terrain neither track nor wheel will suffice.

In generally open terrain where the useful employment of light armor is conceivable, the principal drawback of wheeled vehicles is their inability to cross isolated terrain features which can be negotiated by tracked-vehicles. This weakness rings decisive in the case of units called upon to carry out heavy assaults. The use of wheeled-vehicles in such units would make it necessary to channel the assault otherwise negotiable terrain features logically making the task of the defense immeasurably easier. Heavy assault however, is not a scouting section mission.

The drawbacks of tracked vehicles remain; excessive noise advertising their impending approach at great distances and lesser mobility along roads and smooth terrain. It is probable that light elements on wheels would prove somewhat more maneuverable under a broader range of circumstances than tracked ones. It should be noted that the presence of a strong dismountable element within the scout section would decrease the adverse effect of isolated terrain features which would otherwise restrict vehicle use for such features can normally be penetrated on foot.

The next point is to locate the section within a broader framework. A platoon of two sections and a platoon headquarters would be capable of operating

along a road axis, simultaneously covering the road and the commanding terrain features on either side.

A platoon of three sections and a headquarters could in addition, form a perimeter more easily than the two-section platoon. The drawback is size, for a three section platoon is somewhat large. Moreover, the very likelihood of forming a perimeter at platoon level in relatively open terrain is substantially less than in the jungle where mechanized, non-airborne, light cavalry is infrequently utilized. Nevertheless, the three-section platoon should not be dismissed on the basis of traditional employment. It is rather a matter for testing and experimentation.

It is also clear that the platoon leader would be able to withdraw either the rifle or the armored element from section control to reinforce either another section or platoon headquarters.

Platoon Headquarters should include the following:

- (1) The leader's armored car
- (2) An armored car with a weapon capable of providing both anti-aircraft protection and a large volume of long-range anti-personnel fire
- (3) An armored car with a more powerful anti-tank and anti-fortification weapon than available in the scout sections.

The necessity for antiaircraft protection suggests a radar equipped 20mm "Vulcan" gun while the latter requirement indicates possible utilization of a guided-missile controlled from the firing vehicle. The reason the low-recoil, 90mm gun was considered for the scout section armored cars in preference to missiles is that situations may frequently occur in which a scout section vehicle may need to move while the missile is in flight. Under such circumstances the guidance feature is a hindrance.

In all this would amount to a seven or nine vehicle platoon,



"The General Sheridan appears ideally suited."

which is manageable, but a bit heavy in the case of nine vehicles.

Moving to a higher level, the question of a three or four platoon troop should be seriously considered. This is the level at which independent operation may make the perimeter forming capability and extra reserve particularly desirable.

Regardless of the final decision in this respect, the troop should have a tank platoon in support. There is a realistic need for tracked-vehicles at troop level since circumstances will arise demanding deliberate and immediate assault. This is a task at which the General Sheridan appears ideally suited.



"The need for dispersed and semi-independent action exists in a wide variety of circumstances."



Prolonged survival on the nuclear battlefield . . .

A tank platoon operating within the framework of a wheeled-troop, often at considerable distances from other heavy-armored forces, should be reinforced in order to operate efficiently. A three-section, seven-vehicle platoon is suggested.

It is difficult to determine the organization of the troop without looking at the next higher unit. If the expectation is of frequent, but not necessarily constant air-superiority, then this is the level at which it may be useful to mix airborne and armored elements. There are many reconnaissance—as opposed to screening—missions which an Air Troop can perform better and more rapidly than a vehicular force. In addition, such a troop can assist in screening, by fire support and resupply. The inclusion of an Air Troop of this description has much to recommend it.

Another need is for rifle support in screening and assault missions. Since the Recon Troops are likely to widely disperse, the

Rifle Company provided for this support should be helicopter-borne.

Artillery support calls for the ability to deliver a great volume of fire. There will be situations where relatively long range may be essential and other situations in which fire support may have to be displaced by air in order to be placed at the disposal of an isolated Troop.

Although the Troop organization suggested has a powerful antitank capability, a suitable platoon should be included in the Headquarters element to cover those situations requiring dismounted guided-missile anti-tank fire.

A final question not yet considered relates to the number of line troops to be included. Again, tradition should not be considered binding. The answer depends on the size or type of unit with which the light-armored cavalry is to be incorporated as well as the type of terrain prevailing in the theater of operations. Will the unit be combined with



will become more and more dependent . . .



on all types of mobility

other light-armored cavalry units of the same description? Is it supporting a brigade, a division or a corps? What is the average density of troops in the theater of operations?

Answers to such questions might suggest two, three or even four line Troops in a configuration which might be termed a Squadron, Squadrim, Regidron or Regiment . . . according to tactical needs and in disregard of past customs. A major point to bear in mind is that the availability of important light-armored cavalry elements is likely to free more powerful, but less mobile units for other missions. This is particularly important on battlefields where dispersion is the rule, not the exception, especially when it is essential that friendly forces possess the built-in capability to control large areas as opposed to long lines. Certainly, this is the dominant requirement in counteracting insurgency and infiltration or in screening the concentration of friendly strike-forces on the nuclear battlefield.

THE CAVALRY TROOP

In a Rearward Passage of Lines

By CAPTAIN WILLIAM S. CHANDLER

A rearward passage of lines is an operation in which a unit in contact with the enemy breaks contact and moves through a unit in position to its rear. Responsibility for the zone of action is transferred and the passing unit moves to an assembly area to regroup or assumes another mission. If enemy pressure is great, the commander of the unit in contact is faced with one of the most dangerous situations he is likely to encounter. A successful passage under these conditions does not require tactical genius. It does demand thorough and detailed coordination between the passing unit and the unit to be passed through. Current field manuals do not discuss passage of lines by small units in detail. A new commander may not learn to coordinate a passage of

lines properly until his unit is caught between an aggressive enemy and a "friendly" unit which shoots first and rationalizes later.

The cavalry troop will frequently be faced with a rearward passage of lines as a part of a security or economy of force mission. Fortunately, its flexible organization and communications make it well suited for the task.

Receipt of the Mission:

When assigning a mission requiring a rearward passage of lines, the headquarters ordering the passage should provide certain information to the troop commander. This includes priority of routes through the area; what support the unit passed through is directed to give the passing unit; and the time responsibility for the zone of action will be transferred. In addition, the troop commander's immediate superior will give him the time and general location of the passage, the unit his troop will pass through, where he can coordinate with the commander of that unit, frequencies and call signs of the unit to be passed through, and, any limiting instructions concerning the passage. He also must be given his mission following the passage. When he has this information, the

troop commander is ready to issue a warning order to his platoon leaders and command post.

Actions of the platoon leaders:

On receiving the warning order, the platoon leaders will immediately send the troop commander a status report. They will then select contact parties and give them a preliminary briefing. This briefing will consist of the current situation, both friendly and enemy; a check to insure that the contact party knows the proper frequency and call sign, challenge and reply, and recognition signal; and, a check for the presence and serviceability of equipment. The platoon sergeant is normally a good choice to lead the contact party. The platoon leader should consider sending one man in addition to the vehicle driver to be available to the platoon sergeant as a guide and for security. Following the initial briefing, the platoons continue the mission and await further instructions from the troop commander.

Coordination:

After issuing the warning order, the troop commander is ready to coordinate with the unit he is to pass through. Coordination may be made by the troop

Captain William S. Chandler was commissioned in 1961 from The United States Military Academy. He graduated from the Armor Officer Orientation Course in 1961 and from Ranger School and Airborne School in 1962. He was then assigned to the 7th Cavalry, 3rd Infantry Division, Germany, where he served as a platoon leader, S-2, and troop commander. In 1965 he returned to CONUS and attended the Armor Officer Career Course. He is currently assigned to MACV.

commander, the troop executive officer, or the first sergeant, depending on the situation and the capabilities of the personnel involved. The executive officer and the first sergeant should be able to make the necessary coordination after receiving a short briefing on the current situation, directives of higher headquarters, and the troop commander's concept of the operation. In this article, I will assume that the commanders of both units are coordinating personally.

The troop commander will not be able to remain with the unit to be passed through following the coordination. Therefore, he should take with him a liaison agent who will remain with that unit and who will provide continuous coordination throughout the passage. Again, the troop commander will select the man for the job considering the capabilities of those available. The communications sergeant, liaison sergeant, a member of the surveillance section, or a radio operator are possible choices. The liaison agent must be familiar with the troop standing operating procedures, organization, and tactics. He must have a means to maintain communications with the troop commander since he must keep his commander informed of any changes which could effect the passage of lines.

The commanders will coordinate the following prior to passage:

Mission:

The troop commander must know the mission of the unit he will pass through because this may determine what support that unit can give him. He will determine whether the unit in position has been directed by higher headquarters to support his passage and, if so, what support can be expected. Even if no support mission was specified, normally, it is an implied mission for the unit in position to assist the pass-

ing unit. However, it may be necessary for both commanders to reach agreement or request a decision from higher headquarters.

Location of Friendly Units:

The troop commander will learn the exact location of the troops he will pass through to include the combat outpost line, the general outpost line, planned patrols and their routes, the flanks of the unit to be passed through, and where and with whom it is making contact on its flanks.

Location of Barriers:

The troop commander will determine the location, extent, and composition of barriers in the passage area and the location and marking of gaps through these barriers. He will insure that existing and planned barriers will not interfere with his maneuver before or during the passage. If necessary, he will arrange for the unit to be passed through to clear gaps in their protective barriers and leave these gaps open until his unit is clear of these barriers. The troop commander will provide a copy of his barrier plan to the unit to be passed through and will arrange means to insure that the commander of the passed unit is notified when the passage is complete and he is free to close the lanes.

Enemy Information:

The troop commander briefs the commander of the unit to be passed through on known or suspected enemy strength, location, identification, and activity and on the terrain to his front. This information will be updated by the contact parties from the platoons and by the liaison agent during the passage.

Selection of Passage Points:

Based on his coordination, the commander of the passing unit will select passage points. The exact location of these points is subject to the approval of the unit passed through. In selecting pas-

sage points, the troop commander will consider routes of approach and withdrawal, cover and concealment of these routes and the passage points, barriers, and the friendly plan of maneuver. Passing elements should have sufficient room to break contact with the enemy, assemble in the proper order for passage, and move directly and rapidly through the passage points and out of the area of the unit passed through. There should be a separate passage point for each platoon if the terrain and scheme of maneuver permit. It is possible, but undesirable, to displace an element from the unit passed through to allow passage at a given point.

Each passage point must have a contact point where advanced elements of the passing unit contact members of the unit to be passed through for identification and final coordination. The contact point is located on the approach route to the passage point and should be out of sight of the unit to be passed through. The passing unit is guided from the contact point to the passage point. Recognition signals are exchanged at the contact point and at the passage point. Guides are normally provided by the unit to be passed through.

Route priorities from the passage points to the rear are normally given to the passing unit by the headquarters ordering the passage. Assembly areas for the passing unit must be far enough to the rear to prevent interference with support and reserve elements of the unit passed through.

Communications:

After the initial coordination, both commanders must rely heavily on radio communications for subsequent coordination. The two units will exchange frequencies, call signs (to include alternates), and code words to order switching to alternate frequencies. Recognition signals to be used at contact and passage points will

be agreed on or confirmed if they are specified in Signal Operating Instructions or Standard Signal Instructions. Check points must be established to avoid confusion just prior to passage. A separate code word should be designated to indicate completion of passage of the entire troop. This code word will not be given to the platoons to insure that a message indicating passage of one platoon is not interpreted to mean that there are no friendly troops forward of the unit passed through.

Command:

The time or action when responsibility for the zone or sector is transferred from the passing unit to the unit being passed through must be agreed on. Higher headquarters will designate this time for battalion or brigade but a more specific designation is required at company/troop level. This transfer may occur when the last unit in the troop has cleared the final delay position or it may occur when a certain number of vehicles have effected passage.

Combat Support:

Indirect fire support is coordinated to insure that the organic and supporting fire support of the unit to be passed through is prepared to answer calls from the passing troop prior to passage, and that friendly troops are not fired on. To insure maximum fire support coordination, the passed and passing units will exchange fire support plans. Groups of fires are planned to cover the withdrawing forces as they move to the passage points. The passing troops will normally close gaps in barriers by calling for prearranged fires.

Direct fire is controlled by continuous coordination. Each man in position must know when the passing elements are approaching his position, the route of approach, and any distinctive vehicular marking. The troop commander

can prevent accidents caused by a scared, jumpy soldier by keeping the unit being passed through informed of the approach of the enemy and his own unit. The liaison agent at the command post of the unit passed through will monitor the situation on the troop command net and pass it on to the company commander along with any information he is directed to relay. This will enable the commander of the unit being passed through to direct the fire of his weapons to assist the passage of the passing unit and inflict maximum casualties on the enemy.

Additional Support:

The passing unit will normally evacuate prisoners of war, and wounded, to the unit being passed through prior to the passage. Arrangements are made to pass necessary supply and mess vehicles through the area. After the passage, the passing unit can assist the unit passed through to evacuate wounded and prisoners of war.

Reconnaissance:

Platoon leaders will make a thorough reconnaissance of the passage point and route of withdrawal if the situation permits. In any case, each platoon leader must send his platoon contact party to the contact point in time to allow them to make a final reconnaissance of the route to the contact point. In a fast-moving situation, this may be the only reconnaissance possible.

The contact parties from the passing and passed units meet at the contact point at the specified time. They exchange recognition signals and make final check coordination. The latest enemy information is given to the unit being passed through. A reconnaissance is made from the contact point to the passage point to insure guides are properly placed. Both contact parties then report to their platoon leaders that they are prepared for the passage.

Upon arrival of the platoon, the contact party from the passing unit will identify it and guide it to the passage point. There, the platoon leader will count each vehicle to insure that all elements are present and that no enemy vehicles have joined the column. The platoon will pass in a predetermined order. All weapons will be pointed in the direction of the enemy.

The troop headquarters will normally pass well before the platoons to reduce density at the passage point and to provide continuous communications.

Conclusion:

A rearward passage of lines is not complicated. It is detailed. If the planning and coordination described here are accomplished, minor problems and last minute changes will not lead to disaster. Training is the key. Coordination and reconnaissance can be accomplished rapidly only if personnel are thoroughly familiar with their duties and the planning sequence involved. When a platoon receives permission to break enemy contact, every man must know how he will withdraw, his position in the passage formation, the recognition signal, and the route to the passage point. Security, vulnerability, communications limitations, and time available demand that logical solutions to unforeseen problems be made at the lowest level. Unit standing operating procedures assist subordinates, but only up to date information and realistic training can ensure success.

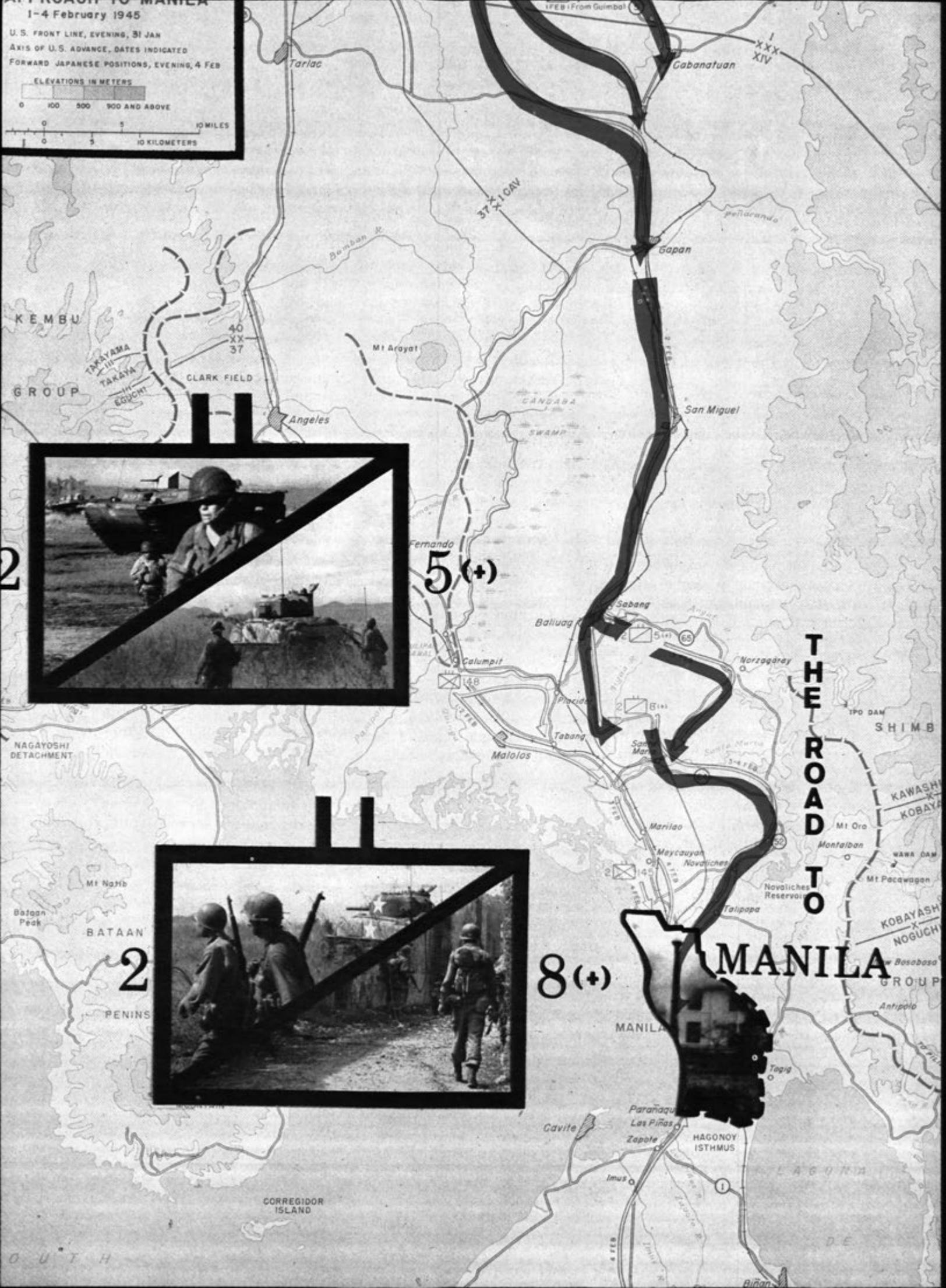
When was the last time your unit made a successful rearward passage of lines? Were you so busy solving minor problems that you lost control of your command?

Now is the time to determine which subordinates are best suited to assist you in coordination, assign them responsibilities, and train them to perform their new tasks.

ROAD TO MANILA
 1-4 February 1945
 U.S. FRONT LINE, EVENING, 31 JAN
 AXIS OF U.S. ADVANCE, DATES INDICATED
 FORWARD JAPANESE POSITIONS, EVENING, 4 FEB

ELEVATIONS IN METERS
 0 100 500 900 AND ABOVE

0 5 10 MILES
 0 5 10 KILOMETERS



THE ROAD TO

MANILA

8(+)

2

5(+)

2

SOUTH

FLYING COLUMNS

By CAPTAIN WILLIAM F. DAUGHERTY

The daylight hours of Saturday, 3 February 1945, were full of excitement for the Allied prisoners of the Santo Tomas Internment Camp in Manila. American fighter pilots had buzzed the compound repeatedly. One dropped a note which read, "Roll out the barrel. Santa Claus is coming Sunday or Monday."¹ The Japanese guards were restless and apprehensive. As darkness approached, the internees heard tanks, but they couldn't tell if the tanks were Japanese or American. After a few more anxious hours, their doubts turned into joyful relief as a flare exploded at 2050 hours, and a GI plainly shouted, "Where the hell is the front gate?"² Suddenly, Santa Claus arrived as a Sherman Tank, named "Battlin' Basic," crashed through the front gate. Prisoners of the Japanese for three long years since the fall of Manila, the 3,700³ emaciated men, women, and children of Santo Tomas will never forget their dramatic liberation by the Flying Columns of the 1st Cavalry Division.

Captain William F. Daugherty graduated from USMA in 1962 and has attended the Armor Officer Basic Course, The Airborne School, and the Armor Officer's Career Course. He served with the 1st Armored Division, Fort Hood, and with the 1st Cavalry Division, Korea. He is currently assigned to duty in Vietnam.

Unfortunately, the average Armor Officer will rarely give the Pacific Theater of World War II a second thought. Because of the predominant amphibious and jungle characteristics of the Pacific War, most of us will turn to the North African Campaigns, to the armored clashes in the European Theater of World War II, or to similar historical examples in studying mobile warfare as we know it today. But to reject the Pacific Theater as a fertile area for study is a mistake. The Luzon Campaign in the Philippine Islands, which employed more American forces than did the campaigns in either North Africa or Italy,⁴ gives us a worthwhile example of mobile warfare. This is the 1st Cavalry Division's dash to liberate the internees of Santo Tomas in Manila.

On 31 January 1945, General MacArthur personally gave Major General Mudge, commanding general of the 1st Cavalry Division, a dramatic order

"Go to Manila. Go around the Nips, bounce off the Nips, but go to Manila. Free the internees at Santo Tomas."⁵

This order reflected General MacArthur's growing fears about the safety of American and Allied prisoners into action. From guerrillas and other intelligence sources, he had learned that Japanese

prison guards were increasing their savagery as his troops approached Manila.⁶ General MacArthur stated that he "... knew that many of these half-starved and ill-treated people would die unless we rescued them promptly."⁷

With the urgency of his mission in mind, General Mudge went to work. His 1st Cavalry Division was unique in its organization. Instead of the normal three infantry regiments of the triangular division, it had four dismounted cavalry regiments. These were the 1st Cavalry Brigade's 5th and 12th Cavalry, and the 2nd Cavalry Brigade's 7th and 8th Cavalry. Each regiment had two cavalry squadrons. These squadrons were smaller than the infantry battalions three of which were organic to the infantry regiment. The cavalry regiment lacked the antitank and cannon companies found in the infantry regiment, but did have a weapons troop with 81-mm mortars, bazookas, caliber .30 and caliber .50 machine guns. The cavalry squadrons had no heavy weapons troop. Division Artillery was also comparatively light with one 75-mm, and three 105-mm howitzer battalions. To give the division added muscle, a 155-mm howitzer battalion was attached. At full strength, the cavalry regiments numbered 1,750 men—1,250 less than an infantry regiment. None of the cavalry regiments was up to strength, for the 1st Cavalry Division had come to Luzon from a rugged campaign in Leyte's mountains, and had received few replacements.⁸ Notwithstanding, the morale of General Mudge's troopers was high. They were to prove their readiness in the test to come.

The enemy situation was vague. To make matters worse, there was no chance for preliminary reconnaissance of the routes to Manila.⁹ General Kreuger's Sixth Army intelligence was on the pessimistic side. A Japanese attack from the San Jose area northeast of Cabanatuan was a possibility. The



These Japanese tanks proved to be no match for the M4

Japanese 2d Tank Division might have been in a position to attack the 1st Cavalry Division flank, as it had not moved north of Cabanatuan on the 1st Cavalry's route of advance. As the 1st Cavalry approached Manila, its flank would be exposed to the powerful Shimbu Group, another unknown factor.¹⁰

History now shows that the Japanese had expected the main U. S. thrust to Manila to come from the south. Consequently, 12,500 of the 16,000 Japanese marines guarding Manila were entrenched in a narrow network south of Manila called the Genko Line.¹¹ These forces were effectively pinned down by the 11th Airborne Division which had invaded southern Luzon at Nagsubu on 31 January.¹² The Shimbu Group was specifically directed by Yamashita not to defend Manila.¹³ Directly opposing the XIV Corps, at the end of January, was the Kembu Group which was withdrawing westward into mountain defensive positions.

Thus, the Japanese had left the door open to Lieutenant General Griswold's XIV Corps. The lead XIV Corps elements, however, would have to move fast to keep the enemy from redeploying and seriously delaying the rush to Manila. General Griswold planned to send the newly attached 1st Cavalry Division along Route 5 from Guimba. The 37th Infantry Division, located by 31 January at Calumpit would advance along Route 3 to Manila. The hot, competitive race between the two divisions for the honor to reach Manila first was about to begin.¹⁴ The 1st Cavalry's initial disadvantage was the 100 mile distance to Manila—almost three times that of the 37th Infantry.

Tailoring his division for mobility, General Mudge organized two reinforced, motorized squadrons. These were destined to gain their place in history as the Flying Columns. Each column included a cavalry squadron, a medium tank company, a 105-mm howitzer battery,¹⁵ an engineer platoon, and a medical platoon.¹⁶ Brigadier General William C. Chase, normally commander of the 1st Cavalry Brigade, was to lead the race to Manila. In addition to the Flying Columns, General Chase had a Provisional Reconnaissance Squadron consisting of the division's 302d Reconnaissance Troop, and two light tank companies of the attached 44th Tank Battalion.¹⁷

The detailed organization of the Flying Columns was as follows:¹⁸

1st Serial (Flying Column)

Commanding—Lieutenant Colonel William E. Lobit (CO, 2/5 Cavalry) Units—2/5 Cavalry; Btry A, 82d Field Artillery; Co A, 44 Tank Battalion; 3 Plt, Trp A, 8th Engineers; and 1st Plt, Trp A, 1st Medical Squadron.

2d Serial (Flying Column)

Commanding—Lieutenant Colonel Haskett L. Conner, Jr. (CO, 2/8 Cavalry) Units—2/8 Cavalry; Btry B, 61st Field Artillery; Co B, 44th Tank Battalion; 1st Plt, Troop C, 8th Engineers; and 1st Plt, Trp B, 1st Medical Squadron.

3d Serial (Prov Recon Sqn)

Commanding—Lieutenant Colonel Tom Ross (CO, 44th Tk Bn) Units—44th Tk Bn (-); 302d Recon Trp

To achieve mobility, the division had only its organic vehicles. All unneeded equipment, such as barrack bags and kitchens, was left in the bivouac area. For the 100-mile race, the troopers carried only their weapons, ammunition, water, gasoline, and four days of rations.¹⁹

THE FIRST DAY—Key Bridges Are Captured

At 0001 hours, 1 February, only two days after landing at Lingayen Gulf and concentrating at Guimba, the 1st Cavalry Division rolled under a complete blackout. By dawn they were approaching Cabanatuan, the first objective on Route 5. The 2d Squadron, 5th Cavalry, forded the broad Pampanga River and captured the Valdefuente Bridge from enemy demolition squads. Characteristic of the example set by the division's leaders was the action of General Mudge who accompanied the 2/5 Cavalry.

Noting that the Japanese were attempting to use mortar fire to detonate a 3,000 pound charge of dynamite on the bridge, he personally led some nearby men through the mortar fire onto the bridge, and threw the explosives into the river. Thus, the bridge was taken intact from the surprised Japanese.²⁰

South of Cabanatuan at Gapan, another key bridge was taken by surprise. About the same time that the 2/5 Cavalry took Valdefuente Bridge, the Provisional Reconnaissance Squadron forded the Pampanga River five miles south of Cabanatuan,

and sped unopposed toward the Gapan Bridge. As the commander, Lt. Col. T. H. Ross, led a patrol onto the bridge, a Japanese rifleman killed him. Quick reaction on the part of Captain Don H. Walton, commander of the 302d Reconnaissance Troop, probably saved the bridge from destruction. His men rushed across the span and set up defensive positions, thus securing the Gapan Bridge for the Flying Columns which were then passing through Cabanatuan.²¹

The surprise achieved on the first day was to give added momentum to the 1st Cavalry Troopers. The rapid capture of the key bridges at Cabanatuan and Gapan allowed the mobile columns to increase their speed. Recognizing this General Mudge relieved General Chase of his responsibilities as commander of the 1st Cavalry Brigade. Instead, General Chase was directed to lead the mobile units, now designated by General Mudge as the "Flying Columns."²²

THE SECOND DAY—Flying Columns

Dawn of 2 February found the Flying Columns well past Gapan. Along the hilly regions on the left flank of Highway 5, the Japanese lay in wait to attack or harrass the troopers. The mission of the 1st Cavalry Division was to not become decisively engaged, so the Flying Columns stopped only to use what force was necessary to brush the enemy aside. The columns sometimes reached speeds of 30 mph, then would have to slow down because of poor road conditions or blown bridges. The Filipinos became a barometer of enemy activity, for the absence of cheering natives alongside the road meant the Japanese were there.²³

Upon reaching the broad Angat River, the leading element found all bridges to be demolished. A reconnaissance westward to Plaridel established contact with 37th Infantry Division units which were beset by the same problem. The Flying Columns had now caught up to the 37th Infantry Division, and were determined not to be stopped by the Angat River. Consequently, a difficult fording op-



A hasty estimate—then orders to eliminate resistance on the route of advance



Terrain ranges from rivers to plains to jungle as the Flying Columns move on

eration was begun 5 miles north of Plaridel at Baliuag. Fortunately, cheering Filipinos greeted the troopers instead of Japanese bullets. Only the formidable width of the Angat River stood in the way of the determined cavalymen. The engineers proved invaluable. In this case, their bulldozers filled deep holes at the fording sites. With the troops assisting the trucks, the Flying Columns lost little time in crossing the river.²⁴

Upon crossing the Angat on 2 February, the two columns moved on separate routes. Here they encountered the stiffest resistance of the day. The 2/8 Cavalry, moving on the right flank, found an enemy battalion entrenched on commanding terrain and apparently capable of withstanding an entire division. Supporting air saved the day with a bluff. Pilots of Marine Air Group 32 made strafing passes over the Japanese position, but could not fire because friendly troops were too close. However, the Marines' low passes so unnerved the enemy, that the position was quickly reduced.²⁵

The artillery brought success for the sister Flying Column on the left flank. Plagued by roadblocks at sharp turns in the highway, the 2/5 Cavalry made good use of dismounted patrols until they reached a bridge too weak for tanks, and with banks too steep for fording. The Japanese opened up on the halted column with mortars, machineguns, and small arms fire. Battery A, 82d Field Artillery, quickly replied with accurate 105-mm fire and silenced the enemy. Reports indicate that this was Battery A's first experience in firing from the prone position.²⁶

As night approached, the 2/5 Cavalry column rolled on through sporadic resistance. By midnight 2 February, the lead elements of the Flying Columns were within 15 miles of Manila!²⁷ The Japanese Shimbu Group, the biggest threat to the Flying Columns was well within striking range but showed no signs of moving.²⁸ The way seemed

miraculously clear, for the division now had an exposed, unprotected flank almost 90 miles long! The only flank screening forces were Marine pilots. Much of the success of the first and second days was due to Marine Air Groups 24 and 32 which provided air cover, vital reconnaissance, and flank protection. These marine pilots, and even a Navy officer, were to play key roles on the third and last day of the dramatic race to Manila.²⁹

THE THIRD DAY—Liberation of Santo Tomas

Determined to beat the 37th Infantry Division, the Flying Columns slept little on the night of 2-3 February. At 0430 hours, 3 February, as soon as drivers could see the gravel roads sufficiently by moonlight, the columns rolled again. Colonel Lobits' 2/5 Cavalry on the left route, showed by many bridgeless streams, found themselves behind the 2/8 Cavalry. Their attempt to catch up at speeds up to 50 mph forced the enemy into a remarkable situation.³⁰

An unaware Japanese supply column of four trucks, full of troops and supplies, tried to enter the Flying Column by nosing out into the traffic from a side road. Alert troopers in lead vehicles waved for the confused Japanese to halt. The Japanese complied! As each 5th Cavalry vehicle sped by the intersection, all weapons of the troopers were brought to bear on the halted enemy convoy, firing until out of range. In a matter of seconds, all Japanese trucks were on fire, 25 of the enemy killed, and the rest dispersed. The classic naval maneuver of "crossing the T" had been perfectly executed by the 5th Cavalry.³¹

Also delayed at fords and slowed by small groups of Japanese, the 2/8 Cavalry finally brushed aside the enemy and raced for Novaliches with the 2/5 Cavalry only 30 minutes behind.³² Located at Novaliches was another key bridge—this one over a narrow stream which had banks too high and too steep for fording. General Chase sent his Marine pilots ahead to reconnoiter the bridge. The Marines reported it intact. This welcome news spurred the columns on. The stage was set for another dramatic episode in the race to Manila.³³

As the troopers approached the bridge, they discovered it covered with Japanese mortar and small arms fire. In the center of the bridge was a large mine with a lit fuze. Accompanying the 8th Cavalry was Lieutenant (jg) James P. Sutton, a Navy bomb disposal officer. Disregarding the furious enemy fire, he ran onto the bridge span and cut the burning fuze.³⁴ Through his heroic action, Lieutenant Sutton saved the Flying Columns a 24-hour delay. It would have taken at least that long for the engineers to have brought up the heavy equipment necessary to build a ford at Novaliches.³⁵

Twelve hours ahead of the 37th Infantry Divi-



5th Cavalry troopers advance along Taft Avenue in Manila toward Santo Tomas

sion, the 2/8 Cavalry brushed aside enemy resistance at Novaliches and sped on. The 2/5 Cavalry, now moving on the same axis, followed closely behind. At 1900 hours, the 8th Cavalry Flying Column reached the city limits of Manila. With tanks in the lead and firing on all suspected enemy positions, the troopers sped through sniper infested streets. Skillful guerrillas led them to Santo Tomas University.³⁶ At 2050 hours, the tank "Battlin' Basic" announced the arrival of the Flying Columns. The liberated internees found their sudden freedom hard to believe.³⁷ No doubt, the Japanese found it equally difficult to believe that only 66 hours ago, the liberators had been 100 miles away!³⁸

CONCLUSION

The 100 miles covered by the Flying Columns in 66 hours were a remarkable achievement for any war. The fact that these 100 miles were over gravel or unimproved roads, with many bridgeless stream and river obstacles, makes the speed achieved even more noteworthy. It would benefit any military student to analyze the factors which contributed to the success of the Flying Columns.

The flexible organization of the columns was ideal for the situation. Each Flying Column had its own motorized infantry, armor, artillery, and engineer support. This self-sufficiency is almost mirrored by today's squadron of the armored cavalry regiment.

The positive mental attitude of the commanders and their men allowed no slow-down of the movement. Individual examples of courage and initiative, only a few of which are mentioned in this article, sustained the momentum in spite of the enemy, natural obstacles, and fatigue.

Imaginative use of Marine air support for screening the columns' unprotected flank, providing air cover and making reconnaissance was a major factor. The Marine aviators kept the commander informed, allowing him to speed the Flying Columns



Get that sniper!!

on with confidence. The last-minute capture of the key bridge at Novaliches is a notable example. Those skeptical of the value of the air cavalry troop of the armored cavalry squadron should reflect upon this example from the Luzon Campaign.

Finally, the breathtaking speed of the Flying Columns took the enemy by surprise. The lack of any Japanese force capable of engaging the troopers in decisive, and perhaps disastrous combat, was due to the Japanese inability to react and deploy fast enough.

The annals of the Flying Columns of the 1st Cavalry Division are an impressive example of the flexibility and speed inherent in the Armor concept. Most impressed of all, however, were the 3,700 internees of Santo Tomas. Mobility had won them freedom, and perhaps their lives.

FOOTNOTES

¹Major B. C. Wright, *The 1st Cavalry Division in World War II* (Tokyo: Toppan Printing Company LTD; 1947), p. 125.

²*Ibid.*

³*Ibid.*

⁴Colonel Vincent J. Esposito, *The West Point Atlas of American Wars, Volume II* (New York: Frederick A. Praeger; 1959), Map 154.

⁵Wright, *op. cit.*, p. 126.

⁶General Courtney Whitney, *MacArthur—His Rendezvous with History* (New York: Alfred A. Knopf; 1956), p. 188.

⁷General Douglas MacArthur, *Reminiscences* (New York: McGraw-Hill Book Company; 1964), p. 246.

⁸Robert Ross Smith, *Triumph in the Philippines* (Washington, D. C.: Office of the Chief of Military History, Department of the Army; 1963), p. 215.

⁹Wright, *loc. cit.*

¹⁰Smith, *op. cit.*, p. 213.

¹¹Robert L. Eichelberger, *Our Jungle Road to Victory* (New York: The Viking Press; 1950) p. 195.

¹²Esposito, *op. cit.*, Map 155.

¹³*Ibid.*, Map 153.

¹⁴E. J. Kahn, Jr., *Fighting Divisions* (Washington, D. C.: Washington Infantry Journal Press; 1946), p. 154.

¹⁵Smith, *op. cit.*, p. 215.

¹⁶Wright, *loc. cit.*

¹⁷Smith, *loc. cit.*

¹⁸Wright, *loc. cit.*

¹⁹*Ibid.*

²⁰*Ibid.*

²¹Smith, *op. cit.*, p. 216.

²²Wright, *op. cit.*, p. 127.

²³*Ibid.*

²⁴*Ibid.*

²⁵*Ibid.*, p. 128.

²⁶*Ibid.*

²⁷*Ibid.*

²⁸Smith, *op. cit.*, p. 217.

²⁹Wright, *loc. cit.*

³⁰Smith, *op. cit.*, p. 218.

³¹*Ibid.*

³²*Ibid.*, pp. 218-219.

³³Wright, *loc. cit.*

³⁴*Ibid.*

³⁵Smith, *op. cit.*, p. 220.

³⁶*Ibid.*

³⁷General Walter Kreuger, *From Down Under to Nippon* (Washington, D. C.: Combat Forces Press; 1953), p. 243.

³⁸Wright, *op. cit.*, p. 129.



By **LIEUTENANT COLONEL
THOMAS W. BOWEN**

This is the Year of the Fiery Horse in China and that ancient land has been marked by events which almost defy description and exceed the magnitude of all other contemporary events. For the People's Republic of China has been seized by almost paranoid drives which result in seemingly irrational responses to today's events. The revolutionary zeal of the current "socialist cultural revolution" uses the terminology familiar in Marxist-Leninist-Maoist writings but its professed aim to alter man's basic nature appears even beyond Communism's avowed ambitions.

What has caused this striking departure in the Chinese interpretation of the Communist dogma?

The basis is not found solely in the writings of the Communist founders but equally in the attitudes long present in the Chinese civilization which evolved slowly and almost unchangingly to the modern day. It is these attitudes fusing uniquely

with Communist dogma which generates the Redness of the Peking leaders. The Communist doctrine is also affected by other significant cultural changes occurring within the nation. For while European Communism was primarily a class movement, in China it is a national movement which can claim not only to have changed the class structure but also to have restored national unity and economic well-being. The Chinese scene today must be viewed both in the light of the ancient Chinese attitudes and Communist dogma if today's contradictions are to be fathomed.

Historically the non-Asian has always ascribed to China an air of mysticism and intrigue. Even the Romans in their world-wide view were quoted by Gibbons as regarding China as a "remote and inaccessible" place. Today, even with the possibilities present in modern transportation, we still use the term "Far East." Certainly to an American, the distance, psychologically at least, to China is much greater than to Europe despite the reality of miles which places parts of the United States closer to China than to parts of Europe. And while to our Atlantic-oriented eyes China may appear to be a most remote place, to Chinese eyes the reverse is true. For to the Chinese, the Chinese Empire is and always has been "The Middle Kingdom" . . . and this "Middle" does not signify a horizontal location between two other areas of worth or note but rather

Lieutenant Colonel Thomas W. Bowen, Armor is a graduate of the USMA (1948), the Armor Officers Advanced Course and the C.G.S.C. He holds an M.A. in Psychology from Vanderbilt. He has served in Armor units in Europe, as an instructor in military psychology and leadership at the U.S.M.A., and as an advisor in Vietnam. Most recently he commanded the 2d Squadron, 1st Cavalry (1st Regiment of Dragoons) at Fort Hood. He is now a student at the Army War College.

a vertical location between heaven and hell. Countries other than "The Middle Kingdom" are not worthy of consideration. China is, was, and always shall be the center of the universe to the Chinese.

The loyalty which Westerners think of as belonging to the nation or state was reserved by the Chinese for their civilization.

This egocentric attitude is not without some considerable foundation, for since the Chou Dynasty of 1000 B.C., China has existed with a recorded history. It is the only large area which has never been brought under Western domination at some time and where ancient traditions have flourished and persisted to modern days. True, many political dislocations occurred in what the Chinese historians refer to as the Dynastic Cycle; but throughout these ages, despite the rise and fall of political leaders, a China existed. The "barbarians" came and sometimes conquered; when this happened the victors were either absorbed into the Chinese culture or expelled when the fruits of victory softened their zeal. Slowly over the centuries the characteristic Chinese civilization evolved and with that evolution a sense of unity with that civilization was born in the Chinese race and became the salient thought in their psyche. The loyalty which Westerners think of as belonging to the nation or state was reserved by the Chinese for their civilization. The government wisely based itself upon this concept of civilization, a relationship best illustrated in the system of placing public officials based on their performance in examinations on the classics. This unique government-civilization oneness played a major part in making China's record of governmental continuity possible—a record without peer and, in fact, without much competition.

Other factors also contributed to making this continuity of the Chinese Empire possible. For example, geography helped. The almost impassable mountains and deserts ringed China's location on the Pacific and formed a natural barrier to all but the most adventurous travelers. And while there existed within greater China many dialects and ethnic minorities, the overwhelming population was of basic Chinese stock. Over the ages this massive majority constantly assimilated the errant groups and dialects, absorbing a little when deemed worthwhile but principally overpowering these divergent tendencies by sheer weight of numbers. In short, race and language reinforced a unity almost required

by geography. The lack of rivals also contributed to the unique Chinese position. No competitor existed nearby to challenge the homogeneity of the Chinese Empire. Until the nineteenth century, the few cursory contacts with the outside world which the Chinese had were not those to inspire the Chinese with ambition to increase such contacts or investigate further the other worlds. For these few contacts were with adventurous traders or merchants—a class held by the Chinese as most inferior, ranking below the peasants as a non-productive group. In summary, the Chinese of the eighteenth century would have characterized his nation's place in the world by saying, "Our Empire is larger and richer, our science is more advanced, and our arts and literature are more fully developed. We are better governed by a better public servant." What could this citizen want from the outside world? To the Chinese, the answer was obvious—nothing.

Until the nineteenth century the Chinese world stood intact, aloof, isolated, and self-embraced with a massive superiority complex . . . not only not interested in the West but unwilling to even consider that such "barbarians" might have anything of interest or value to the Chinese civilization.

Down through the eighteenth century China's outlook continued along these established lines. This general attitude was so firmly engrained that little trouble was encountered in rejecting ideas or philosophies which may have filtered into China from outside areas. Further, nothing occurred during these centuries which sufficed to convince the Chinese that the current model of their ancient system was inadequate or that their view of the Chinese place in the Universe was inaccurate. For while some "barbarians" had successfully invaded the Empire, they had always been of a less advanced civilization and were not capable of contributing to the progress of China. True, some "barbarians," the Monguls for example, did have superior military talents but this was only a small facet of a civilization and was not sufficient to demonstrate cultural

equality. Later the Western military technology would also fail to bring the invaders out of the "barbarian" category.

Until the nineteenth century the Chinese world stood intact, aloof, isolated, and self-embraced with a massive superiority complex . . . not only not interested in the West but unwilling to even consider that such "barbarians" might have anything of interest or value to the Chinese civilization. But while these thoughts were still warming the hearts and egos of the Chinese, in Europe the revolutions in industry and commerce were occurring. Science and technology were blossoming amidst the development of the national political systems. China was a most distant land but her "splendid isolation" was nearing an end.

During the nineteenth century, the Chinese society began one of periodic dips of power and effectiveness so evident in the Dynastic Cycles. The Manchu government, already in power for two hundred years, became increasingly ineffective and corrupt. Nature also took a hand as crop failures and natural disasters plagued the peasants. Rebellions of the traditional type began to spread. The "time of troubles" was at hand. This was always the case prior to the arising of a new dynasty and the return to peaceful times with the existing society intact and, in fact, with the majority of the lower-level government still in identical hands. But new forces were abroad this time, traditional China was about to encounter the forces of modernization and national imperialism while at her weakest. British gunboats in 1840 started China's humiliation as they opened the doors for opium trade. The then-apparent weakness was repeatedly confirmed when the French and British combined to take the capital and put the Emperor to flight in 1860. The collapse was not total at first. Tribute bearing missions still arrived until 1908 but the old order was doomed. While ideally the position which a nation holds in the universe would be based upon its contribution to civilization, reality frequently determines the placement by military power. This criteria placed China as the doormat for all of the hated "barbarians" of the West for the next hundred years. Even through this "time of sorrow," the Chinese remained convinced their civilization was still the epitome of learning, knowledge, and art but military power dominated and China was subjected to every possible humiliation. Despite the periodic attempts (the Boxer Revolt is a prime example) to rebel and to restore Chinese ideas and ideals, until the Communists came to power, China was an almost powerless nation unable to stand unassisted, a civilization brought to its lowest ebb.

Not only was the government under economic and military domination from outsiders, but, the Imperial structure itself was under attack from

Chinese nationalism. For with the failure of the Manchus to meet the challenges of the modern world, the Imperial institution was denounced as the source of all China's weaknesses. Nationalism, the most contagious of Western exports, came with the opening of contacts with the West, traveling, as now in other lands, with the revolution of modernization. The unique relation of state and civilization was also in a process of decay for the Western teaching undermined the lessons of Confucious and the superior firepower reinforced the conviction that the old faith was perhaps lacking in authority. The placement of officials by public examination was abolished.

This Chinese Revolution of the 20th Century can best be understood when the fact is recognized that more than one revolution was occurring at once.

Internally other new forces were also awakening. An evolving pattern of change was evident in the political, economic, and social thinking. Spear-headed by a student elite educated in the West, or by Western methods in China, the final undermining of the traditional China as well as the disruption of the Imperial system was about to occur. This combined political and social reform was symbolized by Sun Yat-sen and his movement. Ultimately the movement would develop into the Kuomintang and be the dominant force in the Chinese politics until the Communist take-over in 1949. The Kuomintang program was summarized in three slogans: "Nationalism, Democracy, and People's Livelihood." This spirit began the Chinese Revolution at the turn of the century long before the Chinese Communist Party was founded and well before the Russian Revolution occurred.

This Chinese Revolution of the 20th Century can best be understood when the fact is recognized that more than one revolution was occurring at once. Not only were violent political upheavals destroying the oldest and most stable political system which had ever existed but the Chinese were at the same time attempting to absorb the radical new social ideas which had required decades—even centuries—for the West to assimilate. China was having a renaissance, a reformation, an industrial revolution, and the beginning of democratic and liberal political movements simultaneously. Disruptions were occurring in every facet of the Chinese civilization at the same time.

The old Imperial system simply disintegrated un-

der these massive strains. Sun and his followers were not well enough organized to have caused the collapse in 1911. But, assisted by the decay internally and the additional pressures from the outside, the Chinese Nationalist party overthrew the Manchus and formed the Chinese Republic.

The immediate result of the formation of the Republic was not the solving of the ever-increasing Chinese problems. The emerging leadership readily agreed upon certain goals: the development of science and technology, constitutional government with mass participation, industrialization, and agrarian reform which would give the land to the tiller. Unfortunately it was soon apparent that the thinkers and intellectuals who had sparked the birth of the republic lacked the plans, the courage and the military support to achieve these goals. The republic entered into a period of complete chaos. The Western Powers were immersed in the World War, and instead of assisting this transition, continued their exploitation. The Republic and Democracy both seemed farces. The national unity so greatly desired seemed an impossibility. At this crucial time, the Russian revolution occurred. And suddenly to the Chinese, this model appeared to be the answer. The Kuomintang adopted the Russian form of political action. And, with approval of the Kuomintang, the Chinese Communist Party was formed. An alliance of the two parties functioned until 1927 and China began to make recognizable progress. Even after the Communists split off from the alliance in 1927, the Nationalist government for the next ten years established the groundwork for a viable nation. But, the Japanese invasion in 1937 destroyed this brave start. Eight years later, the Nationalist Government was in shambles and the nation was in utter chaos. China, allegedly one of the World War II victors, was on the verge of collapse. Split by civil war, China called for new leadership. Into this leadership void stepped the Chinese Communists who had conserved their strength and prepared for the war's end. Forethought was to be rewarded. While it had never been inevitable that the modernization of China would be Communist controlled or led, there were many reasons why in 1949 they emerged victorious.

China's attitude that a thing must be Chinese to be worthy of consideration reflects her general opinion that foreign ideas and people are still "barbarous" and without value.

First the Nationalists had failed to cope with the problems of an emerging China. True, her progress had been disrupted by the Japanese invasion, but, disillusionment had occurred prior to this time in many areas. The attempts to revive the progress frequently took the form of more oppressive methods compounding the problems. The Japanese invasion itself was also a key factor in that it hastened the destruction of the old order and bred the disruptive conditions which a highly organized and ruthless group such as the Communists could exploit. In addition, the Chinese Communists had evolved a most effective organization as well as a revolutionary strategy which had not only the fervor but also the toughness to control China's millions. Communism was to be the agent for restoring the Chinese Empire. After a period of struggle, the new philosophy of Marxism-Leninism replaced the Imperial Confucianism.

. . . the Chinese phobia about foreigners is still most prevalent. It is expressed today in her closed society and excessive fears for her security.

This brief historical synopsis uncovers the genesis of many of the present day attitudes of the Chinese Reds. For example, the idea of a cultural superiority which was present in China before Christ was born is still evident in her actions of today. China's attitude that a thing must be Chinese to be worthy of consideration reflects her general opinion that foreign ideas and people are still "barbarous" and without value. China's determination to return the Middle Kingdom to its "rightful" place of unique power and prestige is daily evident, and this goal is to be accomplished regardless of cost and suffering.

Second, the Chinese phobia about foreigners is still most prevalent. It is expressed today in her closed society and excessive fears for her security. An additional attitude also springs from this basic xenophobia and her past experiences . . . her attitude toward alliances and her lack of concern regarding her isolation in the international community . . . for China has never had what might be called a successful alliance. In the distant past China was the power and needed no ally. In World War I China was invited to join the Allies and under some duress did. Victory came and China

did not even regain the concessions which the Germans held. Her "allies" gave those to Japan. China then placed her reliance in the League of Nations. When Japan invaded Manchuria, China received only platitudes and ineffective sanctions. World War II was not better as China was utterly destroyed and the end of the war found China split by a massive civil war with her allies willing only to act as observers or mediators. After the Communists took over, China's alliance with Russia looked like a winner until China's aims failed to coincide with her ally's. For Russia instigated the Korean War. Then when the United Nations over-ran the North Koreans to an extent which appeared to threaten China's vital borders, Russia set back and gave China only equipment and moral support. China did the fighting. This alliance continued to worsen for the Chinese. When China made her most sustained effort to regain the Offshore Islands in 1958, Russia again backed off and China was unable to move against the American arms supplied the Nationalists. The struggle for the Offshore Islands then dwindled to mere shelling and the islands remained an unfulfilled territorial ambition. Then, as a final insult, Russia withdrew her technical and economic aid in 1960. China's isolation today is nearly as complete as that which she strove for in the days of the Manchus. Her only relatively close relations are with states recognizing her as the leader. However, this isolation is neither a new or disturbing situation to China, for after all the rest of the world is still composed of "barbarians."

The third major attitude evident in China's modern day personality is that of frustration. No doubt exists that China is the most frustrated of all major powers, she is the only one with important unfilled territorial claims. Also of all the principal countries, China alone is denied general recognition and acceptance into the world conference halls. While granting that much of this lack of acceptance is a direct result of her own hostile attitudes, China still feels intensely that she should be invited even if she does not really care to participate. As any first year psychology student can tell us, such frustration breeds aggression—aggression against the object causing the frustration. The principal objective of this aggressive reaction has almost always been the United States, which blocked China's ambitions at the Offshore Islands, in Korea, and in Vietnam. The United States represents, in addition, the epitome of the society which Communists worldwide have sworn to overthrow. Russia has been now added to the roster of the frustration-causers both by her failure to support China and by her failure to acknowledge the Chinese infallibility in translating Marx and Lenin into action.

The next characteristic is a product of the West-

ern invasion of China-nationalism. The gift of modernization brings the awareness of the higher loyalties to nation and state. The old saw that colonialization begets anti-colonialism, imperialism begets anti-imperialism, but that nationalism begets only stronger nationalism applies in totality in China today. Today the drives of anti-colonialism, anti-imperialism, and nationalism are the deepest rooted and most intensely felt of all Chinese cultural ideals.

The final salient attitude within the Chinese culture today is, in many ways, reflected in each of the other factors and concerns the unique relationship between the Chinese people and the Communist dogma espoused by the Chinese leaders. "The Mandate of Heaven" or the right to rule which lends legitimacy to the Chinese governments was conferred upon the group who had the power. The process was a most pragmatic one and the Chinese are a most pragmatic people. Today, the Communists have that mandate.

The philosophy of Communism is one which emphasizes struggle, change, and a collectivist outlook. These are in sharp contrast to the ideas of harmony, compromise, and stability which formerly were the hallmarks of Chinese civilization. Many astute observers of the Chinese scene have pointed out that the doctrine of Communism should not appeal to the Chinese who are individualistic, natural traders, money-makers, land-hungry, and really capitalists in the essence of the word. The operations and affluence of the overseas Chinese certainly supports this characterization. Also the family is always placed above the state. All of these attitudes are now suppressed by the ruling group. Individualistic action is a denounceable crime. The economy has no room for the wheeling and dealing of the sort in which the Chinese excel. The land is collectivized. Legislation and other pressures have reduced the old extended families or clans to a position of no influence. The Chinese family today is merely a biological one of parents and children. These are dynamic changes in the Chinese culture.

However, at the same time, the strength of the Chinese state has been restored, the economy is expanding and improving, and a national pride is being instilled in the population. And the present government does resemble those of the past in two important aspects . . . it is dictatorial and authoritarian and it claims infallibility. So the Communists have not only restored the Chinese nation, but have also reshaped its social order. Whether these new forms of social organization and structure are sufficient to overcome the traditional ones which they disrupted is a prime question today. The Red Guards are physical evidence of this cultural conflict today . . . as well as of the conflict within the Chinese hierarchy itself.

As has been pointed out, the Chinese are most reluctant to accept foreign ideas and Communism is certainly an alien philosophy. The Chinese explain this apparent contradiction in two ways. First, Mao is the only Communist leader who has ever claimed or been given credit for having added to the treasury of Marxism-Leninism. To the Chinese this addition of purely Chinese thoughts to the basic Communist doctrine has restructured, and perhaps purified, it into a new philosophy—now a Chinese one which they can accept. The second rationalization is more subtle and follows the thoughts of the Chinese sage who advised, “Chinese learn as the basic structure; Westerners learn for use.” To some Chinese, the Communist system is merely a means to restore the Chinese Empire’s greatness and then the true Chinese culture can be reestablished.

These five attitudes or characteristics sum up the personality of the Communist Chinese nation today. Two are generated directly from history—superiority and xenophobia; two come from more

modern influences but are still historically based—frustration and nationalism; and one is ideologically based but with important historical influences still present—the unique Chinese-Communist combination. The present Chinese intractable moods are based on these factors which are generated by the fusion of the deep-rooted patterns of Chinese culture with the dynamic forces of Communism and modernization. The result could not have been other than a significantly different form of Communist regime. History could have told us that China could not remain a pupil to the Russian teacher, and that Chinese feelings of superiority dictated that the Chinese version had to be purer and more correct. History could have suggested that the xenophobic contempt for things foreign would have isolated China without the added pressures of ideological frustration. The exact form of the future will be determined by this unique fusion of history and modern forces, for this is the mixture which has made China so Red today.

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11th CAVALRY REPORT

By COLONEL WILLIAM W. COBB

*"Viet Cong Beware! No place to run!
No place to hide! It is too late now!
The tanks of the mighty 11th Armored
Cavalry Regiment will seek you out and
destroy you. Your only chance to live
is to rally to the RVN Government. Rally
to live or hide and die."*

Even as the leaflets floated down at first light to land in the villages and hamlets near Xuan Loc, ACAV's (M113 Armored Personnel Carrier, modified with armor around the commander's hatch, a gun shield on Cal 50 machine gun and two M60 machine guns with gun shields) and Tanks of the Blackhorse Regiment rumbled through the villages and fields on search and clear missions. It was 0230 hours, 20th of October 1966 as the Regiment jumped off on Operation ATLANTA moving from the staging area at Long Binh, to secure a regimental base camp area in the vicinity of Xuan Loc. Operation ATLANTA continued until 8 December, consisting of a series of search and clear, route security, area security and convoy escort missions.

The two most significant actions during ATLANTA, however, occurred as reactions to enemy attacks. On 21 November a convoy escorted by a platoon of 9 ACAV's was attacked along National Highway One by 2 Viet Cong Battalions. The immediate and aggressive reaction by the platoon against heavy odds and the fast reaction by the platoon's parent squadron resulted in the destruction and routing of the enemy, the capture of numerous weapons including recoilless rifles and the killing of 28 VC.

Though the enemy should have learned that the

Blackhorse Regiment strikes back hard and fast, he obviously did not. Late in the Afternoon of 2 December near Xuan Loc he attacked a convoy escorted by 2 tanks and 3 ACAV's. An estimated Viet Cong Regiment hit the small unit and the reaction was devastating. The tanks poured round after round of canister and machine gun fire into the jungle while the ACAV's delivered thousands of rounds of machine gun and grenade fire with deadly accuracy into the bewildered ranks of the VC. With the precision of a well oiled machine the troopers maneuvered their vehicles within the killing zone, rooting out the VC from their fortified positions as the reaction force was converging on the ambush site. The fighting continued as darkness fell and went on throughout the night as the remainder of the squadron closed in on the enemy with the support of tactical air, flare ships, and artillery. Morning light disclosed 99 dead Viet Cong. Numerous small arms were captured: a 75mm recoilless rifle, rocket launchers, a 60mm mortar, one heavy and three light machine guns, countless grenades and small arms ammunition and other military equipment. The casualty figures for the Regiment clearly demonstrated the value of armor protection. The Blackhorse had no KIA's, and only a few wounded, most only slightly. Both actions showed that even when struck in ambush, Armor can absorb the initial blow and return effective fire immediately.

But much had happened before Operation ATLANTA. The 11th Armored Cavalry began mounted combat operations just 20 days after closing into the Long Binh staging area. Vehicles and equipment were still arriving as convoy escort missions were executed in the latter part of September from the staging area to Xuan Loc without the loss of a single vehicle.

The Blackhorse proved soon after its arrival in Vietnam that armor could operate in areas hitherto believed inaccessible to tanks and personnel carriers. In mid-October an operation took place in the Nhon Trach area east of Saigon and north of Rung Sat. A large area was sealed off and search and clear operations initiated. At the culmination of the mission 13 VC KIA were accounted for by the Blackhorse Regiment, 200 tons of VC rice were returned to the people, and an area that had been a haven for the VC was opened for revolutionary development.

Operations to date have shown that the Regiment has the ability to move a tremendous amount of firepower in a relatively short period of time and arrive in fighting condition with men, ammunition,

food and fuel. To give an example, in November, one squadron was on a road clearing operation just south of Vo Dat. The squadron commander received a change of orders at 1010 hours in the morning. By 1100 hours, his first unit had terminated the old operation and had started to move west to join the ATTLEBORO Operation. By dark, the entire command had closed into the Lai Khe area, a road distance of 180 km, with all his vehicles, ammunition and men ready to fight. This was a force of about 1,000 men with over 200 vehicles of which more than half were tracked vehicles.

So varied have been the operations of the 11th Armored Cavalry that the Regiment has even engaged the Viet Cong on Vietnam's inland waterways. In December three sampans were sunk by armed helicopters of the Blackhorse flying in support of a route security mission.

The Blackhorse continues to search out the enemy. The total Viet Cong losses at the hands of the Regiment stand at 149 VC KIA, more than 400 VC captured or VC suspects detained, over 50 weapons ranging from small arms to mortars and recoilless rifles captured, and over 300 tons of rice returned to the people of Vietnam.

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THE
BLACK
HORSE



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The first large armor unit of the U. S. Army to serve in Vietnam, the 11th Armored Cavalry known as the "Blackhorse Regiment," has proved the adaptability of armor to irregular warfare. Under the command of Colonel William W. Cobb, the 11th Cavalry is the first U. S. Army unit to be equipped with the Armored Cavalry Assault Vehicle (ACAV), a tracked vehicle which mounts one 50 caliber and two M60 machineguns with armor shields. More than 300 of the regiment's 900 vehicles are ACAVs.



THE ARMOR PANEL

"An Umbrella"

By

BRIGADIER GENERAL ALBIN F. IRZYK
Assistant Commandant, The Armor School

"I look on you as . . . my principal advisor and representative for organization, doctrine, training, tactics and techniques of Armor. In this connection I desire that your views and recommendations reflect a consideration of user opinion worldwide."

Thus the Commanding General, United States Continental Army Command (CONARC), charged the Commandant of the Armor School in a January, 1962, letter. While CONARC Commanders and Armor School Commandants have since come and gone, the letter has never been rescinded. The mission statement to the Commandant of The Armor School is clear and succinct. At the same time, the mission given him is broad and far-reaching.

Although not spelled out in so many words, the CONARC Commander's letter virtually assigned the Commandant of The Armor School the task of serving as "Chief of Armor."

The Commandant of The Armor School wears a second important hat, that of Commanding General of The Armor Center, Fort Knox. Fortunately, located at Fort Knox are the commands, agencies, and boards which are most knowledgeable about, and which have direct impact on, "organization, doctrine, training, tactics and techniques of Armor." These include: The U. S. Army Armor School; U. S. Army Training Center, Armor; U. S. Army Combat Developments Command Armor Agency; U. S. Army Armor and Engineer Board; U. S. Army Maintenance Board; and the U. S. Army Human Research Unit.

The general responsibilities of each are:

U. S. ARMY ARMOR SCHOOL

Prepares selected officers and enlisted personnel for those duties which they may be called upon to perform in time of peace or war; develops techniques for application of approved doctrine in the operation and training of Armor, armored cavalry, and air cavalry units; and, participated in the de-

velopment and review of doctrine, organization and equipment relative to these units.

U. S. ARMY TRAINING CENTER, ARMOR

Plans, coordinates and conducts training for active Army replacements and reserve enlisted personnel. This training includes advanced individual training for both armor and reconnaissance personnel.

COMBAT DEVELOPMENTS COMMAND ARMOR AGENCY

Using approved concept studies as a basis, and in anticipation of the nature of future land warfare, develops the brigade and lower-level armor, armored cavalry, and air cavalry portions for each Army Concept Program. This includes the determination of the kinds of armor forces and materiel needed, and how these forces and materiel should be employed. To accomplish these basic missions the Armor Agency also:

Develops evaluation requirements and evaluates test results.

Formulates current doctrine and organizational structure for brigade armor elements.

Formulates and documents current doctrine and organizational structure for battalion and subordinate armor elements.

U. S. ARMY ARMOR AND ENGINEER BOARD

Plans, conducts, and reports on service tests, check tests, and confirmatory tests of armor and engineer items and Army automotive systems and materiel.

Participates, as directed, in the in-process review of designated items of equipment.

Assists in the preparation and review of Qualitative Military Requirements.

U. S. ARMY MAINTENANCE BOARD

Evaluates the maintenance and supply operations of the Army in the field to verify the adequacy of Army maintenance and supply systems and pro-

cedures. Recommends means to improve the effectiveness of field operations in support of Army materiel readiness requirements. To accomplish its mission the board evaluates organizational and direct support installation maintenance and supply procedures. It participates in or conducts studies and evaluations of supply and maintenance matters, personnel, training, organization, concepts and doctrine.

U. S. ARMY HUMAN RESEARCH UNIT

Conducts studies of and research on training, needs for training devices, and motivation and leadership, with primary emphasis on the needs of Armor.

Considered together, the functions enumerated above are indeed impressive. They cover an extremely broad spectrum. They range from the initial consideration given to the development of a piece of equipment, an organization or a doctrine all the way to a determination of the support required to sustain it in actual operations.

It would seem with all these commands, agencies, and boards, located at The Armor Center, that the Commandant of the Armor School would have directly responsive to him ample professional help—the help that he needs in meeting his “Chief of Armor” responsibilities.

But paradox of paradoxes—in his role of Commanding General of The Armor Center, only The Armor School and the U. S. Army Training Center, Armor, are under his command. The other boards and agencies are his “tenants” at Fort Knox, but they look elsewhere for their direction and instructions.

The U. S. Army Armor and Engineer Board is responsible to the Headquarters, Test and Evaluation Command of the Army Materiel Command. The higher headquarters of the Combat Developments Command Armor Agency is the Command Developments Command through the Combined Arms Group. The U. S. Army Maintenance Board is subordinate to the U. S. Army Supply and Maintenance Command of the Army Materiel Command and the higher headquarters of the U. S. Army Human Research unit is CONARC.

It is perfectly proper and natural that each of these separate organizations accomplish its assigned functions through its own chain of command. Each is beholden to a “master,” and must satisfy the demands of that “master.”

Yet, The Armor Center, which is known throughout the world as the “Home of U. S. Armor,” is expected by “the outside world” to speak on Armor matters with one voice. And the Commanding General of that Center, in his role which approximates that of “Chief of Armor,” is expected to be a focal point for studies, opinions, concepts, develop-

ments—in fact almost everything that pertains to Armor.

Because these commands, agencies and boards are all located at Fort Knox there is always a considerable amount of coordination and exchange of information. Sergeants at the Armor and Engineer Board working with a new piece of equipment swap notes with the sergeants in the Weapons and Automotive Departments of the Armor School. Action officers at the Combat Developments Command Armor Agency work closely with Armor School instructors. Commanders of the commands, agencies and boards at Fort Knox have been well aware of the responsibilities of their fellow commanders, and of those of the Commanding General of The Armor Center. Accordingly, there has periodically been a “seeking out of opinions,” an exchange of information, and progress reports on studies, projects and tests.

However, these exchanges have been informal, and have depended on the initiative and consideration of those involved.

It has been natural at times for these exchanges to suffer when local commanders were under pressures from their higher headquarters brought on by such things as heavy workloads and close deadlines.

Many months ago, Lieutenant General Andrew J. Boyle (then Major General and Commanding General of the Armor Center) concluded that there was a need to professionalize these exchanges and the coordination of the various elements collocated at Fort Knox without encroaching on the established chains of command. He believed that by developing some sort of an unofficial umbrella that could, when opened, place all the diverse activities at the Armor Center under one cover, he would be bringing them closer together. With such an umbrella all the agencies would be better informed about what the others were thinking and doing; the Commanding General of The Armor Center in his role as Commandant of The Armor School would be better informed and better equipped to be the focal point for the broad spectrum of Armor activities, and the likelihood of Fort Knox speaking as “one voice” would be greatly improved.

It was in November of 1964 that General Boyle developed his umbrella, for it was then that “The Armor Panel” was organized at Fort Knox. The Panel was established to provide a forum for the mutual exchange of information and ideas concerning both present-day problems and the future of Armor. Thus, the Panel could maintain a comprehensive picture of the current status of Armor, particularly with respect to doctrine, training, equipment, tactics and techniques.

The members of the Armor Panel are the Commanding General of The Armor Center, Comman-

dant of The Armor School; Assistant Commandant of The Armor School; Commanding General, U. S. Army Training Center, Armor; Commanding Officer, U. S. Army Combat Developments Command Armor Agency; President, U. S. Army Armor and Engineer Board; President, U. S. Army Maintenance Board; Chief, U. S. Army Armor Human Research Unit; Director of Instruction, The Armor School; Deputy Commander, U. S. Army Training Center, Armor; and the Deputy Post Commander, The Armor Center.

Since his assumption of command of the Armor Center, Major General A. D. Surles, Jr., has agreed wholeheartedly with the concept of "The Armor Panel," and has enthusiastically continued its functioning.

The Armor Panel meets at the call of the Commanding General of the Armor Center who serves as chairman. It meets on no set schedule, but only when it is evident that a meeting is advisable. It should be noted that numerous meetings have been held since the Panel's establishment.

Prior to a meeting of the Panel, members are queried for discussion topics and an agenda is developed. Included are presentations by Panel members or action officers, roundtable discussions of appropriate important matters, and the physical examination of experimental vehicles or pieces of equipment. These meetings are conducted in a formal manner. There are, occasionally, "on call" informal meetings held for a particular purpose. For example, one of these was held during a visit by the Assistant Secretary of Army, (Research and Development), who gave a progress report on the Main Battle Tank-70. Another such meeting was held beside a test model of the M60A1E1 tank. The single purpose was a thorough discussion of that tank.

The Armor Panel, in addition to attempting to develop a coordinated viewpoint, also tackles problem areas and endeavors to propose solutions.

One of its most recent achievements is worthy of mention. General Surles appointed a working committee composed of senior members of the elements represented on the Armor Panel to examine in detail problems relative to Armor, with emphasis on training. This working committee has held many meetings during which it identified and proposed appropriate action on 25 problems which adversely affect Armor's combat capability.

These were submitted to the Armor Panel and approved by that body. The 25 problems areas were then assigned priorities by the Panel and, one of the member agencies, boards or commands, was assigned action on each problem. In addition, specific participants from other boards or agencies to assist in these actions were recommended.

In order to extend the benefits of Panel proceed-

ings beyond Fort Knox, a letter which contains the essence and substance of matters in which the members of the Board as a group or individually are interested and which they consider important is produced at the Armor Center entitled "The Armor Center Letter." It is sent to selected individuals and units interested in Armor. Because of various requests, the letter is receiving progressively broader distribution. From this it can be assumed that The Armor Center is having considerable success in disseminating to the field armor matters of interest.

The Commanding General has stated in this letter that it is intended to publish the letter only when there is something worthwhile to present. In addition to disseminating up-to-date information on Armor developments, it is hoped that the letter will stimulate the submission of valuable ideas and comments to The Armor Center from its recipients. To date, several fine and helpful letters have been received from senior commanders in the field.

With the establishment of The Armor Panel and the requirement for the preparation of "The Armor Center Letter," it became evident that The Armor Center organization did not provide a position to which responsibilities for these functions could be assigned. An evaluation of the functions to be performed by the Panel indicated the necessity for the establishment of a separate office to coordinate its affairs. A "Secretariat for Armor" was established in October, 1965. This office is authorized one officer and one enlisted administrative specialist. These spaces are currently assigned to the Secretary of the General Staff Section, The Armor Center. However, the Armor Secretariat is physically located at The Armor School and functions under the direct supervision of the Assistant Commandant and the Director of Instruction.

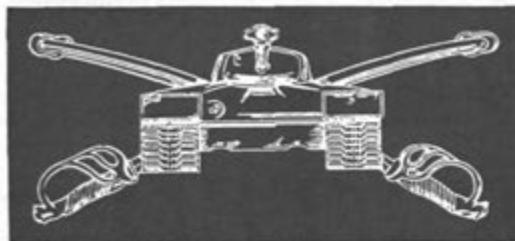
This article is being written on the second anniversary of the Armor Panel. There is little question that it is here to stay.

Armor is on the threshold of marked changes in materiel, organization and employment doctrine. Just ahead are the General Sheridan, the 1970 family Main Battle Tank and an expanding role for air cavalry.

The months ahead will be filled with stimulating challenges. Unquestionably, the Armor Panel will continue to provide an effective "umbrella" under which all Armor activities at The Armor Center will be coordinated. The very real advantages of this coordination will reach commanders in the field through "The Armor Center Letter." In turn their comments and thoughts will receive the full consideration of the Panel.

Thus can the Commandant of The Armor School accomplish the mission assigned by the Commanding General, CONARC with great benefit to Armor as a whole.

Notes From Armor Branch Chief



On 23 Jan 67 Department of Army announced the names of those officers selected to attend the Senior Service Colleges during FY 68. The following Armor officers have been selected to attend those colleges as indicated.

ARMY WAR COLLEGE (Aug 67–Jun 68)

LTC Raymond H. Beaty
LTC Richard N. Bundy
LTC John R. Byers
LTC William W. Deloach
LTC Thomas B. De Ramus
LTC Angelo Grills
LTC (P) Kibbey M. Horne
LTC John J. McCuen
LTC Claude O. Shell Jr.
COL James C. Smith
LTC George P. Tilson
LTC Frederick C. Turner
LTC George S. Webb Jr.
LTC Dan H. Williamson

NATIONAL WAR COLLEGE (Aug 67–May 68)

LTC Richard G. Beckner
LTC Herman T. Boland Jr.

LTC Wallace H. Nutting
LTC Roderick D. Renick
LTC Vancourt Wilkins

INDUSTRIAL COLLEGE OF THE ARMED FORCES (Aug 67–Jun 68)

LTC (P) Alfred B. Hale
LTC Linwood B. Mather
LTC Jack P. Matteson
LTC Robert W. Noce

NAVAL WAR COLLEGE (Aug 67–Jun 68)

LTC Lee T. Doyle
LTC Louis B. Martin

AIR FORCE WAR COLLEGE (Aug 67–Jun 68)

LTC John R. Hendry
LTC John W. McEnery

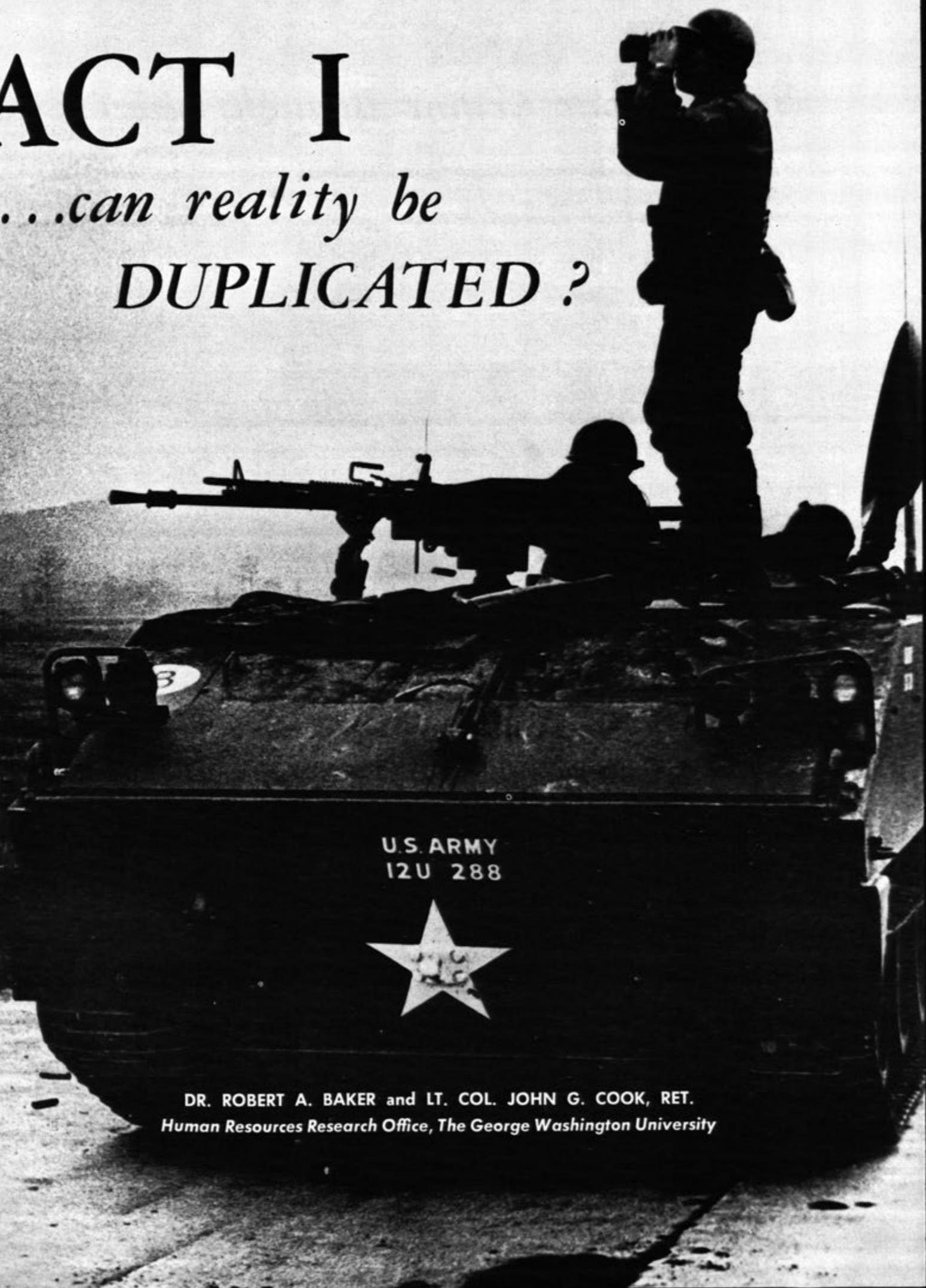
ADVANCE CLASS INFO—NOT CALL US—WE'LL CALL YOU

The Armor School is currently programing three, nine months advance classes for FY 68, beginning 5 July, 5 September 1967, and 10 January 1968. The input to each class will be about 90 Armor captains. A world-wide message has already announced the July course; the September list will be published in April. You may rest assured that all qualified and available officers will be selected; therefore, correspondence to Branch concerning class selection is not required.

ACT I

...can reality be

DUPLICATED ?



DR. ROBERT A. BAKER and LT. COL. JOHN G. COOK, RET.
Human Resources Research Office, The George Washington University

Commanders responsible for the field training of tactical units have often pointed out the difficulties of conducting effective combat training for armored cavalry personnel, the need for improving both the amount and the quality of armored cavalry training, and the importance of developing for these units a practical and meaningful standard of combat readiness. Because of its flexibility, firepower, and sustained fighting capability armored cavalry is not only the first line of defense in the Seventh Army but cavalry elements are also in combat daily in Viet Nam.

The Armored Cavalry organization is not only superbly suited for certain types of combat missions but it is also unique in certain aspects of its organization, mission, and employment.

This very same uniqueness and the very same factors that account for the cavalry regiment's combat efficiency, however, also create some unique training problems and place some unusual burdens on the commander's shoulders.

Mention of a few of the singular aspects of armored cavalry units will bear this out:

1. Within the basic fighting unit—the Armored Cavalry Platoon—there are 14 types of jobs representing 5 MOS categories and covering 16 separate MOS job descriptions. This wide variety of assignments thus complicates all of the normal training problems.

2. This platoon, consists of a scout section made up of two scout squads in M114 vehicles, a tank section consisting of 3 tanks, an infantry squad divided into 2 fire teams in the M113 APC, a support squad equipped with a 4.2 inch mortar, and the Platoon Headquarters also in an M114 vehicle. Thus, in one platoon we have most of the Army's combat elements—Infantry, Artillery, and Armor—all tied together by a small but effective communications network. The Armored Cavalry Platoon is, accordingly, the smallest combined-arms team in the U. S. Army. Since the armored cavalry platoon is composed of five diverse types of sections or elements, the problems of command and control are rather unusual and demanding.

3. Because of the missions typically assigned the Armored Cavalry units and the diversity of weapons and personnel, the range and terrain requirements for tactical training of armored cavalry units are often greater than for any other type of line combat elements.

4. Next, enlisted personnel reporting to armored cavalry units, though adequately trained for service as a tanker or rifleman, have seldom received the degree of combined arms training essential in an armored cavalry unit. Further, few replacements have been given any training as scouts.

5. Finally, nearly all of the Armored Cavalry Platoons are commanded by young officers whose

training and practical experience in combined arms operations is normally somewhat limited.

Therefore, in full recognition of these problems and the training difficulties they cause, Headquarters, USCONARC in 1963, established a research requirement for Task RECON, "The Evaluation and Improvement of Armored Cavalry Training," and assigned the research mission to HumRRO Division No. 2, Armor Human Research Unit at Fort Knox.

The mission of Task RECON was to develop sound, reliable and objective training program guidance, as well as training methods, instructional aids and techniques and management procedures for the improvement of the overall proficiency of the Armored Cavalry Platoon, i.e. for both the individual soldier as well as the squad, section and platoon skills.

In carrying out this mission an increased emphasis was placed on the development of improved training methodology and a mission-type orientation was kept throughout the conduct of the research. Such an orientation, it was believed, would result in the production of the maximum number of needed products designed to meet current and future Army needs.

The research began with interviews of experienced Armored Cavalry Unit Commanders, as well as staff and line personnel, in all of the Armored Cavalry regiments in Europe—the 2nd, 11th, and 14th, and the 3rd in CONUS, as well as several of the Cavalry squadrons organic to Infantry Divisions.

In general, the unit commanders reported that lack of adequate training areas, excessive turnover of personnel, and the need for better trained junior officers were their most critical training problems. In addition, they noted that many of the critical duties and skills peculiar to the personnel of the Armored Cavalry Platoon had not been spelled out in enough detail to permit the unit commanders to readily pinpoint training deficiencies and thus more efficiently assign the priorities of training time and training emphasis.

Using these comments as a guide the research team developed a set of job requirements and combat criteria known as *The Armored Cavalry Platoon Combat Readiness Check*. The development of this test has been described in detail in an earlier issue of this magazine (*ARMOR*, Jan.-Feb. 1967 page 18). When the combat job requirements had been determined the research team then looked for ways and means of overcoming some of the training difficulties facing the unit commander—specifically, ways to meet the need for better trained junior officers and NCO's and ways and means of overcoming the problems caused by a shortage of suitable training areas.

DEVELOPMENT OF THE ARMORED CAVALRY PLATOON TRAINER

In combat training situations where it is either impossible to participate directly or where it is too costly to provide on-the-job experience, the Army has frequently resorted to the use of war games. Although the training value of war games has long been recognized, relatively few attempts have been made to develop such games for use at the platoon or squad levels. Two recent exceptions have been the Miniature Armor Battlefield facility for the tank platoon, (described in the September-October 1960 issue of *ARMOR*) and the Armor Combat Decisions Game, also for the tank platoon (described in the January-February 1962 issue of *ARMOR*).

Therefore, in an attempt to meet the needs of the Armored Cavalry Troops, and to provide a compact, inexpensive yet effective technique for the conduct of reconnaissance training and the various armored cavalry platoon missions, the earlier concepts were modified and a new technique of terrain visualization was designed.

This technique, along with a new training program designed around the detailed job requirements and combat skills, and with accompanying instructional aids, tests, and supporting materiel was called the *Armored Cavalry Trainer (ACT)*.

In brief, this "training package" is a set of comprehensive lesson plans covering the critical combat skills which are carried out in "war game" fashion on a large viewing screen by remotely controlled projector units which superimpose small images of the platoon vehicles on a map display. These images are then independently moved, under the operator's precise control, over the surface of the projected map display.

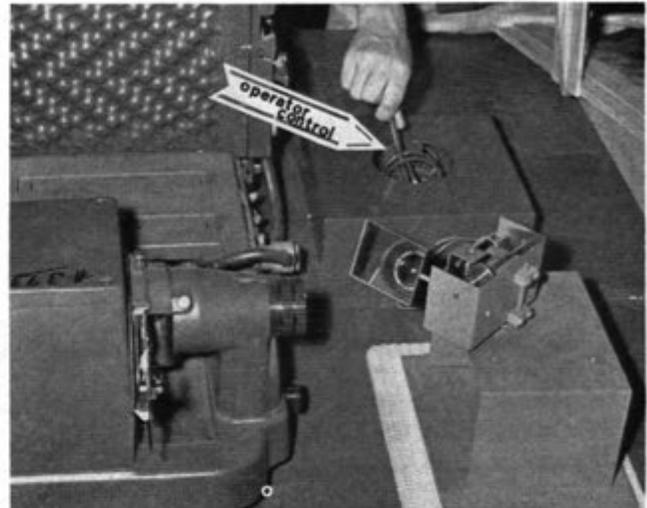
The Armored Cavalry Trainer is made up of the following five components:

1. A large motion picture or viewing screen on which enlarged map section transparencies are projected.
2. Partitioned booths (representing vehicles) containing chairs and tables, standard military maps, acetate, and grease pencils for the personnel who man the vehicles in the platoon.
3. Motorized projector units, individually controlled by the trainees, which superimpose a small image of any vehicle in the platoon on the enlarged map display. (See Fig. 1) Each of the vehicle symbols is geared so that it can be moved across the map display in the same speed-ratio that the actual wheel or track vehicle would move across real terrain. Symbols for the wheeled vehicles are geared to move slightly faster than the tracks.
4. The standard radio equipment normally found in each vehicle in the platoon, mounted in the booths and controlled and operated by members of the platoon.

5. Additional motorized projector units, controlled by support personnel and used to represent friendly supporting artillery and nuclear weapons, aggressor vehicles and personnel etc.

The general arrangement of the equipment and personnel is shown in Figures 2 and 3

Figure 1



Close-up of the motorized projector unit and vehicle symbol control mechanism. The symbol is on a 35mm slide in the projector on the left. The projector image is reflected on to a mirror which reflects the image on to the vertically mounted map display. Movement of the mirror is controlled in the vertical and horizontal planes by means of geared motors. The motors in turn are regulated by rheostats which control the speed of the geared motors. The operator controls the symbol, i.e., varies the current through the rheostats to the motors, by means of the joystick shown in the right center of the picture.

OPERATION AND USE OF THE ARMORED CAVALRY TRAINER

Utilizing the motorized projector units and standard series radios the cavalry platoon carries out a series of specially prepared tactical training exercises in free-play, two-sided war-game fashion. Five training exercises are designed to teach map reading, communications procedure, principles of movement, armored cavalry tactics, and principles of command and control. These exercises, prepared with the aid of the Command and Staff Department of the USA Armor School, are graded in difficulty from simple to complex. Not only are they combat realistic; they also provide freedom of tactical choice and freedom for command decision. Each exercise stresses certain general principles of cavalry operations and requires an optimal solution. The exercises also cover the following aspects of cavalry operations:

- Problem 1. (a) Route Reconnaissance Operations

- (b) Establishment of Blocking Positions
- Problem 2. (a) Advance Guard Operations
- (b) Screening Force Operations
- (c) Withdrawal Through Rearward Positions
- (d) Occupation of a Delay Position
- Problem 3. (a) Zone Reconnaissance Operations
- (b) Use of Phase Lines, Boundaries, and Contact Points
- Problem 4. (a) Mobile Flank Guard Operations
- Problem 5. (a) Delaying Action Operations

For each problem, an instructor's check list is provided and, for some of the problems, prearranged or "canned" messages are supplied for the use of the appropriate platoon members to provide realism and continuity of action. For those problems involving aggressor activity, two forms of the exercise are provided—one with the aggressor *imminent* and another with the aggressor in an active role.

The five exercises are designed so that the program may be administered to an intact cavalry platoon in a normal five-day week. For each tactical exercise, map sections, overlays, and prearranged messages are provided for the use of each trainee, the instructor, and the support personnel.

In conducting the training exercises on the ACT it is assumed that user personnel are generally familiar with the cavalry platoon and its organization, mission, and employment. If this is not the case such instruction should precede the use of these exercises and the trainer.

Before the typical exercise begins and before the trainees enter the booths in front of the screen, support personnel should arrange and position all of the map slides to be used in the problem and should then assign positions to the aggressor units and locate the targets and areas for all the supporting artillery. Next, the instructor has the trainees turn on their motorized projector units and move their vehicle symbols over the map display. This is done in order to familiarize the trainees with the capabilities and limitations of the equipment. After the communication equipment is checked, the trainees then report to the instructor. He, in turn, distributes copies of the maps or map sections and issues the Oral Operations Order to the platoon leader. Then the platoon leader works out his plan of procedure and briefs his squad and section leaders on the conduct of the mission. After this the platoon members don their head and chest sets and move their vehicle symbols across the map display to the designated assembly area. When the vehicles are in the proper assembly area positions, the instructor or-

ders the platoon leader to open the net and check in the vehicles. When all are checked the platoon leader requests permission to move out. After receiving permission from his superior, he gives the movement order to the platoon and they carry out the mission to the best of their ability.

During each exercise the instructor monitors all movement of the vehicle symbols and, if any vehicle attempts to traverse impassable terrain due to failure to read the map properly, the instructor stops the movement and calls attention to the error. After the mistake is corrected the problem is resumed.

The instructor also controls the movements of the aggressor and the delivery of both the aggressor artillery and the fire of the supporting artillery.

After each problem is completed, the instructor holds an extensive critique discussing and reviewing all of the important tactical principles and concepts brought out in the problem.

To operate and maintain the ACT, one instructor, two assistant instructors, and a field radio repairman (MOS 296.00) or an armor communications specialist (MOS 312 or 296) are needed.

To assist the user in evaluating the effectiveness of the training given on the ACT, two proficiency tests have also been constructed. These two criteria, (1) *The Armored Cavalry Platoon Evaluation Problem*, and (2) *The Armored Cavalry Platoon Knowledge Test*, were specifically constructed with the aid of the Armor School to provide quantitative measures of proficiency in Armored Cavalry operations at the platoon level.

The first of these measures *The ACP Evaluation Problem*, a tactical exercise conducted on the Armored Cavalry Trainer, is essentially a final test or examination for all members of the platoon.

The second measure, *The ACP Knowledge Test*, is a comprehensive written test covering armored cavalry tactics, communications, and map reading. Specific tests for numerous aspects of squad, section, and platoon operations are provided. Each of the subtests is based on instruction given at the Armor School and on the training exercises conducted on the Armored Cavalry Trainer.

FIELD EVALUATION OF THE ACT

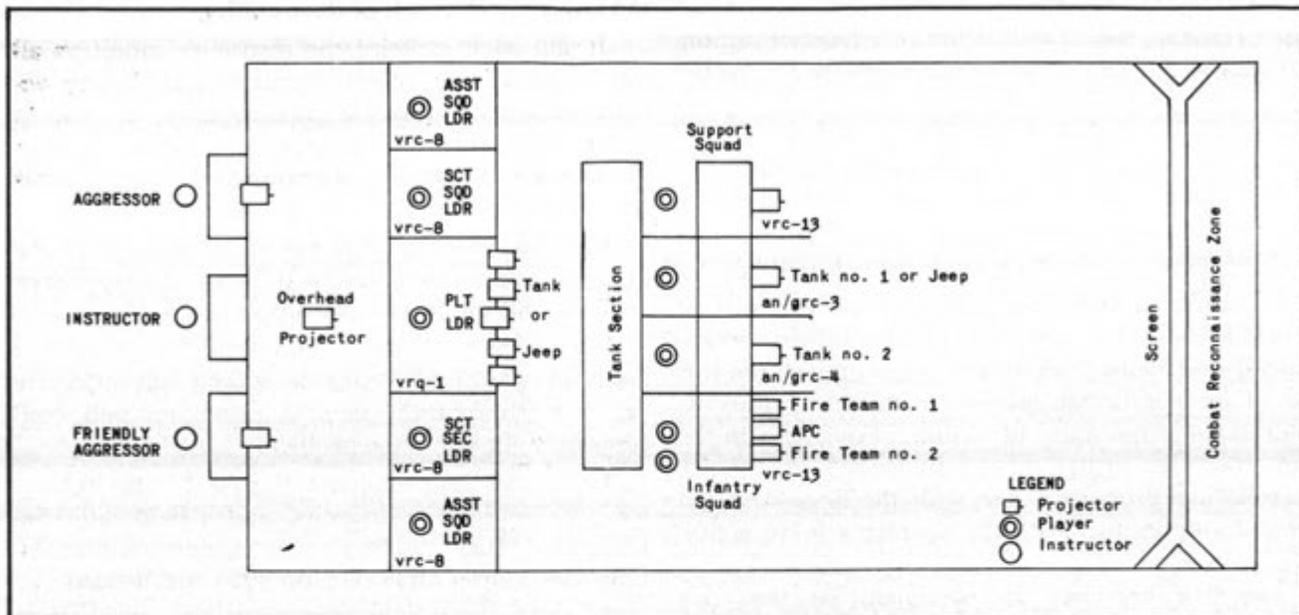
After the research personnel had finished their own evaluation of the trainer, the entire training package was turned over to the 1st Reconnaissance Squadron, 1st Training Brigade, USATCA, Fort Knox for further evaluation. For a six-month period in FY 1965 seven brigade instructors used the ACT for the conduct of reconnaissance operations and scout training. Seven different eight-hour blocks of instruction were administered to a total of 168 trainees. After each eight-hour block of training, each instructor made an evaluation of the ACT

on the basis of their experience in conducting scout training with the device and without it.

When the results of these questionnaires were

tallied not only were the instructor's opinions of the trainer highly favorable but they also unanimously recommended adoption of the training system be-

Figure 2



THE ARMORED CAVALRY TRAINER: Arrangement of Personnel and Equipment.

Figure 3



View of Armored Cavalry Personnel During Training

cause in their opinion, the ACT provided more and better training for less money in less time and with fewer instructors.

To provide potential users with general guidance for the construction, operation, and maintenance of the ACT and to furnish an overview of the requirements and procedures for its effective utilization task RECON personnel then prepared a User Manual.²

Following a review of this entire training package HQUSCONARC approved the Armored Cavalry Trainer for use in Army training particularly USAR and ARNG and has directed that all of the components and parts be fabricated locally by the training aids centers and that copies of the user manual be stocked and issued as required.

SUGGESTIONS FOR ADDITIONAL USAGE

Although the ACT was designed as a training method for the intact cavalry platoon undergoing tactical training at the unit level, it will satisfy other training requirements as well.

Limitations of training areas, support equipment, and support personnel plus the costliness of field training make it difficult to train the junior officers and NCOs. The ACT, therefore, can be used in the schools, training centers, and in the units for this purpose. The method can also be used to augment the training of rifle and support squads and of tank and scout sections.

By modifying some of the exercises slightly ACT can also be effectively used at the unit level to integrate and cross-train the squads and sections within a given platoon.

By employing map displays which are smaller in scale and by substituting aircraft, company, battalion, regiment, or division symbols for the vehicle symbols, the ACT can also be used for war gaming and tactical maneuvers conducted by larger units. Although no CPX's or higher unit level exercises have been prepared for this specific purpose, it is believed that many exercises currently in use are readily adaptable to the ACT concept.

Should local commanders wish to duplicate local terrain and carry out their own field exercises or problems, or to prepare additional exercises for use on the trainer, then maps, overlays, and transparencies should be prepared and distributed. If there are already scenarios for the field problems these are easily adapted to the ACT requirements using the five tactical exercises in the User Manual as a guide.

A Note of Caution.

Although training on the ACT will improve the field performance of cavalry platoon personnel, *by no means* should the system be regarded as a substitute for all classroom instruction, or for all field training and realistic combat exercises. Previous classroom instruction and additional field work are

both needed to guarantee maximum operational efficiency. The ACT does provide essential transitional training, which not only serves to bridge the gap between the classroom and the field but also makes field training more meaningful and more effective.

It should be emphasized that the Armored Cavalry Trainer was *not* designed to teach individual vehicle and weapon skills to various platoon members. These and other such skills are still best taught in the Advanced Individual Training (AIT) or Basic Unit (BUT) phases of the training program. The ACT is, primarily, a tactical training method specifically designed for the platoon leader, the platoon sergeant, and the squad and section leaders working together as a coordinated team. It is in this light that its utility and training effectiveness should be judged.

Armor command personnel interested in using training method can obtain additional information and support from their local Training Aids Center or from the Chief, U. S. Army Armor Human Research Unit, Fort Knox, Kentucky 40121.

FOOTNOTES

¹The research reported in this paper was performed by HumRRO Division No. 2 (Armor), Fort Knox, Kentucky, under Department of the Army contract with The George Washington University. The contents of this paper do not necessarily represent the official opinion of the Department of the Army.

²This manual has since been published as USCONARC Pamphlet No. 350-4, *Education and Training User Manual for DVC 17-15 Armored Cavalry Trainer (ACT)* July 1965, HQUSCONARC Fort Monroe, Virginia.

AUTHOR'S NOTE

The Armored Cavalry Trainer (ACT) was designed to supplement existing facilities and to provide an alternate method of training armored cavalry platoons in tactical operations.

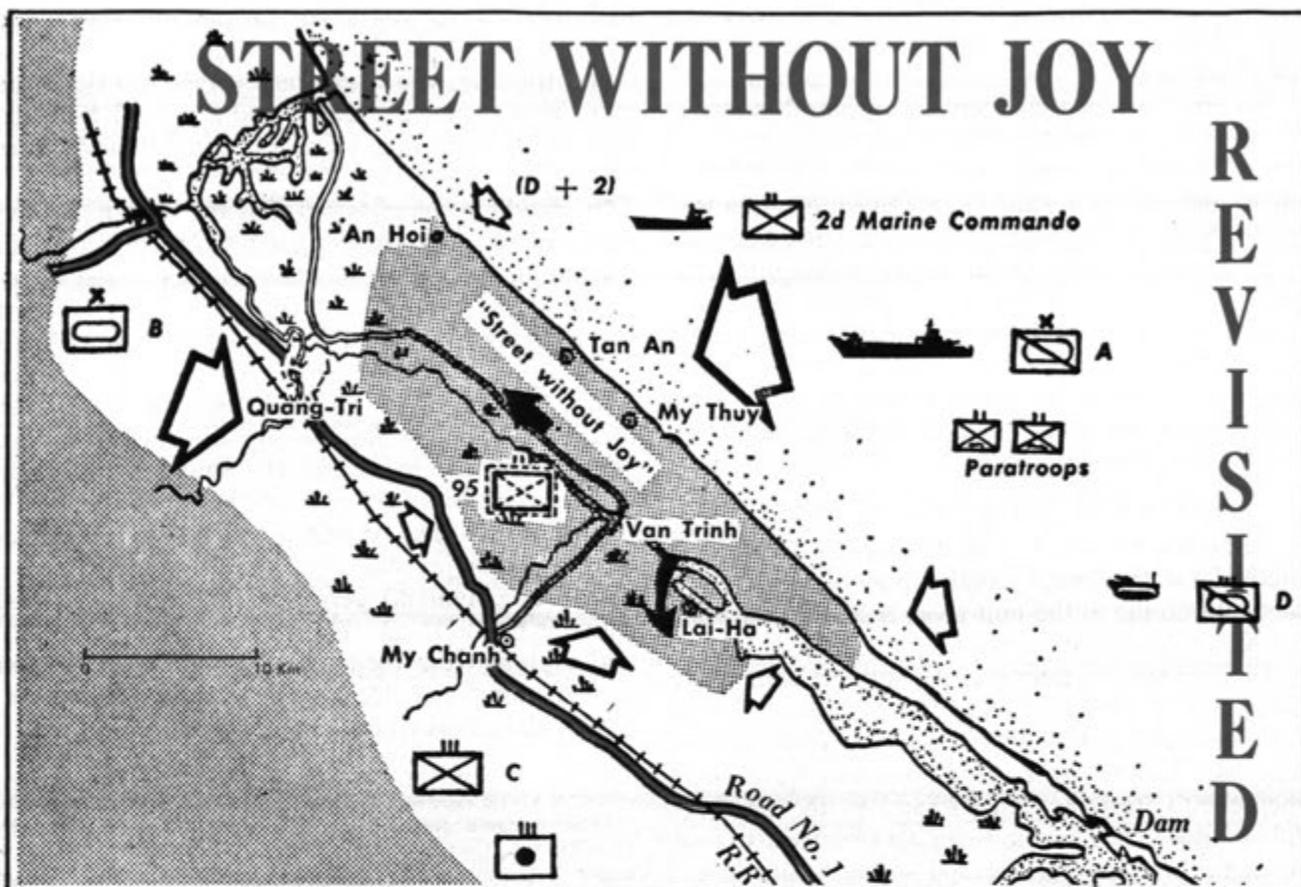
The ACT is an indoor tactical war game consisting of these components:

1. A large viewing screen on which enlarged map sections are projected.
2. Separate booths for the personnel who man each individual vehicle in the platoon.
3. Remotely controlled projector units which throw on the projected map sections small silhouettes which represent the platoon vehicles.
4. Standard radio equipment used in the armored cavalry platoon net.
5. Remotely controlled projector units which throw on the screen silhouettes which represent friendly support artillery, aggressor vehicles, personnel, etc.

Accompanying the ACT is a set of standardized training exercises which provide instruction in the principal phases of armored cavalry tactical operations. The device, suitable for classroom use, and the accompanying training exercises, are a means of providing needed additional training in map reading, terrain appreciation and analysis, command and control, team coordination, and combat tactics.

This training method was prepared to provide potential users general guidance for the construction, operation, and maintenance of the ACT, and an overview of the requirements and procedures for its effective utilization.

Additional information may be obtained from the Military Chief, USA Armor Human Research Unit, Fort Knox, Kentucky.



From STREET WITHOUT JOY, Stackpole Books, Harrisburg, Pa.

By CAPTAIN EDWARD J. LAURANCE

The words *Street Without Joy* from the title of Dr. Bernard Fall's book on the French-Indochina War (Stackpole 1961) ring very familiar to anyone concerned with the struggle in Viet Nam. It was in this coastal area, between the cities of Quang Tri and Hue, that one of the most frustrating operations of the Indochina War took place. A study of what happened there, based on Dr. Fall's account in *Street Without Joy* in contrast with what is taking place there today, reveals the very definite progress that has been made toward defeating the insurgents who have long infested the area.

THE FRENCH EFFORT—1953

On 28 July 1953 the French Army in Indochina had assembled a great number of troops for what they hoped would be a decisive victory along the Street Without Joy. The area had long been a haven

for the Viet Minh 95th Regiment, whose harrassing actions along Highway 1 severely hampered operations of the French Army in the area.

An impressive force of over 30 battalions, including the equivalent of two armored regiments and two artillery regiments, were utilized in the operation. Equipment varied from the Crab (An amphibious cargo carrier), and the Alligator (Tracked Landing Vehicle) to 155mm howitzers and M-24 tanks. (FIGURE 1)

The basic plan was a four-pronged thrust into the area, with the goal being an encirclement and gradual closing of the ring to trap the enemy force. Groups A and D were to land on the coast while B and C proceeded overland from secure bases along Highway 1. Two airborne battalions remained in reserve. (See above map)

The bulk of the enemy resistance was concentrated in the "Street" itself, a long, narrow strip of villages very thick with undergrowth and heavily fortified. To the southwest of this strip are rice paddies and tidal swampland. To the coastal side many graves hidden among sand dunes appear first, followed by a 2-3 kilometer wide stretch of sand that is very trafficable.

The coast itself is characterized by another row of scattered fishing villages, lightly populated but ideal

Captain Edward J. Laurance, Armor, was graduated from the USMA in June 1960. Following attendance at the Armor Officer Orientation Course and the Ranger and Airborne Schools he served with both the 14th Armored Cavalry Regiment and the 1st Armored Division. In January 1967, Captain Laurance completed a tour of duty in Vietnam and is now attending the Associate Armor Officer Career Course at Fort Knox.



Dismounted ARVN troops clear the village of Dong Que on Street Without Joy

for the hiding of insurgent forces. The French hoped to overcome these many obstacles by an overwhelming superiority in numbers and the use of armored vehicles.

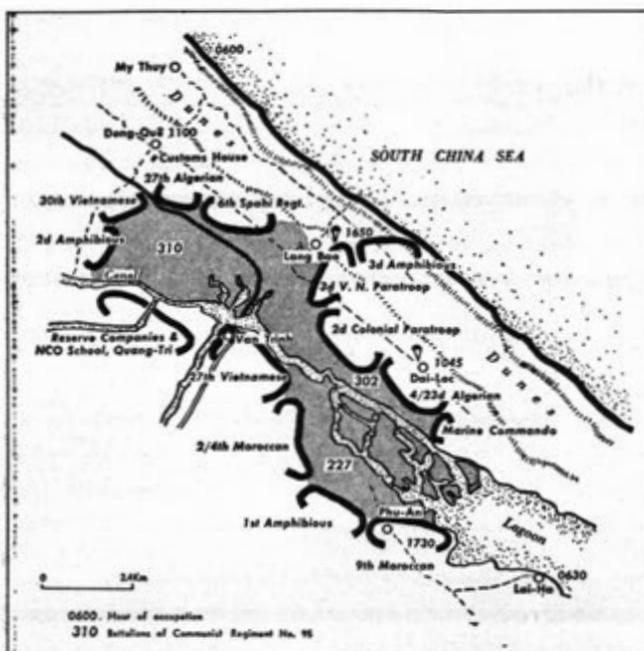
The Landing—1953

The operation began with the landing of the 3rd Amphibious Group at 0600 on 28 July, between the coastal villages of Tan An and My Thuy. The operation was plagued by the many problems inherent in a large-scale effort—lack of coordination, vehicle breakdowns and communication difficulties. But by 0830 all units had reached their lines of departure and the methodical process of finding the Viet Minh began. Village after village was first surrounded and then searched thoroughly, with most of the young men being detained as suspects.

Around 1100, in the village of Dong Que, a vicious fire-fight erupted at very close range between the Viet Minh defenders and the Moroccan tanks and infantry. The infantry in an arc around the village while the tanks took up positions off the road. Artillery was on target within minutes and soon the village began to disintegrate, climaxed by a secondary explosion. The Viet Minh, using civilians as a shield, tried to break out but the infantry had done its encircling job well, and by 1300, the 2nd Company, 310 Battalion, 95th Regiment, Viet Nam Peoples Army, had been defeated. But not before its heroic stand had allowed the bulk of the 95th to withdraw to the south.

<i>GROUPMENT A</i>	<i>GROUPMENT C</i>
Mobile Group 14	9th Moroccan Tabor
3rd Amphibious Group	27th V.N. Inf Bn
2d Marine Commando	2d Bn, 4th Moroccan
2d Bn, 1st Colonial	Rifle Regt
Parachute Regt	1st Commando
3d Vietnamese	Tank Plat, Moroccan
Parachute Bn	Colonials
	Armored Patrol Boat
<i>GROUPMENT B</i>	Platoon
Mobile Group Central	LCM Platoon
Viet Nam	
6th Moroccan Spahi	<i>GROUPMENT D</i>
2d Amphibious Group	3rd Bn 3rd Algerian
Tank Plat, 1st Foreign	Rifles
Legion	7th Amphibious Group
2 Inf Co.s, Quang Tri	Commando Group
Mil Post	
	<i>SUPPORT UNITS</i>
	Tonkinese Arty Group
	1st Group, 69th African Arty
	2 VN Batteries
	1 155m How Battery

Figure 1



From STREET WITHOUT JOY, Stackpole Books, Harrisburg, Pa.

Figure 2

As the ring of French troops closed in, contact was gained at Phu An, in the southeast, and finally overcome by 1730. During the day both airborne battalions had been committed, with a great deal of men and equipment lost due to high surface winds. At nightfall, French dispositions were as depicted in FIGURE 2.

After an uneventful night, the French shut the jaws on the trap. Except for suspects, very little enemy contact occurred, and by 1300, Groups A and D, along with parts of Group B, had pushed in to the Van Trinh canal to link up with Group C coming in from Highway 1. Human chains, mine detectors and bloodhounds had found 51 rifles, 8 sub-machine guns, 2 mortars and 5 BARs. The French suffered 17 KIA and 100 WIA, while the enemy lost 182 KIA and 387 captured. It will never be known how many of the enemy losses were hard-core Viet Minh or simply local guerrillas and innocent civilian victims of Communist indoctrination and occupation. Once again, the numerically inferior Viet Minh had slipped away from their pursuers to fight again.



An M113 from an ARVN APC Troop moves out across the flat, sandy terrain between the Street Without Joy and the coastal villages.

THE VIETNAMESE EFFORT—1966

Today, The Street Without Joy remains a haven for the insurgent, who now calls himself the Viet Cong. The terrain is unchanged. What has changed is the approach to the problem of insurgency, and the employment of modern equipment in counter-insurgency operations, particularly the use of the firepower and mobility of armored units. The operation described below is typical of operations that ARVN now conducts in the coastal area on a continuing basis.

The Plan

Headquarters, 1st ARVN Division, began planning for Operation on the night of D Day minus 2, and on D Day minus 1 at 1500, orders were issued to the commanders involved. The basic plan was to split an area of VC activity into 3 zones of action, with a task force in each zone conducting a search and destroy operation. VC contacts with local Popular Force units occur almost daily in the area and a VC battalion was suspected to be in the area. Each task force was assigned an observation aircraft and FACs were airborne to handle air strike requests. (FIGURE 3)

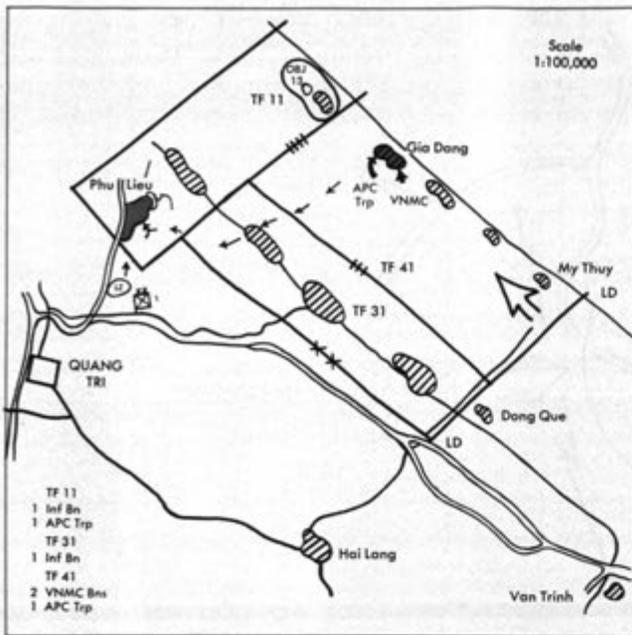


Figure 3



The dunes and graves just east of the Street Without Joy



M113s move across the dry rice paddies just to the west of the Street Without Joy

Contact Regained—Forces Shift

A Popular Forces soldier was going home to his village of Phu Lieu, just 8 kilometers northeast of Quang Tri, when he contacted civilians coming out of the village saying that a strong force of VC had entered the village during the night. Division HQ reacted immediately. An RF company was moved into a blocking position to the west. The 2 VN Marine battalions were helilifted to an LZ south of the objective, and the APC troop from Task Force 41 linked up with the helilifted troops. From 1500 to 1600, air strikes and artillery covered the objec-

tive, and then the attack commenced. The VC again opened fire at close range, pinning down the marines and forcing the APCs to assault three times before the VC defenders started to fall back.

While the VC were falling back and reorganizing, Task Force 11 was ordered to attack from the north, encircling the VC force. The attack was so quickly executed that the defenders were killed or captured while trying to reorient their weapons. The battle continued throughout the night with the aid of flare ships, the only escape being the river. Many tried other routes of escape but were stopped by the encircling forces. (FIGURE 4)



M113s assault village on Street Without Joy.

The Results—1966

At dawn the mopping up began. The final ARVN losses were 37 KIA, 6 from the APC troops, and 104 WIA, 33 from the APC troops. The VC lost 154 KIA, 38 captured, 60 suspects, 58 individual weapons, 12 automatic weapons, 2 mortars and 2 antitank weapons. These were confirmed losses, with the actual total undoubtedly much higher. An ARVN force of 4 battalions and 2 APC troops, aided by artillery and air strikes, had dealt this VC force a severe blow, and yet remained ready to react against the enemy again if necessary.

The above example is not an isolated one, as operations such as this are taking place constantly in the coastal area. It demonstrates what can be accomplished during operations characterized by minimum planning time, minimum reaction time, immediate use of current intelligence and maximum use of mobile forces.

Of special interest is the employment of armor in this area. The M113 was utilized in areas where it could move and employ its firepower and shock action. The APCs were positioned to allow maximum visibility, and thus cover a wide area without physically occupying the terrain. The committing of Task Force 11, with its APC troop, was a striking example of shock action, catching the enemy completely by surprise.

THE DIFFERENCE

What has changed in The Street Without Joy? Certainly not the enemy or the terrain he operates in. And no one can deny that the French had many superior fighting units in the area. But a definite change has occurred.

The first reason for the change is modern combat equipment. The M113 APC can negotiate terrain that the Crabs and Alligators couldn't. And there is no comparison in either air power or air mobility. Also, due to increasing government influence in some areas, intelligence has improved. However, the biggest factor in the change has been the realization that counterinsurgency is a full-time operation, that one big sweep will be only a temporary success at best. Frequent small sized operations, utilizing all the firepower and mobility available, are keeping the VC off balance and constantly on the move. Peace is still not a reality in this area. However, government forces are headed in the right direction toward their goal of eliminating the insurgent, the first step in the making of a better life for the war-weary people of the Street Without Joy.

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1966

The Annual Report of the Editor-Secretary-Treasurer

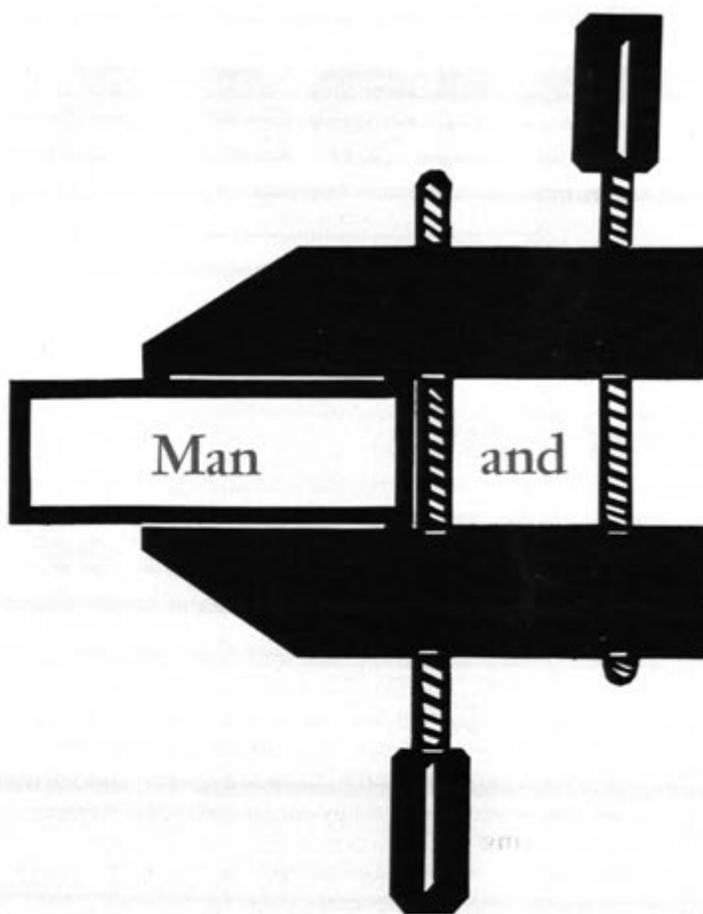
Shown below is the financial statement for the year ending 31 December 1966. We have also shown the financial report for the period ending 31 December 1965 for comparison purposes.

It should be noted that there was a slight increase in overall receipts for the Association this year. The cost of moving the Association offices and purchase of new equipment and refurbishing some of the office furniture reduced the amount of money that could be invested.

Once again the renewal rate has gone up a few percentage points, and this is gratifying. However, there remains a large potential from which the Association can obtain members. Only about thirty-two percent of the Armor officers on active duty are members of the Association. The need for the Association remains greater than ever today and its growth must be nurtured by all who are members of this noble branch.

FINANCIAL REPORT OF THE UNITED STATES ARMOR ASSOCIATION

CASH RECEIPTS & DISBURSEMENTS For the Year Ending 31 December 1965			For the Year Ending 31 December 1966 CASH RECEIPTS & DISBURSEMENTS		
Department	Receipts	Disbursements	Department	Receipts	Disbursements
ARMOR Magazine	\$37,122.99	\$23,148.22	ARMOR Magazine	\$36,050.90	\$23,000.79
Book Department	7,002.50	4,934.91	Book Department	8,112.35	5,178.80
Income from Investments/stocks plus purchases/inv	610.20	35.67	Income from Investments/stocks purchased	778.70	31.93
D. C. Sales Tax	.91	.46	D. C. Sales Tax	.17	.63
D. C. Personal Property Tax		79.51	D. C. Personal Property Tax		86.16
Postage & mailing permit		2,389.21	Postage & mailing permit		1,954.95
Office supplies/printing		2,578.70	Office supplies/printing	14.95	2,919.34
Telephone		548.65	Telephone		615.06
Rent		2,640.00	Rent		3,592.92
Maintenance & equipment rental		106.29	Maintenance & equipment rental		527.96
Travel allowance		1,385.00	Travel allowance		1,300.00
Travel expense		57.00	Travel expense		74.00
Express/freight		88.77	Express/freight		44.32
Executive Council & Editor's Expense		651.20	Executive Council & Editor's Expense	93.46	827.17
Furniture & Equipment		271.86	Furniture & Equipment	10.23	856.72
Awards/Contributions		571.94	Awards/contributions	50.00	1,229.77
Association Annual Meeting		657.00	Association Annual Meeting	87.00	379.00
Miscellaneous (security safety deposit box)		5.50	Insurance/Safety Deposit Box		46.00
			Relocation of Association		479.10
SUBTOTALS	\$44,736.60	\$40,149.89	SUBTOTALS	\$45,197.76	\$43,144.62
Cash Balance (1 Jan. 1965)	16,313.22		Cash Balance (1 Jan. 1966)	20,899.93	
Cash Balance (31 Dec. 1965)		\$20,899.93	Cash Balance (31 Dec. 1966)		\$22,953.07
(less petty cash)					
GRAND TOTAL—CASH			GRAND TOTAL—CASH		
RECEIPTS & EXPENDITURES	\$61,049.82	\$61,049.82	RECEIPTS & EXPENDITURES	\$66,097.69	\$66,097.69



Man and MACHINE

by MAJOR HOWARD C. WALTERS, JR.

Integrating man and machine by designing equipment specifically to fit the human operator's capabilities is a relatively new field of military technology.

Known by a variety of names—such as engineering psychology, human factors engineering, and human engineering—this new applied science, drawing its techniques largely from psychology, physiology, and engineering, emerged in full force after World War II. Prior to World War II, there was less need to study the human implications of machine design. Designers of military equipment concentrated mostly on gaining technological superiority over potential adversaries.

As long as a weapon, vehicle, or other equipment item was a significant technological advance, it made little difference if only ten men in

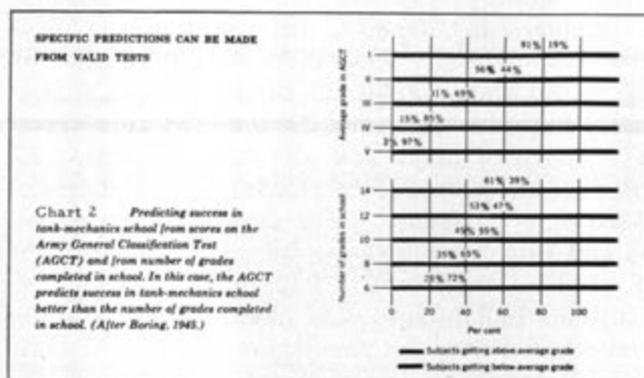
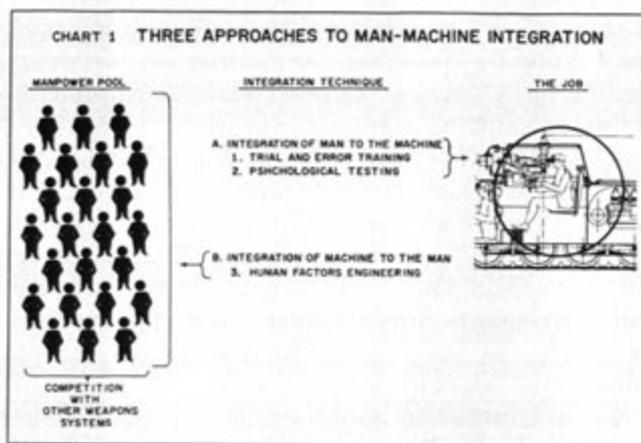
a hundred could learn to operate it within a reasonable time. These ten men could be selected by psychological testing or even by trial-and-error training—both quite feasible when a relatively large pool of manpower is available. But what happens when the manpower pool is smaller, or has lower ability, or when weapons become so complex that many systems must compete for these ten men in a hundred? Obviously, designers cannot change men, but they can design the system so that less capable operators can operate it effectively. Thus, as engineers began tailoring equipment designs to fit existing human capabilities, human engineering was born.

THREE WAYS TO INTEGRATE MAN AND MACHINE

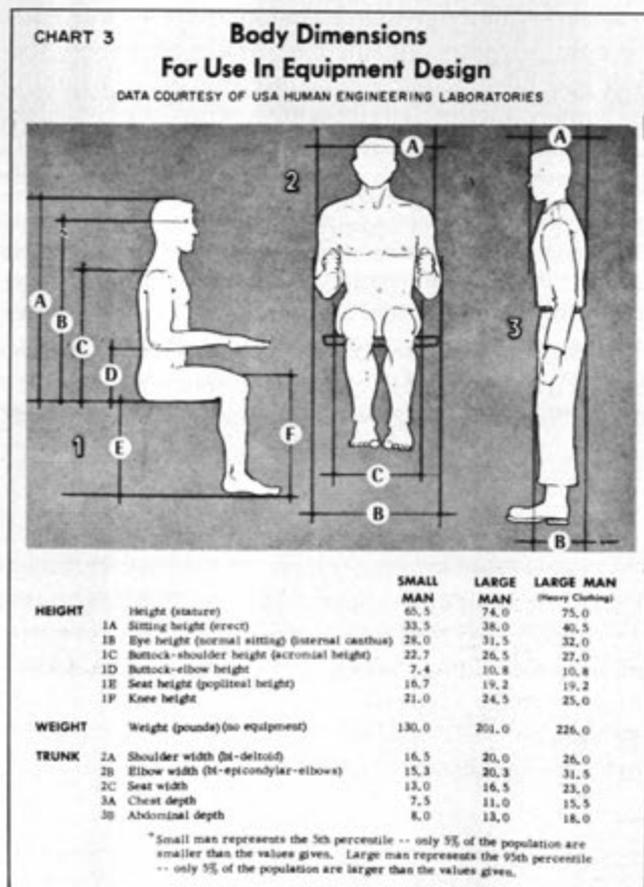
Chart I illustrates the three basic strategies for integrating man and machine. Trial-and-error training is understandably the least effective, though surprisingly enough it is still with us as a corruption of some of our current training programs. Commanders who are required to fill training school quotas may have to select candidates without the required aptitudes—in other words, just select any man to fill the school quota—which is the very essence of trial-and-error training. Sometimes it works, but usually it doesn't.

The second strategy is psychological testing. The

Major Howard C. Walters, Jr., Armor, served in tank and infantry units during the Korean War and was engaged in special warfare in Korea and Vietnam. He is assistant professor, psychology and Chief, Psychology Branch, United States Military Academy. He attended C&GSC and received an MA Degree from Columbia University. He is a member of the British Psychological Association and Certified Psychologist, Board of Medical Examiners, State of California.



FROM: Introduction to Psychology by C. T. Morgan & R. A. King; copyright 1966, McGraw-Hill, Inc.



following example illustrates how tests were employed to select tank mechanics:

"During World War II, the Army was faced with the general problem of selecting men for specialized training—in this particular case, training in a tank-mechanics course. Naturally it wanted to pick men who were most likely to succeed in such training. As can be seen in Chart 2, there was some correlation between the number of grades a man had completed in school and his success in the tank-mechanics course. Those who had completed 14 grades of school had 6 chances in 10 of doing above-average work in the course. Those, however, who had only 8 grades of school had less than 3 chances in 10 of doing this work. Consequently, the correlation between grades completed and success in the course provided some basis for prediction.

But a somewhat higher correlation existed between the Army General Classification Test and success in the tank-mechanics course. This test is a test of intelligence especially designed for the purpose of the Armed Forces. The upper part of Chart 2 shows that men in the highest-scoring group (I) on this test had 8 chances in 10 of doing above-average work in the course. Those in the lowest-scoring group (V) had hardly any chance of doing well. This prediction was considerably better than that afforded by number of grades completed."

Selecting personnel with tests is usually highly effective, particularly when we are choosing relatively few capable people from a large pool of manpower. It is still our primary strategy for integrating man and machine today. However, selection is little use when the manpower pool is comparatively small, and it does not solve the problem of several sophisticated weapon systems competing with each other for high-aptitude personnel.

The last alternative, human engineering, designs the equipment so it is adapted optimally to as many operators as possible. This approach has the advantage of using men with lower aptitudes—a critical factor when manpower pools are limited.

As an elementary example of fitting the machine to the man, consider the driver's seat in a hypothetical armored personnel carrier. An unwary designer, intent on improving road vision, might easily specify a seat requiring an eye height (normal sitting) of 32 inches or more, with a knee height of 21 inches or less. As Chart 3 shows, a 32 inch-plus eye height is at the 95th percentile. In other words, just from the standpoint of eye height alone, less than 5% of our manpower pool could use this seat. If we limit knee height to 21 inches, our large man must either be an oddity (i.e., a large man with very

small lower legs) or he must assume a highly uncomfortable body position, leading to accelerated fatigue and operator failure. If this example sounds exaggerated, try your hand at designing a tank driver's compartment, with all its many controls as well as the requirement for driving with hatches open or closed. If we must design equipment so most soldiers can use it, it becomes quite difficult to solve the problems posed by anthropometrics or body measurements. Add other human factors, such as reaction times, requirements for grasping, instrument sensings, noise factors, intellectual ability, and the problem looks staggering—which indeed it is.

Considering our seat design again, at some point the designer may have to compromise and reject men under 65.5 inches and over 74 inches, which would eliminate 10% of our manpower pool on just height alone. However, by accepting this compromise, he may be able to develop an adjustable seat, which could be raised or lowered to provide a range from 28 to 32 inches for eye height, yet still allow the operator to reach the controls. But the designer's problems go beyond merely making sure operators can use their equipment effectively—equipment design includes maintenance, and maintenance means mechanics. Now the designer must re-examine the potential manpower pool and relate it to a hypothetical maintenance configuration for the vehicle. To improve the utilization factor (say from one in ten to five in ten), we had to design a more complicated mechanism: in this case, an adjustable seat that requires additional mechanical skills to maintain properly. We now find ourselves in the curious predicament that making our vehicle simpler for the crew has made it more difficult for the vehicle mechanic. Some men in the manpower pool are low in mechanical aptitude, and in a limited manpower pool, we may end up competing *within* our own system for high-aptitude personnel. While all of these considerations are rather obvious, our equipment design sometimes ignore them.

WORLD WAR II vs. TODAY

The Army Air Force, during World War II, was probably the first service to feel the impact of operator failure due to equipment complexity. Psychological testing and screening had already increased the number of cadets completing flying school successfully from 23 to 63 percent. However, despite more effective selection, aircraft became more complex and pilot failure was still a critical factor. Toward the end of the war, aircraft dials and controls reached almost unmanageable numbers. Frequently pilots could not react to instrument readings adequately. They even operated the wrong control at the wrong time. The result:

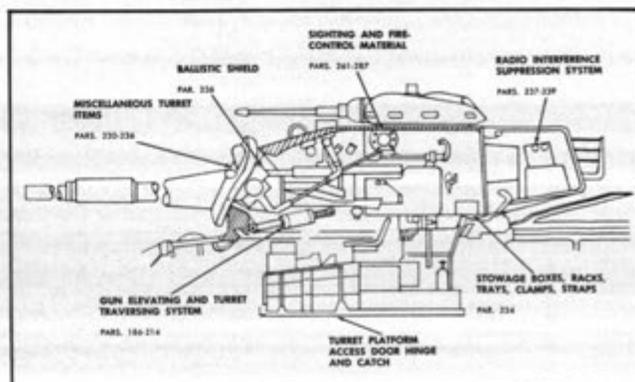
accidents, such as lowering the landing gear rather than dropping bomb loads or, conversely, dropping bombs on a friendly runway while attempting to retract the landing gear.

The armored vehicle in World War II fared somewhat better than aircraft. Its lesser complexity could generally be handled by selecting men to fit the machine. A typical World War II armored vehicle, the M-4 tank, is still remembered with nostalgia by many Armor officers—and maintenance sergeants—as an easily maintained and reliable vehicle.

Is present-day armored equipment so complex that we cannot fit it to the man effectively? The Israeli military correspondent Leo Heiman offers some interesting thoughts for Armor officers in an article in "Military Review."² He reports that, in the recent Indian-Pakistani conflict over Kashmir, India lost 114 tanks and 57 armored cars versus 471 Pakistani tanks and armored cars destroyed, crippled, or captured. Why such a large difference? According to Heiman, "The tanks themselves (M-4s and British Centurions) were better handled by the Indians than by the Pakistanians, mainly because the Indian tanks were older, simpler, and less complicated than the American-made Patton tanks utilized by the Pakistanian forces." His analysis leads him to a serious indictment: that U. S. tanks "proved too complicated for the soldiers who operated them." While many factors may be involved in the apparently greater Pakistanian losses, the case strongly suggests an incompatibility between the man and his machine—or, more precisely, a failure in human factors engineering—when Pakistanian soldiers employed the tanks.

HUMAN FACTORS SHOULD BE EMPHASIZED IN DESIGN

Even if Heiman's analysis is oversimplified, we seem to have reached a point where our man-machine relations are quite strained. If crew breakdown was a critical factor in M-48 losses, as Heiman suggested, we had better re-scrutinize our



PICTORIAL GUIDE TO CONTENTS (5 OF 5)

present way of dividing labor among crew members. American crews are certainly not immune to performance degradations from the excitement, fear and tension of battle. For example, procedures like dividing gunnery responsibilities between tank commander and gunner may be ineffective. We should re-evaluate these procedures to see how they are affected by the emotionality of combat. Or when maintenance becomes at least as critical as operational training (as it is today), it may indicate far more than just command and training problems. Perhaps there is some validity to the mechanics' old gripe about how hard it is to keep our equipment running. There is no doubt that we must pay a price for advancing technology, but the price we are paying today may outweigh the returns.

Enough of the problem—now how can we solve it? The following program is not all-inclusive, but it suggests some of the remedies for our human factors headaches.

—First, *we ourselves must take a harder look at our equipment. To often we automatically blame operator failure solely on command and training deficiencies. The real culprit, or at least an important contributor, may be the equipment itself—equipment which is beyond the user's capability to use it effectively and to maintain it.*

—Second, *we must stop being what psychologists call "ethnocentric" about our military equipment. We often tend to rejoice about the superiority of our own equipment, and to judge non-U.S. equipment as necessarily less effective. We can learn much from our allies, as well as from our potential enemies.*

—Third, *we must give much more emphasis not only to human factors engineering, but to our psychological testing program as well. We must build our equipment—development programs not only around technical notions, but also around strategies for integrating the man and the machine right from the start. Also, we should direct much more effort to securing personnel with required aptitudes. If we cannot secure them, then we must redesign the equipment so lower-capability operators can in fact operate it.*

—Fourth—and this is an old, worn-out cliché which we still don't follow—we should refrain from being gadget happy during development. It is interesting to speculate how Armor would have fared if the M-48 tank had used a diesel engine initially, a simplified steering and transmission unit, and had omitted the cupola, stereoscopic range finder and computer. Life might have been easier while the M-48 was our mainstay battle tank. As a general rule, any new device should have a clearly defined theoretical justification and, when related to human

factors, should produce a distinct advantage—or it should not be added.

—Fifth, *we should be more aware of the basic human dimensions involved in armored vehicle and equipment design. For example, the Non-resident Instruction Division of the Armor School might consider offering a course in the fundamentals of design, armor ballistics and armor plate.*

Fortunately, some progress is being made in armored equipment human factors engineering. The M113 has many qualities that recommend it as an effective design. And, using diesel engines in our tanks, while long over due, is a quantum jump forward. Agencies like the U. S. Army Human Engineering Laboratories at Aberdeen Proving Ground are doing an excellent job analyzing many of our armored vehicles and recommending modifications or subsidiary design features that will help minimize equipment failure due to operator limitations. But the job does not stop at HEL. Much of the responsibility for considering armored human factors engineering rests squarely with Armor officers.

To summarize, we must put much more effort into simplifying equipment and fitting it to our actual manpower pool—not some idealized model—while still maintaining our technical superiority. We are already making progress, but Armor officers must show greatly increased interest if U. S. Armor is to maintain its superiority.

FOOTNOTES

¹Morgan & King: *Introduction to Psychology*, 3d Edition, page 407.

²Heiman, Leo, "Lessons from the War in Kashmir," *Military Review*, Vol. XLVI, February 1966, No. 2.

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A COMMENT FROM THE EDITOR

Three years ago this officer became the 28th editor of ARMOR. Commencing with the May-June issue, and to be more specific, on 31 March, the incumbent turned over this duty to Lieutenant Colonel O. W. ("Sonny") Martin, Jr. On that day our active association with the U. S. Armor Association and the U. S. Army will terminate. It has been a pleasant and rewarding association in all aspects. The past three years as Editor of ARMOR have been particularly gratifying. In addition to the editorial duties there has been the office of Secretary/Treasurer. At certain times of the year, particularly around annual meeting time, this three hatted person has met himself coming and going but in all sincerity we must state that it has been a satisfying experience.

During the past three years our efforts have been directed to the production of a thoughtful and meaningful professional journal for the professional Armor man. And this takes into account that our National Guard and Reserve Armor members are professionals in the strictest sense of the word. It would be presumptuous on our part to comment on the effectiveness of the assignment in this respect. This judgment must be made by the members and the readers.

It would be inappropriate to forego comment about the remainder of the staff here at the U. S. Armor Association. Upon assuming the duties three years ago we had three non-commissioned officers on the staff. Two of these, SFC John Portman, Business Manager, and SSG Wilfred A. Gileau, Circulation Manager, are still here. During this entire period they have been of outstanding help to the editor/secretary/treasurer. They have performed their duties in an unselfish manner and their actions have always been in the best interests of the Association.

We also ask that you give Lieutenant Colonel Martin the same cooperation and encouragement that you gave the incumbent.

As Editor/Secretary/Treasurer, I thank you for a pleasant and rewarding relationship.

The Editor

READER SURVEY

Elsewhere in this issue will be found a report on the reader survey conducted late in 1966. It is self-explanatory and has a good amount of material in it for consideration by the new editor. It was designed to provide a basis for the improvement of ARMOR Magazine and the U. S. Armor Association. We wish to thank all who took the time to record their views about ARMOR and the Association.

ASSOCIATION MEMBERSHIP

The membership of the U. S. Armor Association today does not stand at an all time high nor does it stand at an all time low. There are enough members to support the magazine and other programs of the Association by watching the funds available rather carefully. The squeeze comes when improvements and a better magazine are contemplated. Most of these improvements in the magazine involve money. With a 20 percent increase in the membership the U. S. Armor Association would be able to literally work wonders in producing a better magazine and in administering other programs. Twenty percent represents about 1200 new members. Twelve hundred new members represents about ONE-THIRD OF THE ARMOR OFFICERS ON ACTIVE DUTY WHO ARE NOT MEMBERS TODAY. The Association, therefore, has a pool numbering 3600-4000 OFFICERS ON ACTIVE DUTY from which to obtain new blood. We have scratched our heads many times wondering why more ARMOR officers were not members and have not been able to come up with a good reason. In a branch where 'esprit de corps' was a hallmark since its inception it seems that such a situation could not exist. The staff of the Association does everything within its power to promote new members but it is not enough. Your help is important and is needed. We ask all Armor officers to talk to their colleagues and ask them to join the U. S. Armor Association.

Reader Survey

Late in 1966 ARMOR conducted a reader survey by sending out a questionnaire to all members. The results of the survey are printed here. 884 replies were received out of a total of approximately 4200 sent out. These 884 were broken down as follows:

	<i>Prefer ARMOR to other Military Journals</i>		<i>Prefer ARMOR to other Military Journals</i>	
General Officers	23	18	Second Lieutenants	72
Colonels	54	30	Warrant Officers	5
Lieutenant Colonels	113	73	Enlisted Men	55
Majors	143	79	Cadets	12
Captains	246	161	Veterans/Civilians	49
First Lieutenants	112	87		884
				599

Over 140 gave no preference stating that each publication served a different purpose and that they were satisfied with all.

Fifty-six replied that the contents of ARMOR did not assist them professionally and the remainder said that the contents did assist or had no comment on this question.

Which articles were most helpful?

Recent articles in the magazine on Vietnam received mention and surprisingly, a number of articles as far as a year and a half back were mentioned.

In a response to a question asking what types of articles were found to be most interesting and helpful the following responses were given:

333 listed operations and tactics as first choice.

152 listed R&D as their first choice.

120 listed roles and missions as first.

109 listed training and development as first choice.

60 listed developments in foreign armies as first.

40 listed maintenance as first choice.

Over half replied that they would consider writing an article for ARMOR if a, they had something to say, and/or b, if they received remuneration for it.

ARMOR Magazine strong points were listed as follows:

Articles pointed at unit level activity.

Presents information clearly.

Keeps reader up-to-date.

Good layout.

Articles by company grade officers.

Gives young officers a chance to express themselves.

Professional content.

Reliability.

Independence of Armor School.

Wide range of topics.

ARMOR Magazine weak points were listed as follows:

Occasional ventures into strategy and geopolitics.

Not enough on Reserve Forces.

Not enough on logistics.

Published bi-monthly.

Cost expensive for six issues.

Not enough on other branches, i.e., artillery, infantry, air cavalry.

Not enough articles by more experienced and senior officers.

Not enough color pictures.

Lack of professional art staff.

Too much technical information.

Too much space devoted to Armor School writers.

Not enough R&D articles.

Increasing indications of over-participation by Armor School.

Recommendations for improvements were, of course, coupled with the comments on the weak points that were made. A number can be made without cost but others would involve money, always something in short supply.

What is your opinion of ARMOR?

415 thought it was outstanding to excellent.

406 thought it was very good to good.

The remainder, that it was fair to poor or did not comment.

A substantial number were in favor of expanding the scope of the Association.

Thirty-eight had no objection to changing the name of the Association, to incorporate the idea of air mobility, and a number of others did not object to a change in name if it would be changed to the U. S. Cavalry Association.

The Editors

Material submitted for publication in
The Sounding Board should not exceed 750 words
and be on a subject of general interest that
can be appropriately discussed in ARMOR

The Sounding Board

SELECTIVE RETENTION

By GENERAL BRUCE C. CLARKE, RET.

EDITOR'S NOTE: In the November-December 1966 issue of ARMOR, General Bruce C. Clarke, USA, Ret., discussed the attractiveness of a service career and the problems of retaining some officers who were leaving the service in the "prime of life" so to speak. This discussion below is a solution to one of the many retention problems. It could be a rider to a military bill or a separate piece of legislation.

A Rider or an Act substantially as follows:

The Secretaries of the Army, Navy, and Air Force are authorized to appoint each year in their respective Departments a selection board of seven general (flag) officers to go over the records of all permanent colonels (captains) 0-6 who in the next calendar year, will complete 30 years of creditable service as officers but who are not selected for promotion to permanent 0-7; to select not more than 50 percent of such officers in each Department or Service to be offered the opportunity to remain on the active rolls for an additional four years on the following basis:

- a. In ranks of colonel (captain).
- b. Title: Senior Colonel or Senior Captain.
- c. Duties: ROTC, NG Instr., Res. Instr., R&D, Research, Inspector, Combat and Materiel Development, Engineering, Medical, Supply, Administration, Technical Service, Maintenance, Utilities,

Service School or Academy Staff and Faculty, Communications, Electronics, Personnel, Transportation, Commander or Deputy Commander of Posts, Camp, Stations and Static Installations or such other such appropriate duties as the Secretary may determine.

d. Pay: Pay and allowances of a colonel 0-6 of their service or branch with 30 years commissioned service; plus an extra \$100 pay per month.

e. Extension: The Secretary would be authorized to offer to extend the service of such personnel beyond 4 years on a year-to-year basis, but not beyond the age of 60 years.

f. Promotion List: Such officers will be removed from the promotion list and will be carried as extra members in the grade of colonel (captain) 0-6. They will not in any way block the promotion of otherwise qualified and selected Lieutenant Colonels to the grade of colonel 0-6.

g. *Professors at Service Academies:* All permanent professors at service academies who are in the grade of O-6 with more than 30 years commissioned service shall receive the same title and pay of senior colonels (senior captains) O-6. Other provisions of law applying to professors are not changed.

h. *Subsequent Retirement:* When eventually retired, such personnel would be placed on the retired list with the title and retired pay based upon their rank and pay as senior colonel or senior captain, or in the highest rank and pay held on active duty.

This would:

a. Retain for non-combat duty very valuable abilities and skills in the many specialty fields in a modern armed service.

b. Smooth the gap between outstanding colonels and general officer status.

c. Insure a more attractive career expectation for

career officers in a modern defense establishment.

d. Make entering into the military career service much more attractive.

e. Motivate colonels to keep up their interest and work.

f. Add to personnel flexibility.

g. Save funds and increase overall morale.

h. Increase technical, instructional, administrative and supply efficiency.

i. Present young Reserve lieutenants with a more attractive outlook if they are thinking about making the service a career.

j. Present outstanding officers with 20 years service an expectation of a reasonably full career instead of tending to have them leave to start a second career.

MOLE

By COL ERWIN R. BINGHAM

*To be read with tongue in cheek and with a straight face for two reasons: first, there are some in the military who find leg pulling painful, and second, this paper may not be a pure leg pulling exercise.

Man's Other Logical Environment (MOLE) is a concept which directs military thinking the only way it can go, down. The ever increasing vulnerability and expense of conventional surface, air, and subaquatic war, plus the continuing lead which the offense enjoys over the defense, make it appropriate to consider, in depth, the one remaining dimension of war, the intraterrestrial theater. Such a consideration should be undertaken now so that necessary developmental programs in metallurgy, propulsion, and communications are expedited to insure the rapid design and production of proto-type terrestrial submarines at the earliest possible time. This paper will briefly discuss the need for such a weapon system and some of the military uses and non-military ramifications of MOLE.

Continued incremental refinements in existing conventional weapons systems are both possible and probable; however, there seems to be few

prospects of major breakthroughs in land, sea, or air systems comparable to those achieved in nuclear, missile, or space systems in the recent past. Likewise, should there be such a breakthrough in the present three dimensions of warfare, it is doubtful that it would be as revolutionary or as rewarding as would be the conquest of the last frontier of war, inner earth.

The atomic balance of terror has eliminated all-out nuclear conflict as a rational means of waging war, although offensive and defensive capabilities must continue to be developed and refined in that area. Conventional land operations, particularly in a nuclear environment, that are exposed to the all-seeing eye of future reconnaissance satellites, may soon be prohibitively expensive. There are indications that antisubmarine warfare measures could become so effective within the next 10-15 years that the offensive effectiveness of sub-aquatic

military operations may be seriously curtailed, if not completely eliminated. Likewise, current and proposed air vehicles are faced with a mounting cloud of effective countermeasures, and operational anti-ballistic missile systems appear to be within the state of the art. In underdeveloped areas of the world, where the United States may conduct most of its future military operations—if not all, the lack of adequate surface transportation systems, communications, and generally hostile climate and terrain—jungle, desert, mountains, or polar areas—all point to the requirement to exploit underground military operations.

Such a proposal as MOLE may seem too far out, or under, at least for the 1970-1980 period, and it may be. On the other hand, it may not be any less feasible than nuclear weapons, missiles, space ventures, and recent medical breakthroughs were when first envisioned. A final reason for exploring the fourth dimension of war is that the development of military technology in this area could be expected to provide bi-products comparable to those of the major breakthroughs mentioned above. Entirely new processes and ventures in extractive industries, subterranean agriculture, manufacturing, human habitation, and storage are but a few of the possibilities.

MOLE would be developed around a weapons system, Terresubmarines (Terresubs) that would be capable of travelling considerable distances at depths well below the earth's surface and at relatively high speeds for sustained periods. Its weapons would be used either underground or after surfacing. Additionally, Terresubs would have many of the characteristics of conventional vehicles. MOLE would be to land warfare what the nuclear submarine is to naval war, only more so.

Initial use of Terresubs probably would be for relatively short distances, 10-50 miles and shallow depths, 1,000-3,000 feet. Subsequently, as the state of the art progressed, Terresubs would travel greater distances, at higher speeds and at more extreme depths. Terresubs could eventually have multiple configurations, however, all would be capable of traveling at speeds ranging up to 50-100 miles per hour through any sub-surface element from the hardest rock to water. Necessary high speed tunneling or boring capability might be obtained from an adaption of the laser principle, while propulsion would be supplied by either nuclear, electric, or chemical power.

The ability of Terresubs to move rapidly at great depths would necessitate that they be capable of withstanding great pressures and high temperatures. Terresubs would have to communicate with other MOLE vehicles as well as with surface stations, which might be accomplished through seismographic

or ultra low frequency electronic pulses. Navigation aids would be computerized. Environmentally, Terresub crews would have comparable facilities to those provided for nuclear submarine personnel.

MOLE vehicles would travel at high speeds and be equipped with sufficient penetration aids to make it impossible for the enemy to know which MOLE actions were real and which were decoys. Ideally, Terresubs should be capable of silent movement, but this ability probably would not be achieved in early MOLE generations. Terresubs would either surface within or near an enemy position and attack it with automatic weapons, cannon, flamethrowers, chemicals, etc., or MOLE combat vehicles could attack from below the surface with Polaris-like earth penetrating weapons.

There would be no defense against Terresubs initially, therefore, their first military use would have the same or greater potential for success as did tanks or lethal gas in World War I and nuclear weapons in World War II. The offensive superiority of the Terresub would enable it to perform many combat roles in either a manned or unmanned configuration. These missions would range from "bombing" raids on enemy positions, headquarters, communications, and logistical installations to attacks on production and power centers. Deep penetrations behind the enemy's defenses, tactical vertical envelopments from below, sub-surface and surface reconnaissance are other combat roles for MOLES. Logistical Terresubs would complement surface personnel and air carriers and would perform supply and evaluation missions.

Terresubs would be ideally suited for the most difficult types of warfare that the United States must be prepared to wage, nuclear and low intensity. In the former environment, atomic blast, fallout, blow-down, and rubble could virtually halt conventional operations and logistical support functions. Terresubs would not be affected by such conditions. On the other hand, in underdeveloped areas, neither climate, lack of transportation networks or difficult terrain would impede Terresubs. One application of MOLE techniques in low intensity warfare would be the use of Terresubs to assault guerrilla installations and strong points that have been practically inaccessible by land or parachute drop.

In conclusion, to the question, is the MOLE concept desirable, the answer is affirmative—providing satisfactory Terresubs can be produced. To the question, are Terresubs attainable within the 1970-1980 time frame, the answer is probably not. Remembering the significant technological breakthroughs in the recent past, however, the actual attainability of effective Terresubs probably depends more on the priority given to the development of such a weapons system, than on any other factor.



NEWS NOTES



RATS IN VIETNAM

There are rats among the U. S. Army units serving in Vietnam today. These are not the furry creatures that plague the housewife or the homeowner. They are a new breed, spawned by the need to search VC tunnels and bunkers.

Men known as "Tunnel Rats" are assigned the risky business of probing the tunnels and underground bunkers scattered throughout the Ho Bo and Boi Loi Woods, approximately 25 miles northwest of Saigon.

The "Rats" struggle through the narrow openings and tunnels in search of the "underground" VC. It is up to them to flush out any who could pop up after the column has passed or bedded down for the night. An area is not really secure until all of these underground highways are purged of the VC.

One of the most experienced of this elite group is Staff Sergeant Charles Douglas of the 25th Infantry Division. He explains that on entering one of the tunnels, inspection of the opening, walls and roof is necessary to detect wires that lead to hidden boobytraps. The floor of an enemy tunnel is usually safe he states.

Douglas states that "You can't express the feeling as you go down into a tunnel. It's pitch black and there's not a trickle of light. When a man goes down into one, it's mostly pure guts. Every time you turn a corner there could be a VC waiting for you. The air is thin and stagnant, and occasionally the VC bury their dead in the tunnels."

Although he has another man accompanying him on the hazardous journeys, he usually enters first, for he says, "most of the time nobody else wants to."

"It's a dirty but necessary job," says Douglas, "and all part of the action we must take if we are to help clear the country of VC."

SAIGON ARMOR BALL

The Saigon Area Armor "Files" gathered in December to celebrate the Annual Armor Ball, honoring the birthday of the U. S. Army's Armor branch.

Guest speaker for the evening was Brigadier General James F. Hollingsworth, assistant division commander, 1st Infantry Division. He discussed the role of the combined arms team supported by tactical aircraft in a counterinsurgency operation.

Among the honored guests were Major General John C. F. Tillson III, and Brigadier Generals

W. A. Knowlton and Joseph A. McChristian.

First Lieutenant John K. Lyons of the 1st Infantry Division and junior officer present cut the traditional birthday cake.

ARMOR LIEUTENANT WINS DSC



First Lieutenant Neil L. Keltner, Troop C, 1st Squadron, 11th Armored Cavalry is believed to be the first Armor officer to win the Distinguished Service Cross for action in Vietnam. Lt. Keltner was awarded the DSC for action that took place on 21 November 1966. A native of Lansing, Michigan Lt. Keltner was named the outstanding Army ROTC Graduate of 1965 and was awarded the Hughes Aircraft Company trophy for this achievement.

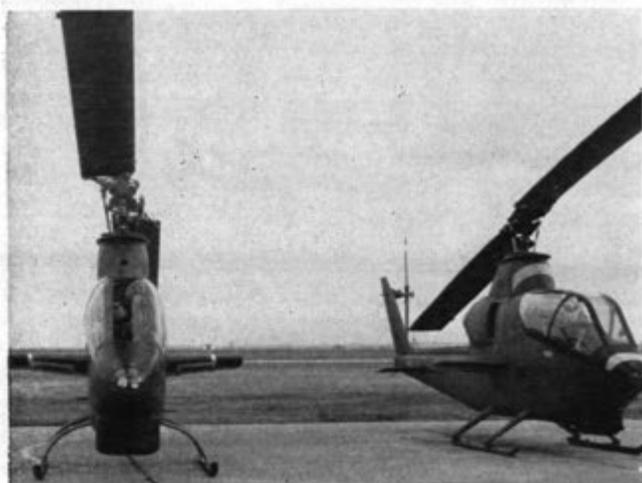
The citation describing the action for which Lt. Keltner received the DSC reads as follows:

"For extraordinary heroism in connection with military operations involving conflict with an armed hostile force in the Republic of Vietnam: First Lieutenant Keltner distinguished himself by exceptionally valorous actions on 21 November 1966 while commanding the security element of a large convoy near Long Binh. The convoy received in-

tense fire from a large Viet Cong force concealed on both sides of the highway. Lieutenant Keltner immediately moved to the head of the convoy where the danger was the greatest, and led them beyond the fire. With all weapons firing, he then returned to the killing zone, personally accounted for five insurgent casualties. He constantly directed aggressive maneuvers of his platoon and the removal of damaged vehicles and wounded men from danger. When he received a hit which wounded him in the calf and thigh, and destroyed his communications, he ran through the intense fire to another vehicle to maintain contact with all defensive elements. Moving again to the head of the convoy, he called in medical evacuation helicopters and air strikes upon the hostile emplacements. Heedless of the inherent danger, Lieutenant Keltner calmly maintained order on the congest highway, held off the superior Viet Cong force until relief arrived, and prevented the destruction of the whole convoy. Lieutenant Keltner's extraordinary heroism and devotion to duty were in keeping with the highest traditions of the military service and reflect great credit upon himself, his unit, and the United States Army.



Major General James W. Sutherland, Jr., Commanding General, 4th Armored Division and Member of the Executive Council, U. S. Armor Association, presents the Association's engraved saber to 1st Lieutenant John F. McLean, Commander of Troop H, 2d Squadron, 3d Armored Cavalry Regiment. At Regimental Mess Night in Baumholder, Germany, Lieutenant McLean was thus officially recognized as one of the top two Armor ROTC Distinguished Military Graduates, nationwide, for 1965. Observing this presentation to the Dartmouth graduate is Colonel Heinz von Schonfeldt, Commanding Officer of Camp Aulendorf, Baumholder Major Training Area.



First of two pre-production models of the HueyCobra, built under a U. S. Army development contract by Textron's Bell Helicopter Company, is shown at left. At right is the company's prototype. Noticeable exterior changes are curved landing gear, wider turret, slightly larger wings and fixed steps for pilot and gunner. Bell has a production order from the Army for 110 HueyCobras, with first deliveries of the world's first fully-integrated weapons helicopter next spring.

One hundred percent membership for all officers and warrant officers assigned to Headquarters, Second Brigade, 27th Armored Division, New York ARNG.



TEAMWORK WINS FOR 2/20 ARMOR—GUARD BATTALION GETS SUPERIOR IN BOTH I-G AND C.M.M.I. INSPECTIONS

A first in Maine National Guard history was achieved this past Fall when all units of the 2d Battalion, 20th Armor, MeARNG, garnered Superior ratings in their Federal I-G inspections, then followed this up the next month with duplicate superior rankings in the annual C.M.M.I. inspection.

Shown congratulating his company commanders is LTC William S. Rogers (center). Unit CO's are, left to right, CPT Joseph H. G. Giguere, Hq Co (Lewiston); CPT Linwood Allen, Co C (Norway); CPT Henry Dombkowski, Co A (Auburn); and 1LT John Rioux, Co B (Rumford).

BOOK DEPARTMENT SELECTIONS

HELL IN A VERY SMALL PLACE by Bernard B. Fall \$8.95

By Bernard B. Fall, The Siege of Dien Bien Phu.

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

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

The French Defense Minister alone was able to give Dr. Fall access to those files, after French authorities were convinced of the importance of a fair "outside" appraisal of events at Dien Bien Phu. In addition, the author went to both South and North Viet-Nam, to France, and even to post-independence Algeria, to interview participants of many nationalities, allegiances, and political persuasions. He also interviewed the sur-

prisingly numerous American participants, from generals to pilots, and legislators. No other author dealing with the subject, anywhere, has done this.

(Taken from the book jacket.)

Illustrated with 32 pages of photographs and 30 maps.

13/13 SEARCH AND DESTROY by Gordon Baxter \$6.50

(Feb 67). The story, told in words and photographs of a specific battle action in which thirteen American marines were wounded on the thirteenth day of February 1966. The author accompanied India Company, 3d Battalion, 1st Marines, on a search-and-destroy mission. "One of our men, O'Hara, heard his name called and turned his head. The bullet that would have gone into O'Hara's face and through the back of his head creased his nose and tore away part of his cheek bone." O'Hara still has some surgery, but is happily married and living in NY. 128 pages with 80 photographs.

BASIC TACTICS by Mao Tse-Tung \$4.95

Translated with an introduction by Stuart R. Schram. This is the first English translation of Mao's important 1938 treatise on the basic techniques and psychology of guerrilla warfare. BG Samuel B. Griffith, USMC-Ret, the author of *Mao Tse-Tung on Guerrilla Warfare* (1961) and *Peking and People's Wars* (1966) provides the foreword to this excellent key to understanding the rationale and tactics of "people's wars of liberation." A useful book for those who want to know more about the enemy in Asia.

VIETNAM SEEN FROM EAST AND WEST—An International Symposium edited by Sibrarayan Ray \$5.95

Dr. Ray, of the University of Melbourne, has brought together and introduced the views of 15 astute political analysts on the Vietnam conflict. Included are contributions from the United States, the United Kingdom, Australia, India, Laos, the Philippines, Korea and Vietnam itself. The result is a comprehensive treatment of the origins of the war, the attitudes of the Vietnamese people, the role of Communist China and the chances for a negotiated peace. The similar experience of the Philippines, Laos and Korea are well presented. The concluding chapters on the policies of various free world nations are particularly interesting. Well written and highly readable.

OUR VIETNAM NIGHTMARE by Marguerite Higgins \$5.95

The late famous reporter visited Vietnam and talked to its villagers, soldiers, Madame Nhu, Diem, Buddhist monks, our soldiers and Henry Cabot Lodge. She charges the U. S. with many blunders, but believed that we'll come out of the mess O.K.

THE BATTLE OF DIENBIENPHU by Jules Roy \$6.95

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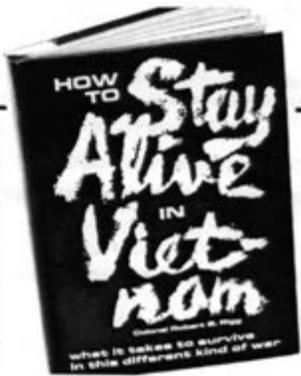
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Bernard B. Fall served with the WWII French underground, was a Fulbright scholar studying his doctrine in Indochina, returned in 1955, has reported to and through the Indochina peninsula since 1955 and was a Fulbright scholar at the RAND Institute for Advanced Study in Vietnam. He has also received a Rome International Fellowship in a social-science area on the Viet-Lao and a Pulitzer Prize Award for "extraordinary achievement in the field of military writing."



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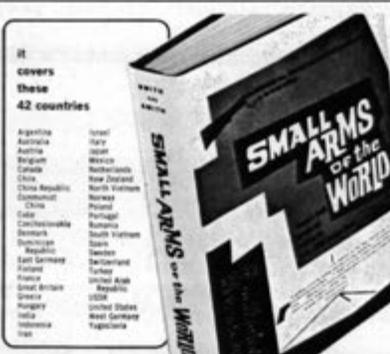
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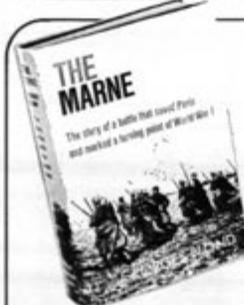
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