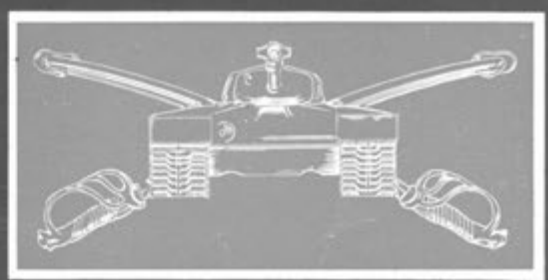
ARMOR

The Evolution of
The Armored Infantry Rifle Squad

—See page 34

NOVEMBER-DECEMBER 1965



POWER AT THE PENTAGON—by Jack Raymond $6.50

The engrossing story of one of the greatest power centers the world has ever seen—how it came into being, and the people who make it work. With the awesome expansion of military power in the interests of national security during the cold war have come drastic changes in the American way of life. Mr. Raymond says, "in the process we altered some of our traditions in the military, in diplomacy, in industry, science, education, politics and other aspects of our society." We have developed military-civilian action programs in he far corners of the globe. Basic Western military strategy depends upon decisions made in America. Uncle Sam, General Maxwell Taylor has said, has become a world-renowned soldier in spite of himself.

DIPLOMAT AMONG WARRIORS—by Robert Murphy $6.95

A brief conversation with President Roosevelt in 1940, transformed Robert Murphy from a conventional diplomat into a secret agent—the President's personal representative and General Eisenhower's political adviser in the no-man's land of French North Africa. Here he tells the inside story of his first special assignment and of subsequent missions from Roosevelt, Truman, and Eisenhower, filling in the gaps that still remain in the official records of the U.S. government. An objective, first-hand account of history in the making.

WAR AS I KNEW IT—by General George S. Patton, Jr. $6.95

From his childhood, George Patton had one absorbing interest—the military art. His life culminated in history's greatest opportunity for the practice of this art. His dominant belief was that a commander's place is at the front, where he can inspire the morale of his troops and keep aware of combat conditions. This belief he lived up to through days and nights of perilous fighting and breaking weariness, and his actions gave rise to many stories. This was not his only side. He was also the military student who, prior to D-Day, made a study of the Normandy roads used by William the Conqueror, since he deduced that the same roads would be useful today, and who, throughout the campaign, kept an Operations Room which was the envy of other commanders.

PATTON: Ordeal and Triumph—by Ladislas Farago Reg. $9.95. Christmas special $8.50

The Patton that emerges from a cacophony of second-hand evidence was a complex and justly controversial figure. In the popular mind, in particular, he survives as a great captain of war, to be sure, but mostly as the general who had slapped an enlisted man, then redeems himself by leading a dashing and dramatic campaign at the head of a competent and romantic army. Sicily, North Africa, the breakout at Avranches, the bungle at Falaise, the anguish of Metz, the prolongation of the war and the restraint preventing total victory are but a few of the areas PATTON: ORDEAL AND TRIUMPH covers.

NIGHT DROP—The American Airborne Invasion of Normandy—by S. L. A. Marshall Preface by Carl Sandburg $6.50

Hours before dawn on June 6, 1944, the American 82d and 101st Airborne Divisions dropped in Normandy behind Utah Beach. Their mission—to establish a firm foothold for the invading armies.

What followed is one of the great and veritable stories of men at war. Although the German defenders were spread thin, the hedgerow terrain favored them; and the American successes when they eventually did come were bloody, sporadic, often accidential. Seldom before have Americans at war been so starkly and candidly described, in both their cowardice and their courage.

In these pages the reader will meet the officers who later went on to become our highest miliary commanders in Korea and after: J. Lawton Collins, Matthew Ridgway, Maxwell D. Taylor, James Van Fleet, James Gavin, Anthony McAuliffe, and others who in the battles recounted here were shouldering the first major commands of their careers.

NEITHER FEAR NOR HOPE—by General von Senger und Etterlin $6.95

General Etterlin, German commander in WW II, sheds new light on the history of the campaigns in the European and Mediterranean theatres where the General fought, as well as a poignant expression of the antithesis between his duty as a professional soldier and his personal aversion to Hitler. At the head of the Senger Brigade in the Blitzkrieg invasion of France the General details the capture of Cherbourg.

A cultured and intelligent man, unlike the stereotype of the ruthless German military personality, and at the same time a cool and successful field commander, von Senger fought tenaciously, without fear, but also without hope.

CAST A GIANT SHADOW—The Story of Mickey Marcus, who died to save Jerusalem—by Ted Berkman $4.95

On a somber afternoon in January of 1948, Colonel Mickey Marcus, U.S. Army boarded a plane for Israel to begin what was to be the most dangerous and challenging assignment of his life.

Mickey Marcus had never backed down from a challenge, especially where an issue of personal principle was at stake. Against six Arab countries outnumbering Israel in population by sixty to one, boasting a prodigious array of modern firepower, the Israeli forces had no tanks, no warplanes, negligible homemade artillery . . . not even enough rifles to go around. He dictated military manuals and outlined a drastic blueprint for Israel's survival. Appointed to Supreme Command on the Jerusalem front, he lifted the three-month siege of the bleeding Holy City, winning the sobriquet "Lafayette of Israel."

The first soldier since Biblical times to hold the rank of General in the Army of Israel. The only soldier interred at West Point who was killed fighting under a foreign flag.

ARMOR

The Magazine of Armored Warfare

Continuation of THE CAVALRY JOURNAL

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LETTERS TO THE EDITOR

76th Annual Meeting

Dear Sir:

I would like to congratulate the United States Armor Association for a most enjoyable and enlightening Annual Meeting this past June 10-12, 1965. It was the first such meeting that I have attended and was my first trip back to Fort Knox since attending the Armor Officer's Orientation Course in 1960.

The series of lectures on the morning of 11 June were very timely and covered the latest concepts very adequately. The Armor School and Fort Knox are to be congratulated on the firepower demonstration CS-1, vastly improved and a far cry from what it was in 1960. Even though the time is short for such meetings, I feel that an additional conference period should be included. It should last from four to eight hours and is outlined below.

During the social functions of the Annual Meeting, many ideas, concepts, "war stories," and other valuable information passed hands. However, I feel that all members of the Association would benefit more if these discussions were put on a more formal scale. For example, among company grade officers like myself, a great amount of discussion took place on the subject of the tank-infantry team and its employment. A discussion leader from the Armor School or Combat Developments Command could be selected to guide the discussion and all interested personnel could attend.

This proposal is certainly no less valid for field grade officers. The battalion commander has a most complex job and what better way to express ideas and absorb the ideas of others than a discussion of this type. Two examples of likely subjects for discussion are the employment of the reconnaissance platoon in a tank battalion and tank gunnery techniques.

A great deal of Armor experience is assembled only once each year, and I propose that this experience be utilized for the benefit of all Armor personnel. Advance notice of such discussions may well increase the number of experienced Armor personnel attending the Annual Meeting, especially those anxious to convey original ideas and concepts that have been tested by experience. By discussing mutual problems, many ideas are developed and the complex situations of the modern battlefield are more readily solved.

CAPTAIN EDWARD J. LAURANCE

Hq., 3d Brigade
1st Armored Division
Fort Hood, Texas

America's Forgotten Tanker

Dear Sir:

The July-August 1965 issue of *ARMOR* is attractive and interesting and very well balanced.

Captain Ciccarelli's article about Christie was very good but he omitted an important point—in fact, two points. We did not buy five T-3 mediums as a last resort as inferred. They were the original purchase; the Polish and Russians purchases were later. As part of the contract he was to furnish a set of prints but never did. Parts were not interchangeable between the vehicles and Ordnance made up a set by literally making the parts and compromising on dimensions.

The second point is that, except for the T-3, his vehicles were neither armed nor armored. Ordnance did not have the funds to re-engineer them but asked him to do so and he refused to do so, claiming that he was an idea man and that it was up to the military to develop the idea. "And because of his own fire-eating, hard to get along with nature," as the author says, things just never worked out.

COLONEL ROBERT J. ICKS, USAR, RET.

438 May Street
Elmhurst, Illinois 60126

Dear Sir:

Captain Ciccarelli's article on America's Forgotten Tanker in the July-August issue must have brought back memories to the Cavalrymen who went from the

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Rates: See bottom of contents page.

Mechanized Force, Camp Eustis, to Camp Knox in 1931. There are few of us still remaining.

In 1932, I went with Colonel Van Voorhis to New Jersey to witness the trials of Christie's idea of a tank to be carried under an airplane and saw it run on wheels at 100 miles per hour. Christie was a great man to talk with and was certainly ahead of the Army's tank designers in many respects. As I remember, Christie had been an auto race driver and at one time had raced against Henry Ford. I think he supplied anti-aircraft mobile guns for the United States in WWI. I am convinced that our failure to adopt the Christie suspension system in the late 20's put us years behind other countries in tank design.

The Christie was called "Combat Car" in the Cavalry as tanks were the responsibility of the Infantry.

Christie sold some antiquated blueprints of his vehicles to the Japanese in order to obtain money to continue his developments. I doubt that they were able to build anything from those blueprints. The blueprints which came to us with our combat cars were of little value in building replacement parts since each part was practically hand built and corrections did not show on the prints.

I remember that we had constant trouble with the gear boxes and gears. Christie was not a gear builder but lacked the finances to have gears built by those who knew. The Liberty engines with which our combat cars were powered did right well for airplane engines used in armored vehicles. Christie wanted a "pancake" Italian engine but could not get funds or influence enough to get one to this country.

In addition to Adna Chaffee, there were more officers who were responsible for the development of Armor. H. H. D. Heiberg was the test driver of development vehicles and he led an interesting life. General Grow, Dave Barr, and Charlie Usger, have never in my opinion received the credit due them for their work with the Mechanized Cavalry and Armor.

MAJOR GENERAL J. H. PHILLIPS, RET.
Rancho Rio Vista
Rt. 3, Box 291
Carmel, California 93921

New Armor Publications

Dear Sir:

I would like to call your readers' attention to two recent publications in the Armor field which may have escaped their notice.

FIGHTING VEHICLES AND WEAPONS OF THE MODERN BRITISH ARMY by Stevenson Pugh was published by MacDonald, London, in 1962. Its five sections offer details and photographs of British Army Equipment from the Chieftain and Conqueror tanks down to the Browning 9mm Semi-Auto. These sections are entitled Armour, Missiles and Artillery, Infantry Weapons, Army Aircraft, and Special Support Vehicles. The Introduction discusses the British Army Re-Equipment Program in terms of nuclear weapons and tactics, strategic and tactical air mobility, and sea mobility.

INTERAVIA Magazine published an International Defense Supplement to its regular issue entitled THE MODERN ARMY WEAPONS AND TECHNOLOGY and dated Volume XX, No. 2/1965. Among the ten articles of interest to readers of *ARMOR* are: "The Concept Behind the Chieftain Tank," "European Tank Development," and "Countering The Tank By Guided Missile."

Copies of the Supplement may still be available from INTERAVIA, 185 Madison Avenue, New York 16, New York, or 149 Fleet Street, London E. C. 4, England.

LEO GALLENSTEIN
1840 S. Street, S.E.
Washington, D. C. 20020

Taschenbuch Der Panzer

Dear Sir:

I am looking for a book which is out of print. As it is a book about Armor, perhaps you can assist me.

The book that I would like to obtain is TASCHENBUCH DER PANZER, 1954 or 1957 edition.

P. DECROOS-DELBECQ
114 Rue Solferino
Lille, France

NATO Versus Communist Tanks

Dear Sir:

While reading the article in the May-June issue of *ARMOR* by Martin-Joseph Miller, it seemed to me he refuted his own theory of mobility by his statement, "Developments in armor-piercing projectiles have far outpaced progress in armor protection."

The facts of life for armor, for the present at least, seem to be armor without close infantry support is worse than worthless; it is a danger in that it leads to thinking in terms of "Blitzkrieg" warfare. It seems to me we need to think in terms of an "Infantry" tank rather than present concepts.

Mr. Miller indicates the ideal Western tank must be a match for the T-54 or T-55. This is well and good as far as it goes, but he has totally over-looked the Josef Stalin III, T-10, and the 122mm Assault Guns. Unless there has been a drastic change in Soviet thinking there should be quite a few of these types around for some time to come.

The 122mm mounted on the JS/T-10 types should punch rather neat holes in most Western tanks. These Soviet tanks are well-armored, and the armor well-arranged. The T-10 is an excellent design and presents a low target with very few shot traps.

The Leopard and AMX-30 are doubtless fine tanks; I for one would not like to meet *any* of the larger Soviet types in either of them.

If the Soviets see a need for these large (in gun size at least) tanks, we must have something to counter them. The experimental T-30 was a step in the right direction and which was unfortunately halted. Why not build a first-class "heavy."

CADET CHARLES MCDONALD
P. O. Box 92
Lakeland, Florida

ARMOR

IN THE AGE OF COEXISTENCE

The Armor soldier of the mid-1960's finds himself in a strange position. He is trained and equipped to fight a gigantic war of movement. But he hears it said on every side that such a war "probably" never will occur.

Much more "likely," it is said, are small "wars of national liberation," of which Vietnam is the current and the most pressing example.

By MAJOR WILLIAM V. KENNEDY

THE "WARS OF NATIONAL LIBERATION" are the product of the Communist doctrine of "peaceful coexistence"—the attempt to achieve world domination by subversion and insurrection. This is a doctrine of frustration, imposed, in part, by the strategic aircraft and missiles of the U. S. Air Force; in part by the ships, aircraft and submarines of the United States and Allied navies; in part by the U. S. Seventh Army—an Army of Armor—and its Allied NATO formations in Europe, and in part by the increasing ability of the United States to deploy significant strategic reserve forces without an appreciable interim period of training and preparation.

In a sense, then, Armor already has exerted a significant influence on the course of the struggle between freedom and Communism, by denying Communism the most direct and overt path to its goal of world conquest.

What now?

That depends upon how one looks at those words "probable" and "likely."

Do they mean that the evidence is now so strong of a "detente" between the United States and the Soviet Union and of a fundamental "mellowing" within the Soviet Union that a major war is *impossible*?

If so, the storm has come and gone, and we can indeed, as so many in our colleges and universities are urging, set about converting tank production lines to tractors.

But if the evidence is that strong, why are not some more definite words chosen than "probably" and "likely?"

The choice of words brings to mind a proposition once put to the rabbit in Walt Kelly's comic strip, "Pogo."

"It seems a shame," said one member of the swamp menagerie, "that those electric rabbits in Florida should be making all that money, and here you are a real live expert on rabbitin' an' all. Why don't you go down there and get a job?"

"Sounds good," said the rabbit, "but do those dogs ever catch up with the rabbits?"

"Oh no," said his erstwhile advisers, "the rabbits almost never gets caught."

"That word 'almost,' " said the rabbit, "has an alarming ring of frequency."

There need be but one exception to "likely" and "probably" to bring about the most desperate situation any generation of Americans ever has faced. That exception could occur for precisely the same reasons that led Japan to attack the United States in 1941—a belief that Communism has reached a peak of power that it cannot expect to retain or regain, and that it is "now or never."

MAJOR WILLIAM V. KENNEDY, Armor, PARNG, served four years as Liaison and Intelligence Office in Headquarters, 1st Squadron, 104th Armored Cavalry and as Commanding Officer, Troop D, 104th Armored Cavalry (The Governor's Troop). He is a 1956 graduate of the Associate Company Officers' Course of the Armor School and a 1958 graduate of the Combat Intelligence Officers' Course at the Intelligence School. Major Kennedy is presently serving on active duty in the Public Affairs Office of the National Guard Bureau, the Pentagon.

In short, to accept the "likelihood" of a series of small wars as a certainty that there can never again be a major war would be a gamble on the future of this Nation that no responsible official or soldier can afford to take.

In evaluating the role of Armor in the present world situation we are confronted with a second set of "likelies" and "probables."

This is the assumption on the part of a great part of the press and almost all of the academicians now writing on national defense that a full-scale nuclear war would be over in a matter of days, that it would not involve substantial land combat forces and that "winning" or "losing" would be a matter of irrelevance.

This assumption is based on arithmetic, and only arithmetic, i.e., the great powers now have *x* number of megatons at their disposal; these figure out to *y* numbers of pounds TNT equivalent per each man, woman and child alive, and that, therefore, nuclear war is certain to be over in the time it takes both sides to salvo their weapons.

The charming simplicity of this theory not withstanding, no man on earth can say with certainty that this would be, in fact the outcome of such a "nuclear exchange." It can be said with certainty, however, that large numbers of human beings subjected in past history to conditions of chaos and slaughter approximating those of nuclear catastrophe have shown a surprising capacity for renewing and continuing a struggle.

The peoples involved in the Thirty Years War; China during the chaotic years of the T'ai P'ing Revolt, the armies on the Western Front in World War I, all demonstrated the ability of humans not only to survive, but to carry on military activities that affected the future course of history.

The most valid indicator of possible American behavior in the face of a comparable situation lies in the conduct of the Confederate States in 1864-65.

A similarly useful indicator of the character of the Russian people and of those other Soviet peoples most closely related to, and allied with them lies in the history of World War II.

In neither case was there the slightest indication of a willingness to surrender until resistance had been physically stamped out.

In both cases, the governments and the populations concerned demonstrated a willingness to sacrifice all that had been built up by all preceding generations.

The issues involved in the present conflict are certainly no less clear cut, and no less charged with emotion and personal and national interest than those of the Civil War and the war on the Eastern front.

The basic issue involved in the present conflict is nothing less than the destiny of man, either as a creature of the state and his own worst instincts, or as a creature with an innate, and eternal dignity.

Only those who never have seen the consequences of military defeat, or who have forgotten the intensity of the struggle man has waged for freedom down through the ages could believe that this issue is "irrelevant," no matter what the cost of resolving it in favor of freedom.

From all of this, it seems reasonable to conclude that the United States cannot proceed on the assumption that a nuclear war is impossible, or that such a war, if it does occur, will be limited to a predictable period of days, months or years, and to a predictable type or level of forces.

On the contrary, all of the evidence at hand points to massive land, sea and air combat from the first moment of such a conflict, lasting until one side or the other is no longer able to resist.

The Armor soldier is faced, therefore, with two major challenges:

a. The existence of Communist-inspired and directed "wars of national liberation," requiring only fragmentary Armor forces;

b. The continued threat of a major nuclear war, involving Armor forces on a scale exceeding that of any war to date.

In regard to any form of conflict, it must be recognized that Armor is a strategic rather than a tactical arm, in the sense in which these two terms currently are being used.

This does not rule out the employment of Armor in a significant role in the smaller conflict, any more than such conflicts rule out use of the B-52 and other primarily "Strategic" weapons and weapons delivery systems.

But this is not the *primary* role of Armor in the present world situation, any more than dropping high explosives ordnance is the primary role of the B-52.

The primary role of both Armor and the Strategic Air Command is to deter a major war, if that is possible, and to win such a war if deterrence fails, employing whatever combination of weapons may be necessary to complete that task in the shortest time possible.

In this, there is a closer correlation between Armor and the big bombers and missiles than most observers have recognized, or, more accurately, have allowed themselves to admit.

In an intercontinental war, bombers and the long range missles can stun, disorganize and disrupt. They cannot gain a lasting decision, one that will change the course of history as effectively as did the American and Allied occupation of Germany and Japan.

Armor alone is capable of making the rapid, long-range penetrations that can give meaning to

the destruction wrought by nuclear weapons.

Armor alone offers the *certainty* of ending a nuclear war, because Armor alone offers the means to seize and hold the strategic areas from which the enemy's nuclear weapons are coordinated, aimed and fired.

To the extent that the Seventh Army and Allied Armor formations in Europe and in strategic reserve elsewhere are kept at or above their present level of power and efficiency, the United States and its Allies will be able to refrain from direct nuclear attack on populations and the economy that supports those populations.

All this is possible because Armor alone offers the means to operate and to achieve meaningful strategic results in the land environment produced by a nuclear catastrophe.

This environment will be identical to that encountered in Joint Exercise DESERT STRIKE, in May 1964, regardless of the normal climate of the region involved. In this man-made desert, dismounted formations can survive only to the extent that they are able to occupy high, difficult terrain. Their effect on the armored forces that swirl around them will be about the same as that produced by isolated Japanese island garrisons by-passed during World War II.

Airborne forces in battalion strength can be a valuable adjunct to operations of the Armor columns. But, as in DESERT STRIKE, it is difficult to believe that they can be employed in larger than battalion combinations. The susceptibility of troop and cargo aircraft operations to nuclear attack; the length of time required to marshal and execute large airborne operations; the likelihood of complete changes in the ground situation while the aircraft are enroute to the drop zone; the extreme sensitivity of such operations to the slightest vagaries of weather, and the almost complete tactical nakedness of air-dropped formations in an armored and mechanized infantry engagement all militate against operations that depend for their success upon air-dropped troops and equipment.

The air transport now required to support large airborne operations can be more profitably employed in the logistic support of the more flexible and more powerful Armor striking forces. For, in the nuclear desert, these striking forces must operate without permanent land logistic links. For the same reason, combat and logistic ground vehicles alike must be able to operate over vast areas where roads, towns, farmland and forest have been reduced to a common base of dust, ashes and, in bad weather, mud.

Airmobile elements organic to the major Armor formations offer much greater promise of accomplishing the missions originally assigned to air-dropped forces.

It is this versatility of the tank, mechanized infantry, artillery and airmobile elements contained in the modern Armor corps and army-level striking force, joined in close concert with Strategic and Tactical air power that gives to American foreign policy the option of avoiding a direct attack on the society of the Communist nations.

Obviously, we must avoid such an attack, in the event we ourselves are attacked, if we are to separate the peoples of these lands from the governments that have been established over them by conspiracy, usurpation and terror.

In short, Strategic and Tactical air missile power need not and must not be used to attack the life of the enemy nation itself. Their primary purpose must be to disrupt command and control, communications and transport and to gain absolute air supremacy.

Once this has been achieved, on one side or the other, it will be possible for deep-striking Armor formations to seize their assigned strategic objectives. Upon this will depend the outcome of the conflict—and with that the future of mankind, in freedom or in slavery.

It can be concluded, therefore, that the Armor soldier must never allow his attention to be diverted from the transcending strategic role occupied by Armor in the present world conflict.

This is not to say that he can ignore, or discount the importance of the "wars of national liberation." Such conflicts threaten the world strategic position of the United States. Each is a microcosm of the situation that will exist throughout Eurasia in the event of a total war. The methods being employed to cope with them are substantially the same as those upon which the Armor commander must rely to secure his columns and his base areas against guerrilla attack. The airmobile forces involved are the same as those the Armor commander must employ forward and to the flanks of his main columns.

So long as the use and employment of these forces is mentally fitted into the much greater panorama of strategic Armor operations, such training and experience is valuable. It could become an obstacle were it to lead to the conclusion that limited, dismounted operations have now become the center rather than the periphery of the Army's role in the latter half of the 20th Century.

There is no escaping the reality of total industrial and mechanized warfare, even when such warfare is conducted by forces in being rather than by forces in action. Armor is the land power expression of such warfare.

If all this has come to be obscured in the public mind by the concerns of more immediate emergencies, it must not be so obscured in the minds of those who are responsible for the present and the future strength of Armor.

LEGEND OF FIDDLER'S GREEN

By LIEUTENANT COLONEL PAUL M. CROSBY

According to *The Cavalry Journal*, the legend of Fiddler's Green "was inspired by a story told quite some time back by Captain 'Sammy' Pearson at a campfire in the Medicine Bow Mountains of Wyoming.

> "Having mentioned Fiddlers' Green and found that no one appeared to have heard of it, Pearson indignantly asserted that every good cavalryman ought to know about Fiddlers' Green, and forthwith told the story.
>
> "He said that about halfway down the trail to Hell, there was a broad meadow, dotted with trees and crossed by many streams (comparable, I suppose, to the Elysian Fields), and here all dead cavalrymen were camped, with their tents, horses, picket lines, and campfires, around which latter the souls of the dead troopers gathered to exchange reminiscences and tell stories. There was also the old army canteen store (where liquor was sold), long since hounded from this mundane sphere by the zealous efforts of the W. C. T. U.
>
> "No other branches of the service might

LIEUTENANT COLONEL PAUL M. CROSBY, Armor, is a 1961 graduate of the Command and General Staff College, Fort Leavenworth, and is presently assigned as senior Armor instructor at the Artillery and Missile School, Fort Sill, Oklahoma.

stop at Fiddlers' Green, but must continue the march straight through to Hell. Though it was true that some troopers, feeling the call to eternal damnation, had packed their equipment, mounted, and set out to continue their journey, none had ever reached the gates of Hell, but having finished up their liquor had returned to Fiddlers' Green.

"I have never heard any explanation of the name of this 'bivouac of the dead,' but I believe, as Captain 'Sammy' Pearson said, that every good cavalryman ought to know about Fiddlers' Green."[1]

L. M. Limpus, in a World War II book about the Army, says:

"It is 'Pistol attack! Follow me!—followed by the leader's dash to victory or to the cavalryman's proverbial resting place—'Fiddler's Green' "[2]

The view that Fiddler's Green is a figment of Cavalry tradition is supported by yet another source, "Sound Off! Soldier Songs From Yankee Doodle to Parley Voo," which gives the words and music for Fiddler's Green. The introduction reads:

"I am indebted to Lieutenant J. K. Mitchel, Cavalry, for the words of this old cavalry song. In 1923 the *Cavalry Journal* published it as a poem, but the Cavalry Association did not know whether or not it had ever been sung. I finally secured the tune from Lieutenant J. C. Hamilton, who told me that he heard it sung by old officers of the Seventh Cavalry when he was a small boy. An old soldier states that the song was a favorite with the Sixth Cavalry forty years ago. It is clearly another relic of frontier days and should be classed with 'The Wide Missouri' and the old Fourth Cavalry song, 'Old Arizona.' "[3]

But is Fiddler's Green *clearly* a "relic of frontier days?"

Webster's Third New International Dictionary defines Fiddlers' Green as "a heaven reserved for sailors or soldiers, especially cavalrymen."[4]

Confusion as to the meaning of the legend of Fiddler's Green is evident, however, if one consults the *second* edition of Webster's and there reads that Fiddler's Green is "the imagined Elysian field of sailors and vagabond craftsmen, where credit is good and there is always a lass, a glass, and a song."[5] Neither soldier nor cavalryman is mentioned in this definition.

How did sailors and vagabonds get into the picture?

All Hands, a U. S. Navy publication, offers sailors the following enticement:

"Imagine doing duty at a place where there's no reveille, lots to eat all day long, plenty of shore duty, and everything is free.

"There is such a place, restricted to sailors only.

"Called Fiddler's Green, this ethereal paradise is the sailor's traditional conception of heaven. Fiddler's Green is believed to be the only heaven claimed by an occupational group as its own.

"You never wait in line at this gay place, where eveything is strictly non-regulation. Here the main pastime is dancing with lovely ladies and singing all day long.

"Every good seaman hopes to go to this happy land when he dies."[6]

Membership at Fiddler's Green isn't restricted to sailors or soldiers or vagabonds. Vance Randolph writes:

"My neighbors in the Ozarks don't believe in Purgatory and they never heard of Limbo, but many of them refer occasionally to Fiddlers' Green, which is seven miles the other side of Hell. This place was originally set aside for fiddlers only, but later regulations admit banjo-pickers and story-tellers and ballad singers and other fellows with colorful accomplishments, even if they can't scrape the fiddle. There are sailors and peddlers and tinkers in Fiddlers' Green, and a few cowpokes, and maybe a thin scatterin' of old soldiers. Some people say that the dance-hall girls from West Hell are allowed to come over on Saturday nights, but there is a divergence of opinion about this."[7]

A further blow to the tanker's pride, since Armor is the legitimate and proud successor to the Cavalry, is the inconsistency in the venerable *Cavalry Journal:*

"So when the cavalrymen die, their souls ride away with full pack and arms down the long dusty road to the Next World. But two miles before the fork where the road turns north to Heaven and south to Hell, they ride off the road and dismount. They lead off to the right and past them march the infantry and the artillerymen drive their guns and caissons past, marching on to the fork of the Road to the Next World. * * * And afar through the day and night, from the distant Road to the Next World, comes the muffled tramp of the infantry and the rumbling of the guns (and of late there has been the clangor of tanks and from overhead the hum of planes) marching on to the South Fork of the Road to the Next World."[8]

Thus there was a time when tankers, as well as infantrymen, artillerymen, and aviators, were re-

quired to travel the South Fork leading to Hell.

The Oxford English Dictionary says that Fiddler's Green is a nautical term meaning "a sailor's elysium, in which wine, women and song figure prominently."[9] This famous reference work then lists these sources of the term:

> "My grannan . . . used to tell me that animals, when they depart this life, were destined to be fixed in *Fidler's Green." (Sporting Magazine,* XVI, p. 404, 1825).
>
> "It is . . . believed that tailors and musicians after death are cantoned in a place called 'Fiddler's Green.' " (W. H. Maxwell, *Capt. Blake,* v. I, XV, 1836).
>
> "We shape a course for Fiddler's Green." (Marryat, *Dog-fiend,* 1837).
>
> "The pilotless narrows which lead to Fiddler's Green, where all good sailors go." (J. D. J. Kelly, *Harper's Magazine,* pp. 441-2, Aug., 1883).

Another early reference, Marryat's *Snarley-Yow* (about 1837), gives this verse:

> "At Fiddler's Green, where seamen true,
> When here they've done their duty,
> With bowl of grog shall still renew,
> And pledge to love and beauty."[10]

Definitions given in three encyclopedias show how the definition of the term "Fiddler's Green" was expanded during the years from 1881 to 1955:

> "A sailor's paradise, where dance houses and kindred amusements abound."[11]
>
> "A name given by sailors to their dance houses and other places of frolic on shore; sailors' paradise."[12]
>
> "The Elysium of sailors; a land flowing with rum and lime juice; a land of perpetual music, mirth, dancing, drinking, and tobacco; a sort of Dixie Land . . ."[13]

Even the Canadians have their versions of the origin of the legend. The dedication of Margaret Widdemer's poem, "Fiddlers' Green," is "for Anna, who told me the story of the place 'where the souls do be going that was too bad for Paradise and too charming for Hell . . .' "[14]

And Theodore G. Roberts, also a Canadian poet, prefaces his "Fiddler's Green" with the claim that "at a place called Fiddler's Green, there do all honest Mariners take their pleasure after death; and there are Admirals with their Ladies and Captains of lost voyages with the sweethearts of their youth, and tarry-handed Sailormen singing in cottage gardens."[15]

At least two books have the title "Fiddler's Green." Wetjen's book, although fictional, deals with old legends of the sea. He writes: "I have been unable to discover the origins of many of the legends and beliefs, but they are all undoubtedly very old, probably going back to pagan times . . ."[16] Ernest K. Gann's novel is dedicated to "those rugged individualists, the commercial fishermen." Except for an abbreviated definition of Fiddler's Green, which is very nearly the same as that found in Webster's Second Edition, Gann's book contains nothing that helps unravel the background of the legend.[17]

It should be apparent at this point that the origin of the Fiddler's Green legend is uncertain. There is no agreement among poets and writers as to what creatures are privileged to go there. The list should include (in no particular order or rank) animals, tailors, musicians, sailors, vagabond craftsmen, soldiers, cavalrymen, fiddlers, banjo-pickers, storytellers, ballad singers, tinkers, peddlers, cowpokes, and "souls . . . too bad for Paradise and too charming for hell."

Even the spelling of the name of this legendary place varies from author to author. Is it Fiddlers Green, Fiddler's Green, Fiddlers' Green, Fiddlers'-Green, or Fidler's Green?

There seems to be no doubt that Fiddler's Green is an imaginary place, free of care, and that it is the figment of very old legends. One of the oldest references to be found (1825) describes it as the place where animals go when they die. Tailors and musicians early occupied a place of honor, if the date of the references is the only consideration. Other fairly old sources mention sailors (of all ranks). Certainly, most references allude to the priority given to seafarers.

The earliest written source referring to the Cavalry is Colonel Stodter's verse, published in *The Cavalry Journal* in 1923. Of the origin of the story and the introductory remarks in Dolph's book, Colonel Stodter writes:

> "I do claim authorship for the Cavalry version. It my recollection that I wrote the verses in 1910 or 1911 at Fort Russell (now Ft. Warren) Wyoming, where my father . . . was then stationed. I first heard the prose story of Fiddler's Green as a place where all good Cavalrymen go when they die, from Captain 'Sammy' Pearson, 9th Cavalry, over a campfire in the Medicine Bow Mts. where he, my father, and a Captain Love had taken their families on a hunting and fishing trip. We all gathered around a central campfire in the evening and Captain Pearson asked if anyone knew where Cavalrymen went when they died. No one did, and Captain Pearson proceeded to enlighten us about Fiddler's Green. He was a good story teller and made the most of it. I was much impressed and upon our return to the post I proceeded to put the story into verse. This effort I sent into the *Cavalry Journal* where it

was published, I believe, for the first time in some issue of the year 1911, as I remember. Unfortunately I have been unable to find in the Library of Congress the issue in which my verse was first published . . .

"I bought the book *Sound Off* shortly after publication and was most surprised at the introduction to Fiddler's Green. I had known Lieutenants Mitchel and Hamilton at Fort Riley, Kansas, 1928-1929, and had never heard of Fiddler's Green in verse, preceding mine. It would indeed have been possible that after publication in the *Cavalry Journal* in 1911 old officers of the Seventh Cavalry might have sung Fiddler's Green within Hamilton's hearing while he was yet a boy. The rest of the introduction appears to be mostly unfounded supposition.

"The story (not my verses) is doubtless very old and I agree with you that Fiddler's Green was probably first associated with sailors, along with 'Davy Jones Locker' and other yarns. Unfortunately Captain Pearson never told us where he got the story and I must have assumed that he made it up on the spot, for our entertainment."[18]

In the face of the foregoing information, the Cavalry and Armor have a very weak basis for any exclusive membership at Fiddler's Green. However, even those readers who agree with La Rochefoucauld that "one of the tragedies of life is the murder of a beautiful theory by a brutal gang of facts" may enjoy Colonel Stodter's verse in full.

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

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

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

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

ACKNOWLEDGEMENTS AND REFERENCES

Bibliographic assistance was provided by G. & C. Merriam Company, The Library of Congress, and The Chief of Military History. Valuable assistance was also furnished by Col. John H. Stodter (USA, Retired), Brig. Gen. C. A. Symroski, and Mrs. Marjorie M. Nelson and the staff of the USAAMS Library, Fort Sill, Oklahoma. The music used with Col. Stodter's words is from Dolph's book, "Sound Off."

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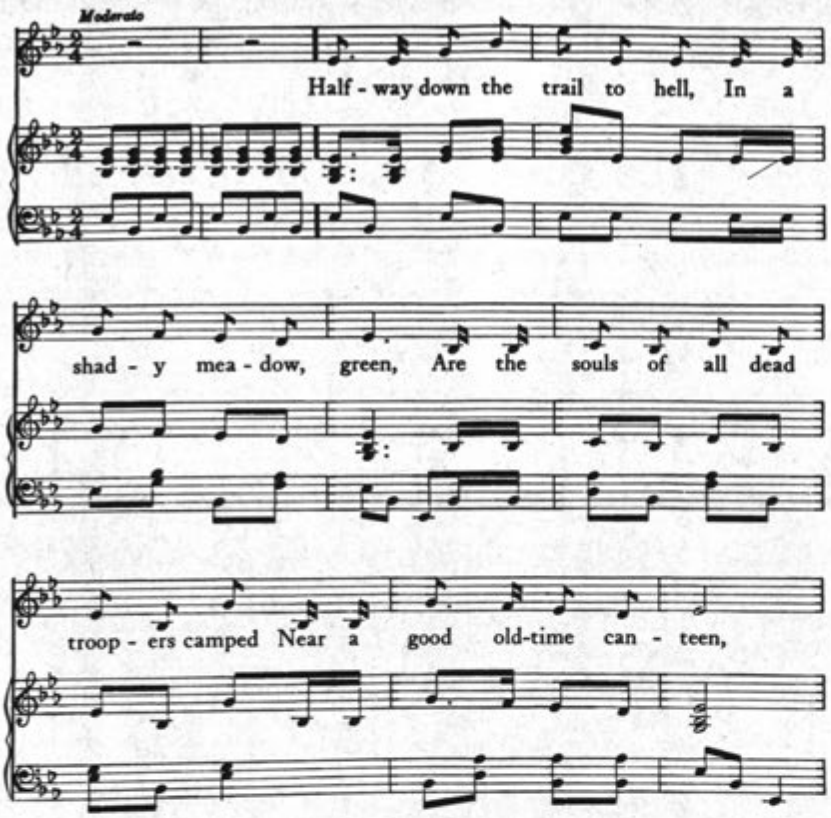
FIDDLERS' GREEN

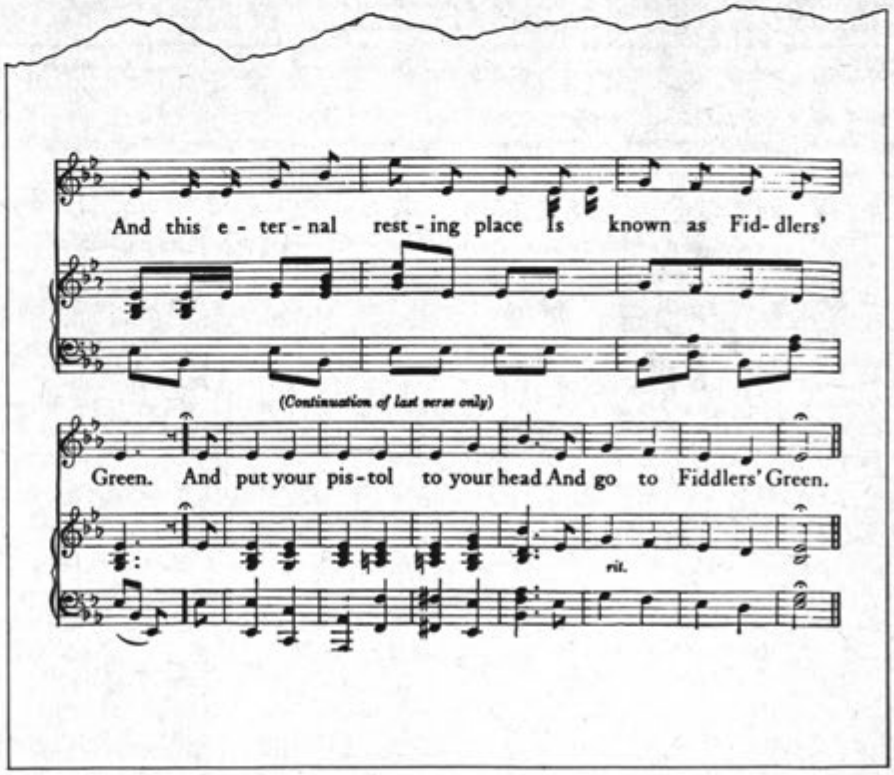


I am indebted to Lieutenant J. K. Mitchel, Cavalry, for the words of this old cavalry song. In 1923 the Cavalry Journal published it as a poem, but the Cavalry Association did not know whether or not it had ever been sung. I finally secured the tune from Lieutenant J. C. Hamilton, who told me that he had heard it sung by old officers of the Seventh Cavalry when he was a small boy. An old soldier states that the song was a favorite with the Sixth Cavalry forty years ago. It is clearly another relic of frontier days and should be classed with "The Wide Missouri" and the old Fourth Cavalry song, "Old Arizona."

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

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

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



Tank Platoon

Combat Readiness Check

By CAPTAIN LEWIS M. TUGGLE

COMBAT READY — NOT COMBAT READY — EXCELLENT — SATISFACTORY — UNSATISFACTORY. It is easy to obtain a definition for these terms, but what do they actually mean to unit commanders when evaluating a tank platoon's Combat Readiness? Would a tank platoon rated *Excellent* in the 3d Armored Division receive the rating of *Excellent* for the same performance in the 4th Armored Division? It may, or it may not, using our present subjective scoring for Tank Platoons. However, all units have the equal responsibility to achieve and maintain high standards of Combat Readiness. A failure of any item in Combat Readiness is a serious matter for a commander and item(s) failed must receive immediate remedial attention.

The purpose of this article is to point out to the commanders the need for objectively scoring individuals, tank crews, and tank platoons. This information will be based upon a Research Memorandum, "The Development and Evaluation of the Tank Platoon Combat Readiness Check," prepared by the U. S. Army Armor Human Research Unit (HumRRO), Fort Knox, Kentucky. Our present formal platoon and company ATT's afford the commander flexibility, however, they lack comprehensiveness, objectivity, and standardization.

Every year a great deal of money, time, and arduous effort is spent on training and annual training tests. A discussion with many commanders would reveal that they are of the opinion most of our training is lacking in realistic combat situations, and there is a need for more field training exercises. The distinct possibility of future conflicts indicates that nothing can be substituted to obtain the best results from this training. To ensure highly effective Combat Readiness which is the finished product we achieve from all training, we must have an effective system to detect and indicate to the commander *specific weaknesses* within his organization.

Presently, commanders offer considerable debate over the adequacy and the reliability of the evaluation in the resulting scores of our platoons tested. Often, the unit is judged and scored as a whole. The duties and skills of individuals and tank crews are overlooked and not fully examined. Too often when the individuals and tank crews are evaluated, the evaluation is based on the opinion of a scorer, with such subjective remarks as, "range card improp-

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CAPTAIN LEWIS M. TUGGLE, Armor, entered the service in 1945. He served with various units as an enlisted man and as a platoon sergeant with the 3d Infantry Division, Korea, during the Korean conflict. In 1955, he was commissioned, Armor, from the Infantry School, Fort Benning, Georgia. Upon graduating from the Armor Officer Basic Course in 1956, he was assigned to the 1st Squadron, 11th Armored Cavalry Regiment, Germany, where he served as a platoon leader, troop executive officer, maintenance officer, and troop commander. He was assigned to the 3d Armored Cavalry Regiment from 1960 to 1964, where he served as the 1st Squadron Howitzer Battery Commander, Reconnaissance Troop Commander, Squadron S-2, and Regimental Headquarters Troop Commander. In 1964, he returned to CONUS and attended the Associate Armor Officer Course. He is currently assigned as an Armor Advisor to the Pennsylvania National Guard's 104th Armored Cavalry Regiment.

erly prepared," "radio procedure inadequate," etc. These remarks are not specific and offer little to a retraining program.

It is most difficult to assign additional weight to items without established criteria as to their importance. Fully recognizing that some items of individual duties, tank crew duties, and platoon actions are more important than others, we must also recognize that all items of individual duties, tank crew duties, and platoon actions have their importance. All items reveal their importance *only* when they are needed to properly complete a situation. The platoon is only as strong as its weakest individual or crew. This weak link must be detected and isolated so immediate remedial action may be taken.

Subjectively scoring these items of individual duties, tank crew duties, and platoon tasks when differentially weighed only broadens this opinion margin of scorers in evaluating Combat Readiness. Armor Doctrine and concepts have moved toward combining the platoon and company annual training tests. The writer agrees with this doctrine and concept; however, he is of the opinion that a high standard of Combat Readiness must be obtained before combined platoon/company training begins. With the tank platoon being the basic combat element within our Armor units, we must concentrate and ensure that high standards of Combat Readiness are maintained.

The Tank Platoon Combat Readiness Check evaluated by HumRRO will ensure that this high standard of Combat Readiness has been obtained and will point directly at the specific weaknesses of the individuals and tank crews. To evaluate the skills and duties as individuals, as a tank crew, and as a platoon, the test is divided in three phases.

Phase I of the test is the individual crew member and individual order phase (day), and covers the following operations:

a. Before-operations maintenance and stowage checks.
b. Communications and at-halt maintenance checks.
c. Selection and occupation of a firing position.
d. Preparation of a range card.
e. Preparation of the individual tank to withstand a friendly nuclear burst.
f. Cross-country movement using a strip map.
g. Range firing (main gun, coaxial, and caliber .50 machineguns) at simulated targets.
h. After-operations maintenance checks.

To perform Phase I, it is divided into four stations. Stations will be separated and out of sight of one another.

Station 1: This is the assembly area, where the test begins. Here, before-operations maintenance checks and stowage will be tested. The driver, loader, and gunner of the tank crew will be taken to the tank individually and be required to perform his duties of before-operations maintenance. The tank commander may be present to observe, however, he will not be allowed to supervise or make corrections.

After the before-operations check, the gunner, loader, and driver will be checked on OEM stowage. Each crewman will be required to show or tell the scorer where the items of OEM for which he is responsible are stowed on the tank. As an example, the gunner will show or tell the scorer the location of the elevation guadrant, flashlight, lens tissue, etc. Check sheets will conform to unit SOP stowage plan and vehicle OEM.

Station 2: Here the communications check and at-halt maintenance will be tested. Have the loader put the radio set into operation on prescribed frequency(s). He will be checked on proper procedure for each set(s). This accomplished, the gunner and loader will be required to check in to the tank commander. They will be checked on procedure such as Control Box switch to INT position, volume adjusted properly, etc.

Once the crew members have completed the communications check, they will be sent to a position out of sight. Each member will then be called back individually to perform an at-halt maintenance check. When the crew has finished the check, the tank commander will be given location and told to move to Station 3.

Station 3: At Station 3, the tank commander will be assigned the area of responsibility for a firing position. The tank commander will be given 5 minutes to select and prepare his primary position. After the primary position has been scored, the tank commander will be required to select and point out his alternate position. He will not be required to move the tank.

The next requirement at this station will be the preparation of a range card. The tank commander and gunner will be scored separately on each one's responsibility in preparing the range card.

After the range card has been completed and scored, the tank commander will be ordered to prepare for a nuclear blast that will have an effect on his position. Also, he will be given 5 minutes to prepare for the detonation. When the crew has been scored on the preparation for the nuclear detonation, Station 3 will be completed. The tank commander will be given a strip map and ordered to move to Station 4. The tank commander will be scored on his actions. The driver will be scored on his driving ability to negotiate obstacles and rough terrain properly.

Station 4: This station will be located on a range which will accommodate firing all weapons.

The crew will be required to perform the prepare-to-fire checks. Each crew member will be called upon to perform his portion individually, only calling upon other members when their assistance is required for the individual to complete his portion of the before-firing check.

When the tank crew has completed the before-firing check, it will be issued ammunition to zero the main gun, coaxial, and caliber .50 machineguns. When zeroing is completed, a required exercise will be fired using the main gun. Upon completion of the main gun exercise, the crew will fire a caliber .50 and coaxial exercise on a moving tank course. This exercise completes Phase I.

Phase II is the individual tank crew phase (night) and covers the following operations:

a. A night movement along paved roads and cross-country using partial and complete blackout (including the use of infrared driving equipment).

b. Preparation of range cards using flares.

c. Repelling an aggressor night attack using live ammunition and all tank weapons and flare illumination.

Phase II will begin by the issuing of a strip map to the tank commander. The strip map will include the route, no light lines, blackout distance, cross-country using infrared equipment, cross-country blackout, and location of a firing position. This march will be made without the assistance of guide, directional arrows, or other artificial direction devices.

Upon arriving at the designated location, the tank commander will select and occupy the best available position. If the tank position selected needs to be adjusted before crew can fire tank for safety reasons, the Officer in Charge (OIC) will direct the tank commander to make necessary adjustments.

Here the tank commander will be given a sketch of the area of responsibility showing two designated target areas. The crew will be given illumination and be required to prepare a range card.

When the range card has been prepared, it will be checked by the OIC to ensure that it is within firing limits of the range. Then the OIC will inform the tank commander that the aggressor is approaching through target 1 and that the tank will fire five rounds. When the ammunition has been expended on target 1, the tank commander will be informed that aggressor armor vehicles are in the vicinity of target 2. He will be informed that he has available three rounds of ammunition. He will use only the ammunition required to obtain target destruction. He has two illuminating flares available to use upon his command.

On completion of firing the armored vehicle exercise, the tank will fire a coaxial and caliber .50 machinegun exercise. In this exercise, the tank commander will be informed of two aggressor teams approaching his position. The tank commander may have two flares upon his command. However, he will gain points if he needs only one. This exercise completes Phase II.

Phase III of the test is the tank platoon phase (day and night) and consists of the following:

a. Night movement to an assembly area and attack position.

b. Occupation of the assembly area.

An extract will now be shown from each phase of the test. The scorer scores one (1) point if the item was performed; a zero if the item was not performed. The score sheet offers little or no margin for opinion. The check sheets may be modified to conform to the unit's equipment.

Extract, Phase I, Range Card Preparation:

"GUNNER

Item	*Weight*	*Score*
1. Index HE on the Computer	1	____
2. Lay on the REFERENCE POINT	1	____
3. Zero the azimuth indicator	1	____
4. Request the range to Target A, or was it given by the TC?	1	____
5. Set range on computer?	1	____
6. Record (or announce to TC) the correct deflection (R or L)?	1	____
7. Record (or announce to TC) the correct elevation (+ or −)?	1	____
8. Record (or announce to TC) correct range?	1	____
9. Request range to Target B, or was it given by the TC?	1	____
10. Record (or announce to TC) the correct deflection (R or L)?	1	____
11. Record (or announce to TC) the correct elevation (+ or −)?	1	____
12. Record (or announce to TC) correct range?	1	____
13. Was all data entered on the range card?	1	____
14. Was Target A shown on the range card as *A*?	1	____
15. Was Target B shown on the range card as *B*?	1	____
16. Was the tank position shown on the range card?	1	____
17. Was the range shown as 'Rg _____'?	1	____
18. Was the quadrant elevation shown as (QE+ _____ or − _____)?	1	____
19. Was the deflection shown as 'Defl_____ (R or L)'?	1	____
20. Was a straight line drawn from the *tank* to Target A?	1	____
21. Was a straight line drawn from the *tank* to Target B?" (1:30)	1	____

Extract, Phase II, Night Movement Using Infrared Equipment (Cross-Country):

"1. The infrared equipment was not turned on too soon.	1	____
2. The tank was on the infrared trail when the equipment was turned on.	1	____
3. The tank commander assigned *specific* duties to the gunner.	1	____
4. The gunner performed his assigned duties.	1	____
5. The TC assigned *specific* duties to the driver.	1	____
6. The driver performed his assigned duties.	1	____
7. The TC assigned *spe-*		

cific duties to the loader. 1 ____
8. The loader performed his assigned duties. ..... 1 ____
9. The tank did not *at any time* follow the wrong route. ..... 1 ____
10. The TC (or crew member) located a depression. ..... 1 ____
11. The TC (or crew member) located the *specific* depression. ..... 1 ____
12. The TC (or crew member) recognized the depression as the *specified* depression. ..... 1 ____
13. No member of the crew used an unfiltered light, in violation of the SOP. ..... 1 ____
14. No member of the crew lighted a match or cigarette lighter in violation of the SOP. .. 1 ____
15. No crew member smoked. ..... 1 ____

NOTE: Items 10 through 12 should be modified to reflect the actual physical reference points in the local terrain complex." (1:63)

Extract, Phase III, Attack of the Second Objective:

"1. *All* tank commanders traversed their gun tubes toward the enemy. 1 ____

NOTE: Deletion of inappropriate questions will *not* affect the total score. . . .

2. The platoon attacked the platoon objective in LINE, WEDGE, ECHELON, COLUMN formation. (Select one.) 1 ____
3. The platoon leader set up a base of fire and a maneuvering element when fired on. ..... 1 ____
4. The platoon leader designated the route of maneuver. ..... 1 ____
5. The platoon leader designated areas of fire for the base-of-fire tanks. ..... 1 ____
6. The platoon leader designated specific targets for the base-of-fire tanks. ..... 1 ____
7. The platoon leader attacked by bounds. .... 1 ____
8. The platoon used ALTERNATING, SUCCESSIVE bounds. (Select one) ..... 1 ____
9. The maneuvering element used the available cover and concealment. ..... 1 ____
10. The base of fire joined the maneuvering element in the assault. .... 1 ____
11. The tanks participating in the assault covered the objective with area fire. ..... 1 ____
12. The platoon leader reported seeing aggressor tanks on the objective, to the OIC. ..... 1 ____
13. The platoon leader ordered the base of fire to shift its fire (or to CEASE FIRE) when the maneuvering element began the assault. ..... 1 ____
14. The platoon leader ordered the base of fire to join the maneuvering element on the objective. ..... 1 ____
15. The platoon leader positioned his tank on the objective, so he could best control all the tanks in his platoon. 1 ____
16. *Each* tank took up a defensive firing position when the assault was completed. ..... 1 ____
17. The platoon leader designated areas of responsibility for *each* tank to observe for enemy counterattack. 1 ____
18. The platoon leader reported the seizing of the objective to the OIC. ..... 1 ____
19. The platoon leader requested a report from *each* tank regarding their continued state of combat readiness. ..... 1 ____
20. The platoon took up positions on the far side of the objective. .. 1 ____
21. *Each* tank had one crew member designated as AIR ALERT observer. (If this duty was previously assigned, give credit.) .... 1 ____
22. The people designated as AIR ALERT observers actually did the job; that is, they stayed on the tank and observed. ..... 1 ____
23. *All* tank commanders reconnoitered for, and selected, alternate positions. ..... 1 ____
24. An attempt was made to camouflage the tanks. ..... 1 ____
25. The platoon leader knew what his mission was while on the objective. (The scorer will ask.) ..... 1 ____
26. *All* TC's knew the platoon's mission while on the objective. (The scorer will ask.) ..... 1 ____

NOTE: Mission is to be the base of fire for the company attack."

Using check sheets prepared in detail and objectively scoring the test, we isolate and identify the specific weaknesses and areas where additional training is required for the individuals, tank crews, and platoons to be combat ready.

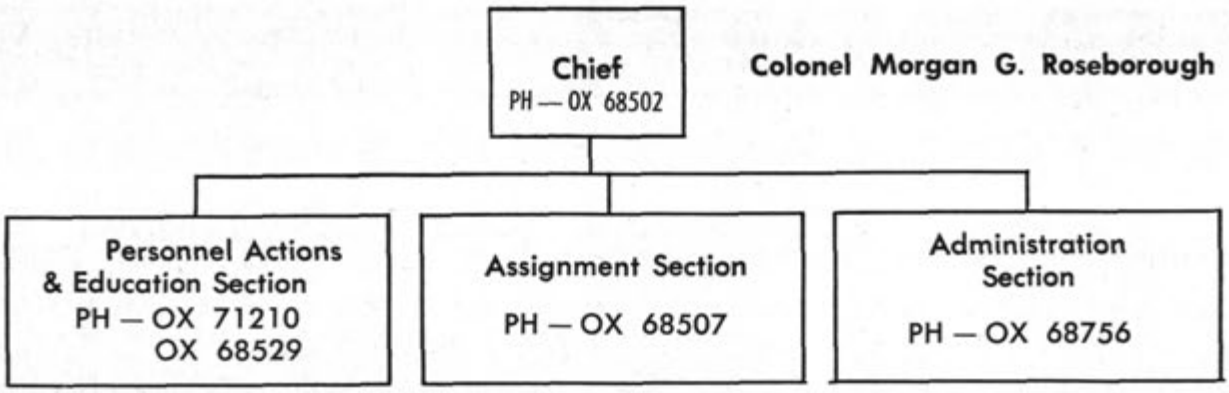
Once the commander is aware of these specific weaknesses and areas, it is a simple task for him to accomplish this additional training in the minimum time. Now we will have achieved our *ultimate goal*—COMBAT READY.

PROSPECTIVE AUTHORS

It is requested that all officers and enlisted men on active duty, National Guardsmen, and Reservists, forwarding articles to ARMOR *with a view toward publication, submit their articles in triplicate, double spaced, with a minimum margin on each side of at least an inch and a half. One copy of all articles submitted for clearance is retained by Security Review, Department of Defense.*

Notes From Armor Branch Chief

ARMOR BRANCH



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Lt Colonel Robert J. Baer

Personnel Actions
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Major John P. Prillaman

Military and Civilian Education
Major Earle L. Denton
Major George L. Bernard

Section Chief
Lt Colonel Charles L. Phillips

Overseas field grade assignments
Major Thomas P. Lynch

Overseas company grade assignments
Major Walter F. Ulmer

CONUS field grade assignments
Major J. Godfrey Crowe

CONUS company grade assignments
Major Richard A. Miller

Section Chief
Miss Edna M. Bayless

PREFERENCE STATEMENT

1. All officers are encouraged to review their preference statement and to ensure they are up-to-date.

2. Officers who are overseas are reminded that they should submit a new preference statement approximately nine months prior to their return to the United States.

3. Upon return to CONUS, a new preference statement should be completed and forwarded to Department of the Army not later than 90 days after arrival on your new duty station.

4. All preference statements should be filled out completely showing both principle choices of duty and geographical area. A general order of preferences for all CONUS Army areas and overseas theaters should be established.

5. Recent developments in the world situation have made it necessary for Armor Branch to contact officers at home and in a leave or travel status. Therefore, all officers should include the following information on their preference statements: Duty and home telephone numbers and their leave address and telephone number, if known, or the name of the individual in which telephone number would be registered.

6. Officers on unaccompanied tours should list the address and telephone number of their dependents.

7. Number of dependents and personal desires should be listed under personal considerations.

THE NEEDED MAN

By ARMOR BRANCH

THE RETENTION of young officers on active duty beyond their periods of obligated service continues to be a matter of utmost importance to the Army. Many studies have been made of the situation, and many programs initiated, still much remains to be done by all if the quality and quantity of the officer corps is to maintain pace with ever increasing demands being placed upon it by the events of our time.

Each year many talented young officers join the ranks of Armor. We must encourage those who are qualified to remain in the service in an indefinite status, and integrate the best of them into the Regular Army. Concurrently, we must make every effort to retain the young Regular Army officer. It is only as a result of such efforts that we can assure a quality corps of Armor officers to meet the challenges which we face.

An analysis of the reasons for resignation or declination of extension submitted by junior officers over several years discloses that lack of job satisfaction is the predominant factor in their decisions. Other reasons commonly cited are lack of family stability (including housing and separations), dissatisfaction with the quality of their superiors, the handicap to a career as a result of an unfavorable efficiency report, and inadequate pay. Most of these objections have been isolated and discussed in realistic detail in DA Pamphlet 600-4, *Commander's Guide for Career Counselling*. As discussed in the pamphlet the reasons given the Army by those leaving the service are those which appear to be the most acceptable. They may or may not be the real reasons for leaving.

It is recognized that many of the areas of indicated dissatisfaction would require action by agencies at the highest levels to eliminate. However, we believe that our mutual interest and endeavors can do much to improve the picture and it is to this end that these remarks are being directed. Armor Branch operations have been tailored to give officers the personalized attention they can justifiably expect. We carefully consider personal problems in making assignments; counsel officers through visits, by letters and by telephone; identify potential RA officers for consideration by commanders; write numerous letters encouraging officers to improve their performance and qualifications; and publicize retention efforts in articles such as this. The real key to retention, however, has been, and will continue to be, the commander who is in daily contact with the young officer. DA Pamphlet 600-4, *Commander's Guide for Career Counselling* has been prepared to assist the commander in presenting to the young officer a factual, logical, and objective evaluation of a military career. When combined with the commander's imagination, knowledge, and personal experience it is an exceptional retention tool. Above all, it deals directly with the reasons given for leaving the service by acknowledging those areas requiring improvement, but at the same time emphasizing the Army's strengths. One squadron commander, in addition to personal interviews, invited his junior officers to participate in a seminar to discuss the pros and cons of an Army career. This seminar was held in an informal atmosphere in an attempt to allow each young officer to freely express his personal views. This discussion was profitable. The young officers appreciated the opportunity to be heard and the commander acquired a better insight into the problems of his officers and in some cases was able to dispel doubts and clear up misconceptions. After listening to their young officers' views, many other commanders have suggested and adopted some of the following practices aimed at increased retention. We feel they are worthy of your consideration:

a. Attempt to lessen pressures by providing compensatory time and requiring that periodic leaves be taken.

b. Revise policies which may tend to degrade dignity. For example, PX and club check cashing policies, post clearances, business practices of concessionaires, automobile registration, and assignment of quarters procedures.

c. Curtailment of command emphasis of involuntary contributions to permit a net increase in take home pay. This is not to be confused with command emphasis on meeting one's moral obligations to society and his community.

d. Expediting personnel actions.

e. Establishment of a formal program of family services, and publication of periodic newsletters to keep the distaff side informed of policies, social opportunities, and other material of current interest designed to satisfy their needs.

f. Rapid identification and separation of officers who do not show the promise of meeting the highest standards of integrity, duty, personal morality, social, and physical demeanor.

g. Consideration of the financial obligation to be incurred by officers when selecting the type and frequency of command social functions.

h. Selection of those exceptional officers for command positions who will take the time to train their subordinates.

i. Insure that officers are not selected for details or extra duties which debase their rank and position. On the other hand, the importance of an essential job that lacks glamor should never be played down. The officer who understands that his success will be geared to how he performs an assigned task rather than what that task may be is frequently the producer of outstanding results.

These are positive actions which have been implemented by commanders in various degrees that we believe have been responsible for the retention of some young officers. They are by no means a complete solution to the problem, but they do consider the young officer's criticisms and are a step in the proper direction to retention of the needed man.

Mechanized Infantry Live Fire Course

By MAJOR

GEORGE B. BARTEL

A LIVE FIRE COURSE for mechanized infantry squads has been developed at Fort Hood. The course is designed primarily to train squads to apply their fire power *from a moving* personnel carrier. The "Mechanized Infantry Squad Combat Proficiency Course" is the brain child of Colonel Arthur N. Whitley, CO, 3d Brigade, 2d Armored Division, who conceived the idea while serving with the Army Concept Team in Vietnam. While serving there he watched Vietnamese Cavalry Squadrons employ the PC effectively as a fighting vehicle, firing rifles, M79's, AR's and LMG's from the M-113 while it moved across the rice paddies of the Mekong Delta.

Upon his return to the U. S. and subsequent assignment to the 2d Armored Division Colonel Whitley decided to test the feasibility of a range to *train* the U. S. Mech Infantryman to fight from this vehicle before he gets into combat situations.

The 3d Brigade's Mechanized Battalion, 1/50th Infantry, received the project. The CO, Lt. Col. F. E. Shelton and his S3, Captain N. Wilderson, developed a trial exercise at Fort Hood's Tank Table VIII. A wet run demonstration was given for tactical unit commanders of the 2d Armored Division which resulted in approval of the concept by the Commanding General.

The big problem was to find ground suitable for the course where squads could run year-round and not interfere with other Fort Hood range operations. The Post Range Officer, Lt. Col. T. D. Woodley solved this problem. He provided an ideal piece of ground between West Range Road and the junction of House and Cowhouse Creeks, the site of abandoned Close Combat Range #1.

Then followed one of the most rapid range construction jobs in recent Fort Hood history. Anxious to complete the course before the start of the tactical training season, Colonel Whitley organized a task force and led it into action. The 1/50th Infantry provided the plan and the labor force; the 2d Armored Division's 17th Engineer Battalion provided heavy equipment and technical assistance. The Post G-3, Engineer, Ordnance Officer, Range Officer and Signal Officer rounded out the team.

The whole job took about a month and a sizable portion of this time was required by Post Ordnance to build a power take-off for the moving target motor. The course is simple in design and was built at minimum expense. M-59 Carrier hulls were used for bunkers and hard targets. Most of the remaining targets are "E" silhouettes. The result of this concentrated team effort is illustrated in *Figure 1*. Colonel Whitley, at the outset, had provided specific guidance to his range task force. This guidance is summarized as follows:

1. Each man must fire *his* weapon from the carrier at least twice, including the M-60 machinegun.
2. The majority of targets will be engaged while the carrier is moving.
3. Targets must be engaged from both sides of the moving carrier.
4. A ground moving target must be provided for the OEM .50 cal. machinegun.
5. A moving aerial target must be provided for the OEM cal. .50 machinegun.
6. An ambush situation in close terrain must be provided.
7. The course must include a dismounted phase in which the squad deploys from the carrier, maneuvers against and assaults an objective.

The rifle squads from Colonel Shelton's 50th Infantry ran the course first to develop range opera-

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tion procedure and to refine the scoring system. It was decided early that the best results would be obtained by creating competition among squads. The score sheet and Crew Classification developed from this experience is shown in *Figure 2*.

The combat proficiency course, as built, satisfies all these requirements. For detailed description of the course see *Figure 3*.

During early trial runs by the 50th Infantry, Chief Examiner Sergeant William B. Walsh of Hq. and Hq. Co. provided some refinements and additional polish to the course plan. He noted that the performance of squads was directly proportional to the effectiveness of the squad leaders. Thus the high number of points allocated to preparation of the squad and control by the leader during the individual exercises. Walsh also developed the standard positions for squad members in the carrier hatch. *Figure 4*. Other firers rotate to these positions as the carrier travels between firing points. It was found that no more than two men could fire comfortably (and thus, effectively) from one side of the hatch. Therefore, no more than two weapons are scored for any of the moving carrier exercises.

Several solutions were available for firing the M-60 from the carrier hatch. A soldier from the 1/50th Infantry fabricated a device which fits into either of the antenna bases located adjacent to the

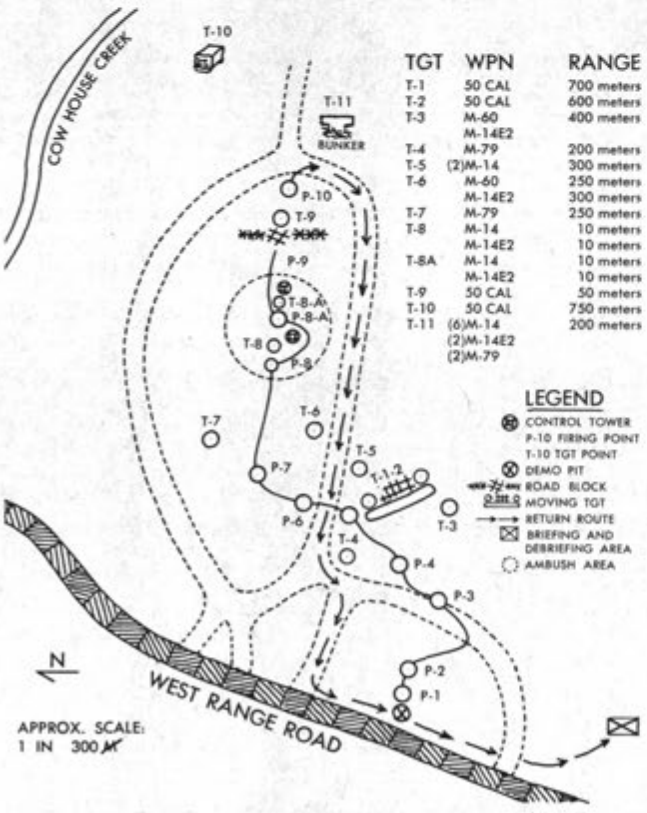

Figure 1

Figure 2
SCORE SHEET

UNIT _____ (Sqd/Plt/Co/Bn) SQUAD LEADER _____

DATE _____

Exercise	WPNS/RDS	Items and Possible	Points	Score
Was the squad fully equipped and prepared for combat?			200	
1. Moving Truck (PC stationary, fire to front)	1 cal. .50/50	Open fire within 10 sec	15	
		Completed within 60 sec	5	
		Fire Control	20	
		Target hits (sensed by Examiner)	70	
		Total Possible	110	
2. Aircraft (PC stationary, fire to front)	1 cal. 50/50	Opened fire within 10 sec	15	
		Completed within 60 sec	5	
		Fire Control	20	
		Target destroyed (Balloon bursts)	50	
		Total Possible	90	
3. Troops (PC moving, fire to right side)	1-7.62MG/100 1-M-14E2/40	Opened fire within 5 sec	15	
		Completed within 30 sec	5	
		Fire commands & con'l	20	
		Fire distribution & accuracy (5 points per silhouette hit plus 1 point per hit not to exceed 5)	100	
		Total Possible	140	
4. Troops (PC moving, fire to left side)	2 M-79GL/6	Opened fire within 5 sec	15	
		Completed within 30 sec	5	
		Fire commands & con'l	20	
		Fire distribution and accuracy (sensed by examiner)	30	
		Total Possible	70	
5. Troops (PC moving, fire to right side)	2 M-14/40	Opened fire within 5 sec	15	
		Completed within 45 sec	5	
		Fire commands & con'l	20	
		Fire distribution & accuracy (5 points per target hit plus 1 point per target hit not to exceed 5)	60	
		Total Possible	100	
6. Troops (PC moving, fire to right side)	1-7.62MG/100 1-M-14E2/40	Opened fire within 10 sec	15	
		Completed within 45 sec	5	
		Fire commands & con'l	20	
		Fire distribution & accuracy (5 points per silhouette hit plus 1 point per hit not to exceed 5)	100	
		Total Possible	140	
7. Troops (PC moving, fire to left side)	2 M-79 GL/6	Opened fire within 5 sec	15	
		Completed within 30 sec	5	
		Fire commands & con'l	20	
		Fire distribution and accuracy (sensed by examiner)	30	
		Total Possible	70	
8 & 8a. Ambush (PC moving, fire to left side then right side)	1 M-14E2/20 1 M-14/20	Returned fire immediately after explosion	30	
		Fire commands & con'l	20	

Exercise	WPNS/RDS	Items and Possible Points		Score
		Fire distribution & accuracy (5 points per silhouette hit plus 1 point per hit not to exceed 5)	100	____
		Total Possible	150	____
9. Roadblock (PC Halted)	1 cal. .50/.30	Returned fire immediately after explosion	30	____
		Target hits (max of 5)	15	____
		Squad rapidly and properly dismounted and deployed	35	____
		Roadblock rapidly and properly bypassed	35	____
		Total Possible	115	____
10. (PC Halted)	1 cal. 50/100	Opened fire within 10 sec	15	____
		Completed with 30 sec	5	____
		Fire command & con'l	20	____
		Fire distribution and accuracy (sensed by examiner)	100	____
		Total Possible	140	____
11. Assault of bunker	5-M-14/100 2-M-14E2/80 2-M-79 GL/6 Prac gren/5	Squad rapidly and properly dismounted and deployed	30	____
		Proper formation & dispersion	30	____
		Effective fire and movement/assault fire	40	____
		Consolidation & reorganization	30	____
		Total Possible	130	____
		Grand Total Possible	1455	____
		Total Score		____

Minimum Satisfactory Score—945

Examiner _____ Officer In Charge _____

NOTES:

CREW CLASSIFICATION	SCORE
Total Possible	1455
Expert	1200
Sharpshooter	1090
Marksman	945
Unqualified	Below 945

carrier hatch. *Figure 4*. Or the machinegun can be fired from the tripod with legs strapped to the carrier. A third, less desirable solution is to fire using the bipod.

The moving aerial target consists of a helium filled balloon tied to the moving target trolley. This target appeared at first to be a formidable challenge to the squad leader, but after practice the .50 cal. gunners of the 1/50th Infantry achieved excellent results in hitting the simulated helicopter.

It was found to be unproductive to run squads through this course "cold." Initial runs indicated best results would be obtained by providing for one dry run, one live exercise for practice and one record run. Trial runs showed that this amount of practice caused dramatic improvement in squad scores. To allow two wet runs ammunition requirements *(Figure 5)* must be multiplied by 2 for each squad.

Figure 6 illustrates the course control plan. There are two each Safety Officers, Safety NCO's, examiners and scorers so that succeeding squads can commence their runs without delay.

Uniformity of scoring will be best achieved by retaining the same examiners for all the squads of a battalion. Some targets are scored by examiner sensings and other scoring points, such as those for Exercise 11, would be rated differently by different graders.

Figure 3

SEQUENCE OF ACTIONS

1. General

a. Preparations for negotiating the course will be made before the unit assembles in the bleachers for the Chief Controller's orientation except that weapons will not be loaded. All weapons will be test fired at firing point 1 before starting exercises.

b. Conduct of Course.

(1) Exercise 1. PC Halted (Moving Panel—cal. .50). Time will start when panel moves. Telephone order to target operator given by Chief Controller on signal from Examiner. Examiner senses target hits. Upon completion the PC moves to point 2.

50 rds cal. .50

(2) Exercise 2. PC Halted (Aerial target (balloon towed by moving target trolley) cal. .50). Time will start when balloon appears. Telephone order to target operator given by Chief Controller on signal from Examiner. Safety NCO will establish positive control to insure target is engaged only between safety panels. Upon completion PC moves to 3.

50 rds cal. .50

(3) Exercise 3. PC Moving (Troops (10 silhouettes)— engaged by 7.62 MG and one AR firing from right side of PC). Time starts when green disc reached. Scorer computes score.

100 rds 7.62 MG
40 rds AR

(4) Exercise 4. PC Moving (Troops (10 silhouettes) engaged by 2 M79 Grenade Launchers from left side of PC). Time starts when green disc is reached. Score sensed by Examiner.

3 rds ea GL

(5) Exercise 5. PC Moving (Troops (6 silhouettes in two groups of 3 each) engaged by 2 M-14's firing from right side of PC). Time starts when green disc is reached. Scorer computes score.

20 rds ea M-14

(6) Exercise 6. PC Moving (Troops (5 silhouettes at 400 meters—7.62 MG, silhouettes at 250 meters—AR). Fire from right side of PC). Time starts when green disc is reached. Scorer computes score.

100 rds 7.62 MG
40 rds AR

(7) Exercise 7. PC Moving (Troops (10 silhouettes)—engaded by M79 grenade launchers from left side of PC). Time starts when green disc is reached. Score sensed by Examiner.

3 rds ea GL

(8) Exercise 8 & 8a. PC Moving (Ambush (10 silhouettes in 2 groups of 5 each)—engaged by 1 M-14E2 and 1 M-14 first from the left then from right side of PC). Demolition detonated by trip wire or safety officer fires demolition 1 at 1st green disc and 2d demolition at 2d green disc. Time starts upon detonation of charges. Scorer computes score.

20 rds AR
20 rds M14

(9) Exercise 9. PC Halted (Roadblock (1 silhouette near roadblock) engaged by cal. .50 firing to the front.) Demolition detonated by trip wire or safety officer fires at green disc. Time starts upon detonation of charge. Scorer computes score.

30 rds cal. .50

(10) Exercise 10. PC Halted (Enemy PC halted at 800 meters engaged by cal. .50 MG). Time starts when green disc is reached. Score sensed by Examiner.

(11) Exercise 11. (Assault of bunker) 200 meters from point 11. Safety Officer, Safety NCO and Examiner accompany squard on foot to evaluate performance and enforce safety regulations.

100 rds M14
80 rds AR
6 rds M79
5 practice grenades

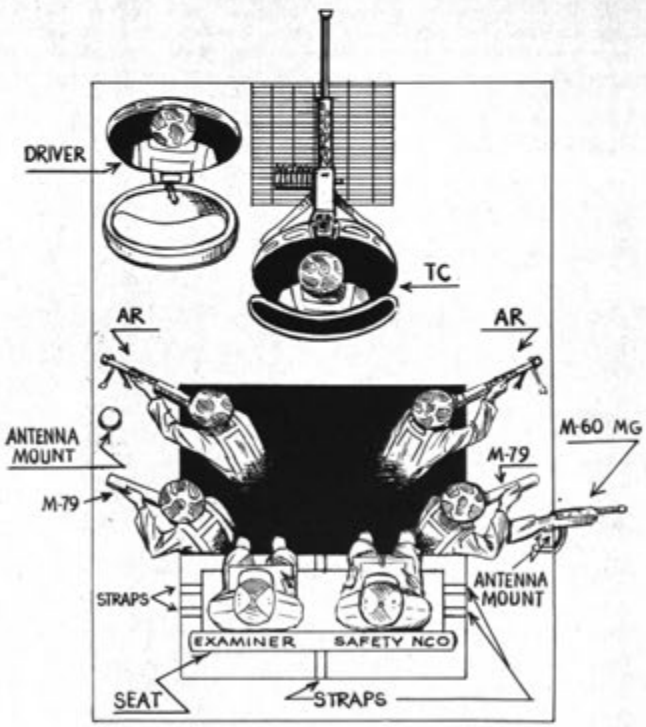

Figure 4

Safety measures on this course must be strict and must be enforced. Movement in the hatch-way with loaded weapons in a moving carrier is obviously dangerous. The 1/50th Infantry developed an expedient seat for mounting on the open hatch cover which accomodates the Examiner and the Safety NCO. From here, without getting in the way of the squad, the Safety NCO can enforce rules and the Examiner can concentrate on evaluating the squad's performance.

The Mechanized Infantry Squad Combat Proficiency Course is a basically simple exercise run on an easily constructed range. At Fort Hood big training dividends are already accruing from a relatively modest investment.

Figure 5

AMMUNITION REQUIREMENTS

Nomenclature	*Amount*
Cartridge, 7.62mm, Ball per M-14 Rifle	40 rds
Cartridge, 7.62mm, Ball per M-14E2 Autorifle	100 rds
Cartridge, 7.62mm, 4-1 TR MLB per machinegun	220 rds
Cartridge, 40mm PRAC per M-79 Gren Lchr	11 rds
Cartridge, .50 cal. 4-1 TR MLB per machinegun	280 rds
Grenade, Hand, Practice per Rifleman & Autorifleman	1 ea
Grenade, Hand, Smoke, Red per controller for emergency cease fire	1 ea
Grenade, Hand, Smoke, Green or Yellow	2 ea
Explosive, TNT, ¼ lb Block	3 blocks
Cap, Blasting, Elec Spec	3 ea
Simulator, shell burst, ground	6 ea

Figure 6

CONTROL PLAN

1. Personnel. Minimum requirements for course operation follows:

a. Officer in charge (Chief Controller)
b. Assistant Controller—NCO, E6 or E7
c. Two Safety Officers
d. Two Safety NCO's—E5 or E6
e. Two examiners—NCO, E6 or E7
f. Two scorers—E4
g. Four moving target operators—E3 or E4 (Target 1 & 2)
h. Two ambush target operators—E3 or E4 (Target 8)

(Used only if pop-up targets used)
i. Two-man target detail—E-3
j. Two-man utility detail—E-3

2. Equipment

a. Targets and range flag (Incl Balloons & Helium bottles)
b. Six field telephones (Control Tower, T1, T8)
c. Two stop watches
d. Score Sheets
e. Master Score Sheet
f. Binoculars
g. Vehicles
(1) ¼ ton truck for OIC
(2) ¼ ton trucks for Safety Officers
(3) ¼ ton trucks for scorers
(4) ¾ ton utility truck

NOTE: All ¼ ton trucks should be equipped with compatible FM radios.

h. Portable radios for Examiners and target operators which are compatible with vehicle radios (g (1) thru (3) above).

i. Seat(s) for examiner and Safety NCO to be mounted on hatch cover of personnel carrier.

3. Procedures

a. The Chief Controller will conduct an orientation briefing for each unit prior to the start of range operation. This briefing will include:
(1) Purpose and concept of the course
(2) Operation of range
(3) Scoring procedure
(4) Safety regulations
(5) Issuance of attack order

b. Examiners will critique each squad and announce scores after completion of course.

c. Duties of Control Personnel

(1) Chief Controller. Responsible for the overall conduct of range operations. Conducts orientation briefings. Authenticates all score sheets.

(2) Assistant Controller. As directed by Chief Controller.

(3) Safety Officer. Follows each squad through course maintaining radio contact with Chief Controller and Safety NCO. Enforces safety regulations in conjunction with Safety NCO. Commands demolition firing and target operation at T8. Fires demolition at T8, 8A, T9.

(4) Safety NCO. Rides on personnel carrier with Examiner. Insures that fires are directed only within authorized safety fans. Maintains radio contact with Safety Officer. Insures that only authorized weapons engage the various targets.

(5) Examiner. Accompanies each squad through the course, riding in the personnel carrier. Acts as Safety NCO also in Exercise 11. Computes and scores. Conducts critique of each squads' performance.

(6) Scorer. Follows each squad through course scoring and pasting targets 3, 5, 6, 8, 8a and 9. Delivers scores to Examiner at critique area. Replaces targets as required.

(7) Moving target operator (T1, T2). Operates moving targets on telephone or radio command from control tower.

(8) Ambush target operator (T8). (If used) Operates demolition and ambush targets on telephone or radio command from Safety Officer (NCO).

(9) Target detail. Repairs and replaces targets as directed by Chief Controller.

(10) Utility detail. Polices range as necessary.

The Unbalanced Response

By
MAJOR
CLINTON E.
GRANGER, JR.

ACCEPTANCE HAS COME LATE, but with growing intensity, to military participation in the grey area of counterinsurgency operations. Recognition of the value of support and advisory forces from the U.S. military establishment has come in response to the continued Communist efforts to use all degrees of force, short of overt military action, to further Red political aims and ambitions for territorial expansion.

Since the only operations where progress in stemming the Red tide can be readily measured in human lives and square miles of regained ground occur is in Southeast Asia, the advisory and support efforts of the United States in this area have been highly publicized by both press and government. The actions in that distant but strategically significant corner of the world have come to represent the U.S. position, and an outward show of our national aims and methods to the nations of Pacific-Asia. The result has been to focus the attention of the people, the press, the United States government—and the military leadership of our nation on Southeast Asia and counterinsurgency operations.

Close attention to the problems of using military resources in counterinsurgency situations short of war came with a great rush. The last few years have evidenced a new vocabulary (frequently old meanings, but tied to new terms), new organizations, and sincere efforts to profit from the long and bloody history of counter-guerrilla and counterinsurgency operations. Historic parallels ranging from Hannibal, Napoleon in the Iberian Peninsula, to the recent British success in Malaya—and the equally spectacular failure of the French in Indochina—have been studied and restudied.

Doctrine has been developed, experiments tried, and many working arrangements have been established to effectively use the military resources of the U.S. in that portion of the spectrum of conflict that encompasses counterinsurgency operations. The Army has profited through the increased attention of nation and government, and the role of the individual man as the critical and essential ingredient has again been emphasized.

The degree of interest is clearly reflected in all of our military periodicals. Special articles, feature stories, first-hand reports; even special editions of magazines have centered on the problems of counterinsurgency.

The end result is a comprehensive, highly publicized, and reasonably successful advisory and support effort to counter the threat of Chinese Communism along the periphery of the Red dominated portion of the world.

A second end result has been to shift emphasis to a new area of military interest; occasionally at the expense of considering other aspects of military operations. These shifts are subtle, and cannot be reflected in any programs that actually states that another capability should be deemphasized to permit an expansion in the area of counterinsurgency. Rather, the new emphasis causes less attention to familiar problems, because the wheel that squeaks the loudest gets the grease—and counterinsurgency has created a penetrating screech.

Service schools now conduct training in activities within the entire spectrum of war, but tending toward increased emphasis in the grey areas where war is less conventional. Such instruction represents a great step forward in broadening the perspectives of students, and assists in the fundamental thinking behind the handling of problems inherent in situations such as South Vietnam. Yet, the new instruction, rather like the great emphasis on nuclear instruction a few years ago, has been superimposed on an already full academic schedule—and one can only reflect that occasionally

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the counterinsurgency instruction appears to have been assembled in haste to meet an overemphasis on the subject somewhere in the chain of command. The necessity is there, of course, for detailed instruction in the newer fields, but it is a matter of maintaining an overall perspective to attain a balanced response.

The same instructional emphasis extends into troop units, where counterinsurgency instruction is still more basic, and certainly no less important to the young soldier who may be concerned with activities in his immediate future. The instructional time may be stated as a minimum requirement in the course of a given period, such as a fiscal or training year. Here it competes with other mandatory training, ranging from CBR to the chaplain's periodic discussions with the troops—as well as the brigade baseball, football, track, ping-pong, twenty-questions, and rifle teams; all critical to troop morale and welfare.

The result, at least from the bottom looking up, occasionally makes junior commanders wonder—they can see clearly the competition between the requirements for their soldier's time, and note that not infrequently some rather basic things—like use of the soldier's personal weapon, or learning to care for the vehicle for which he may be responsible —seem to get less emphasis than in former days.

Perhaps the turning point in counterinsurgency interest was the indication of approval from the President. From that time on, those who would get in on "the ground floor" of this newest "winner" formed in swelling ranks, and fought to be identified with this latest road to professional success in the military. This is a predictable reaction, and has gone its predictable way. Not especially harmful in itself, a side effect is the problem that people with understanding and experience who long fought for the recognition of unconventional warfare—in all its forms—are occasionally crushed under the stampede of the new "experts"—with the possible loss of the real experience factors that the "old hands" represent. Of course, the new experts voraciously defend their freshly professed specialty with the same dogmatic approach of a religious convert. This can contribute to the possible failure to view all conflict in more reasonable perspective.

There is an observable tendency for headquarters to enter into the race—perhaps with only the designation of one individual with other responsibilities as "unconventional warfare" or "counterinsurgency" officer; perhaps with the creation of an entirely new staff element. This increased emphasis represents a parallel increase in administration. Of course there are new problems to be met, but the increased interest and the additional personnel concerned with the specialty of counterinsurgency also creates a feedback effect that only amplifies existing problems. New reports are required, additional staff concurrences are sought; studies and restudies are directed and conducted in response to this self-perpetuated cycle of events. The blossoming of headquarters has the worst effect on the troop units at the bottom of the pyramid of command. Operating with the same number of people, with the same functions as before, they find that the administrative workloads continue to increase. This is no "paperchase" problem, for being against counterinsurgency is akin to being opposed to motherhood or the American Flag, and correctly so—but that which is valid may well be used to justify actions that are invalid.

Another area of military interest where this latest impact has been felt is in research and development. New groups, agencies, and facilities have been created with the missions of establishing sound doctrine, evaluating past performances, developing new techniques, and examining the entire scope of counterinsurgency and all related problems. This blossoming of new R&D elements could lead to duplication, and the very newness could preclude efficient cross-dissemination of valuable information.

The increased R&D effort, like the increased emphasis on the new would-be specialists, and the growing staff element, is not really bad in itself—it is only in the subtle impact on other required military activities that the evils may occur.

All of the areas that have been discussed are small in themselves, and certainly not earth-shaking when considered alone. Yet, taken all together they represent a significant shift in emphasis away from the flexible response. A few years ago we were concerned over the narrowness of the approach to all military activities caused by the (perhaps incorrect) evaluation of the impact of nuclear and thermo-nuclear weapons. Now we find ourselves scampering to the other end of the teeter-totter, when we really need to find a balanced midpoint.

There is no question that proper emphasis on counterinsurgency is critical and necessary for the military to meet the requirements placed on the armed services to support national policy; equally, there is no question that the military will be expected to perform with equal skill in operations ranging from picking up the pieces after a thermo-nuclear attack, through conventional ground-gaining decisive war, to the restoration of order in a liberated nation. All of these functions are important, and all must receive their due emphasis. Undue concern with any special portion of the spectrum of war provides an *un*balanced, instead of a flexible response. The Free World cannot afford this difference.

WILL THE CRY BE HEARD?

By CAPTAIN STEPHEN S. LEAVITT

WITH THE CRY "MEDIC," the first step has been taken toward medical support. However, will the cry be heard? Will medics be where they are needed? Will evacuation be achieved safely and without compromising the priority of the combat mission? For the answer to be "yes" the medical platoon must function efficiently as a military element closely integrated with the combat operations of the armored battalion.

Unfortunately, the medical platoon leader who is a medical officer, often lacks military training and, more important, lacks interest in combat operations. The operations assistant, a medical service corps lieutenant often fresh out of school, may be enthusiastic, but ignorant of armor operations. He may even share the "doc's" inexperience in military leadership. The medical corpsmen, reflecting the attitude of their leaders, would rather give shots than work in a motor pool. The NCO's are often oriented toward duties in a big hospital.

From August 1963 to August 1964, I was medical platoon leader (battalion surgeon) for a medium tank battalion then being activated under ROAD in Korea. Three days after I arrived the battalion S-3 called me into his office and handed me a fat pack of mimeographed papers.

"Doc," he said, "look through this TAC SOP and write something up for the medical platoon."

Six months later I handed in the fifth and final copy of the medical support SOP for the battalion. In these months the battalion staff and line officers and I tried to explore the gap between needs and the medical platoon T.O. & E. Integrating a medical platoon into an armored battalion required special attention, but it could be done.

Raw Materials of Medical Support

The raw material of medical support for the armored battalion consists of about twenty men, three or four armored personnel carriers and twice as many front line ambulances. A Medical Corps officer and a Medical Service Corps officer organize the platoon. The field operation breaks the platoon into two parts —the battalion aid station associated with combat trains and the evacuation section. The evacuation section provides three or four medics for each of the line companies creating the company aid station. The starting structure may dictate one company aid station for each of the line companies and a battalion aid station. The company aid stations are in communication with their respective companies via the company command net and with the battalion aid station via the battalion log net.

First Level of Integration

The corpsmen assigned to a line company forming, with their vehicles, the company aid station, constitute the first link beween the individual soldier and definitive medical care. This link must be strong and it can be welded only if the corpsmen actively participate in the field operations of the company.

Unfortunately, it is not uncommon for medics to go to the field with their company and never leave the confines of the ambulance. However, during field exercises medical corpsmen must stand-to with the company. They should visit every tank every day and inquire about the health of the men. They should inspect mess and latrine facilities daily. Within a short period of time they should know the names of nearly all the men in the company. When they have completed medical tasks and pulled maintenance on their own vehicles and equipment, medical aidmen should be expected to work with the men of the company.

Insofar as possible they should know what the company is doing, where the company is operating and how the company is being logistically maintained. In this

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CAPTAIN STEPHEN S. LEAVITT, MC, received his MD from New York University Medical School in 1961. He entered active duty in 1963 and received basic indoctrination at the Medical Field Service School, Fort Sam Houston, Texas. Captain Leavitt served with the 2d Battalion, 15th Armor, Korea, as Battalion Surgeon. He is now assigned to the U. S. Army Hospital, Fort Ord, California.

way the medics will become familiar with the terrain over which they must travel, map coordinates, difficulties associated with the operation and maintenance of tanks and inherent dangers. They will become familiar with fuel runs, mess and ammunition supply and thereby be able to combine their own needs with that of the unit.

Evacuation of wounded from tanks is a special skill which requires a good deal of well-planned, thoroughly-practiced teamwork, particularly if the evacuation is under fire. Tank crews must prepare the patient and position the tank to afford maximum cover. Medics must learn to coordinate their approach with the battle plan to reduce interference with the maneuver. Wounded may be extracted from the tank turret by a pistol belt sling under the arms. They may be removed from the escape hatch under the drivers compartment. Medics must properly position their vehicle and remove the casualty from the tank deck or from underneath the tank without injury to themselves or further injury to the patient.

Anticipation of Need—Tactical Integration

Medics are often praised for their ingenuity, but ingenuity is not a substitute for anticipation. It is common for medical platoon leaders to have no plan for medical support other than the supply of a company aid station with each line company and the establishment of a battalion aid station. In fact, every combat operation, attack, defense, etc., should initiate a distinct plan for medical support. Platoon leaders, the doctor and his operations assistant should be expected to formulate such plans and to advise the battalion commander. Their formulation evolves from four sources of information:

a. Battalion operations and logistics staff,
b. Reports from company aid men,
c. Communication with supporting medical units (clearing company, etc.),
d. Literature such as FM 8-10, FM 8-15, and FM 101-10.

Here are examples of problems that should be anticipated. Supporting the FEBA (forward edge of the battle area) may post two tank companies forward and one in reserve. The original organization may find one company aid station with each company. In response to increased enemy activity in the FEBA the medical platoon leaders may send the reserve company's aid station forward. If enemy pressure is light, front line ambulances and extra medics may suffice. If enemy pressure is heavy, armored ambulances may be better. In case the enemy is not contained and is allowed to penetrate into a killing ground and then contained, platoon leaders may anticipate the delayed arrival of numerous casualties requiring evacuation, but not with armored ambulances.

Involved in a counterattack, platoon leaders may face entirely different problems. Here rapid movement and the sudden creation of masses of severely wounded men shortly after the major engagement may best be handled if the platoon leaders, including the doctor, leave a skeleton crew at the battalion aid station and go forward with the reserve company's aid station. There, acting from the point of decision, they can provide emergency treatment under fire and disperse vehicles with greater swiftness.

Medical Platoon leaders must thoroughly understand the combat mission their battalion faces. They must construct plans and alternate plans to follow the fate of these missions and must arrange to test these plans during the battalion's field exercises.

Knowledge of Resource—Another Level of Tactical Integration

It is the responsibility of medical platoon leaders to know where to get help, how to call for help and what to expect. Of course, it is difficult to estimate what will actually be available in case of combat, but the medical platoon leaders must be well aware of where to look. On paper the medical platoon is backed up by the division-level medical battalion's clearing company. In the field the medical platoon has attached to it an ambulance from the division medical company. In reality, however, there are many other sources of help not ordinarily brought into play. For example, in a defensive maneuver there may be other battalions on the flank. Medical platoons from these battalions may be of assistance if their battalion is not heavily engaged. Similarly, in tank-infantry operations, combined medical platoons may afford extra reserve strength. The medical platoon leaders must include other than medical channels of evacuation in their analysis such as fuel trucks and mess trucks. They must also include some knowledge of available civilian resources.

Ultimately, the medical platoon leader should be able to provide the battalion commander with a complete and thorough briefing of the medical support plan. The plan should include organization of platoon strength to meet various battle contingencies and an estimate of the number of casualties the platoon might handle and how they can be provided for.

A detail often overlooked is communication. Communication procedures are complicated for a number of reasons:

a. Procedures for evacuation of simulated casualities may differ from evacuation of actual ones.
b. Field exercise procedures

may change when actual combat occurs.

c. Field exercises at a battalion or task force level will not give opportunity to work with units that would be present during combat.

d. Wire and radio procedures may be changed. For example, requests for air evacuation during combat will probably go through the division medical battalion. However, if someone gets hurt in a field exercise there is nothing to stop the medical platoon leader from directly contacting the helicopter detachment by radio and he should know how to do just that.

Combat is not the time to search for proper channels of communication. These, too, must be anticipated.

Soldiers and Medics—Approach to Overall Integration

In the above paragraphs we have outlined two aspects of the gap between the medical needs of the armored battalion and the capability of its medical platoon to fulfill these needs, integration of medical personnel with armor operations and integration of medical support plans with the tactical situation. Certain other points require emphasis:

a. Medical personnel must learn that the combat mission has priority. The medical platoon must never compromise the security of the combat mission. For this reason they must receive extra training in the art of camouflage. They must be specially supervised in proper radio discipline, road march and perimeter defense. They must learn to coordinate evacuation plans with battle plans.

b. They must absorb the principles of vehicular maintenance intrinsic to armor operations. The key to saving lives is not the litter, or morphine, or penicillin, or having the smartest doctor in the division, but the operative ambulance. Medic drivers will require intensive on-the-job training in the operation and maintenance of their vehicles. Likewise, medical platoon leaders must take as deep an interest in the maintenance of vehicles as in the maintenance of first-aid kits and field lighting kits. Medical platoon leaders ought to know the elements of vehicular inspection and the procedures for assuring prompt second, third and fourth echelon attention.

c. Combat readiness must be emphasized. The little things, second nature to a combat element may be foreign to hospital oriented medics. On return from the field, equipment must be cleaned, oiled and ready to go before the day is ended. Gas tanks must be kept full, etc., etc.

d. The battalion surgeon must learn that in his job as battalion surgeon he cannot be considered a good physician if he is a poor soldier. If he cannot provide leadership for a good military platoon, either directly or in spirit, he is not assuming his responsibility to his patients, to his men or to himself.

Anticipation of need, intergation at the company level, mastering of many skills and a change of inter-branch integration required for medical support for the armor battalion. The battalion commander can assist medical platoon leaders and operations assistants by making special effort to incorporate them into the spirit and the mission of the armored battalion and by supervision of military affairs in that platoon. The medical officer and his assistant should be introduced to pertinent technical manuals concerning armor operations and vehicular maintenance. They should attend and participate in all staff meetings and should understand the responsibilities of military leadership and justice expected of any line officer. The rest is hard work, experience in the field and, ultimately, the assurance that trained medical specialists will be there when you need them.

The cry "medic" will be heard and speedily answered.

Please send us your new address change including your Zip Code prior to our press run on 20 December 1965.

Vehicle Recovery

MR. WILLIAM W. BOSTON

IS THERE SCIENCE to recovering a disabled vehicle? Or is it possible for an untrained man, who has no knowledge of the fundamentals of recovery or special-purpose recovery vehicles, to become a polished recovery chief? It is our contention that vehicle recovery is a science, and to become proficient, recovery personnel must have a knowledge of leverage, recovery techniques and special purpose recovery vehicles. Moreover, we believe that before any man can become a qualified recovery chief, he must initially be service-school trained and have several years of field experience.

Through the ingenuity of our ancestors we have at our disposal the simple lever and the wheel. When these two items are used correctly they provide a means of creating a mechanical advantage. But before this mechanical advantage can be applied in the field of automotive recovery we must have some knowledge of the fundamentals of vehicle recovery.

Fundamentals of Recovery

Common Recovery Terms

There are certain terms that are common to all phases of recovery operations, and that must be understood as a basis for understanding the fundamentals of recovery. Let us consider the meaning of a few of the most common of these terms:

EFFORT—an active force exerting power.
FORCE—the cause that changes bodies from a state of rest to one of motion or from motion to rest. Force and effort are very closely related. A distinction between them would be that force produces a result where effort may not.
POWER—the rate of transfer of energy. Power is the product of force and distance divided by time.
RESISTANCE—any opposing action that tends to prevent motion.

There are many other terms that are used in the science of vehicle recovery but effort, force, power, and resistance are the most common and are used with every recovery operation.

Levers

The first element of recovery operation to be considered is levers. Levers from a broad classification, compressing many elements. A wheel, gear, and pulley are really levers in disguise. The purpose of a lever is to give a certain advantage in the application of a force to a load. This may be a change of speed and distance of travel, and hence of power, or merely a change of direction. A simple lever would consist of a rigid bar that swings on a fulcrum. There are three orders or types of levers. The relative position of the point where the fulcrum, the force of effort, and the load are applied will determine the order.

The weight that can be lifted with a given effort depends upon the ratio of the effort arm to the weight arm. Therefore, a man can lift a ton with an effort of only 100 pounds if the effort arm is twenty times as long as the weight arm. This is assuming the lever has no weight and there is no friction at the fulcrum. But this simple lever would be of little advantage when considering the amount of effort required for vehicle recovery. Therefore, we must consider a method of having a continuous application of leverage and a method to increase power.

Tackle

In vehicle recovery this is accomplished by a combination of ropes and blocks called tackle.

Tackle uses the principle of the lever in such a manner that effort exerted overcomes greater resistance through multiplication of the effort.

Blocks may be arranged to correspond to the three orders of simple levers.

In the first order, the effort and weight arms are

MR. WILLIAM W. BOSTON is employed in the Automotive Department, The Armor School, Fort Knox, Kentucky.

equal and hence balanced. In the second order, one pound will raise two pounds of weight because the effort arm is twice as long as the weight arm. In the third order the weight arm is three times as long as the effort arm, therefore, it would take three pounds of effort to lift one pound of weight. Normally, in vehicle recovery it is necessary to employ a mechanical advantage to accomplish a given task. This is accomplished by the proper application of tackle.

Rigging is the application of rope and sheave (block) combinations to raise or move a load. Rigging includes the installation of all items necessary to employ the effort available. Rigging will not necessarily gain mechanical advantage since it may be used to obtain a change of direction of pull.

In many instances if recovery is to be accomplished, mechanical advantage must be increased until the total resistance divided by the mechanical advantage would be less than the effort available. It must be remembered that there is no end to the possible combinations of ropes and blocks that will multiply power.

Resistance

Up to this point most of the discussion has been on how to increase the effort, force or power available, and overcoming a resistance. To move an object, it is necessary to overcome all resistance. Therefore, a recovery chief must know the types that will confront him and how to determine total resistance.

In recovery, we are confronted with several forms of resistance; probably the first to enter the mind would be *rolling* resistance—opposition to movement created by friction when a vehicle is rolling. It must be remembered that type of terrain will affect rolling resistance. For example, an M-60 tank, weighing 51 tons, would have approximately 2 tons of rolling resistance on a hard-surface road. On a smooth gravel road the rolling resistance would be approximately 10 tons. If the vehicle is in mud, the minimum resistance would be vehicle weight and the maximum resistance would depend upon the depth and consistency of the mud.

Because it is not always possible to tow a vehicle to the repair point on level ground, grade resistance, which is caused by gravity, must be considered. While the exact resistance can be determined by use of a factor table, a recovery chief would find it simpler to consider the weight of the vehicle as resistance, then he will always have enough applied force to accomplish the mission.

Overturned vehicles will create what is known as overturning resistance. This resistance is part of the weight of the vehicle acting against the force exerted to upright the vehicle. Since only half the weight of the vehicle will ever be beyond the center of gravity from the point of recovery, only half the weight of the vehicle should be considered as resistance.

Mechanical Advantage

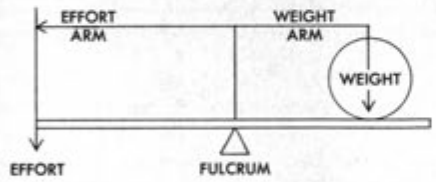
When making a recovery, it may be necessary to employ a mechanical advantage. To accomplish this, we must use tackle. Any time tackle is used, there will be tackle resistance. Tackle resistance is due to the friction of the sheaves rolling on the pins, the flexing of the cable, and the cable scuffing within the groove of the sheave. Tackle resistance will vary slightly when different size cables and sheaves are used, but the variation will be insignificant. This tackle resistance must be overcome before the load can be moved. The approximate tackle resistance can be determined by finding the approximate resistance created by the vehicle and terrain and dividing by 10 for each sheave in the rigging.

After determining the resistance created by the vehicle and tackle, it is necessary to find the total resistance. This is done by adding all resistances together.

Usually it is not necessary to use a mathematical formula to determine the resistance of a vehicle in mud; a close estimate will suffice. A very practical field method of determining resistance of a tank mired to the extent it cannot move itself is as follows: If the vehicle is mired to the top of its wheels, use the vehicle weight as the estimated resistance. If the vehicle is mired to the fenders, multiply vehicle weight by two. If the vehicle is mired to the turret, multiply vehicle weight by three.

There are two possibilities of reducing the load resistance of a mired vehicle. If a vehicle can be

SIMPLE LEVER



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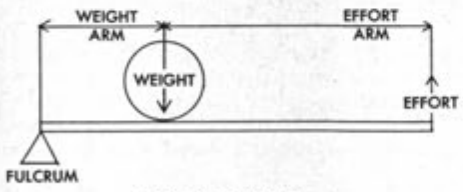

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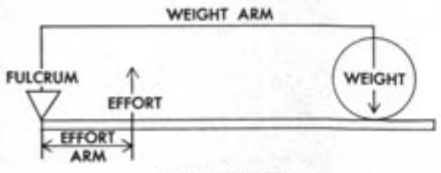


THIRD ORDER

recovered in the opposite direction of travel at time of mire, the vehicle resistance would be reduced about 10 percent. Also, if the vehicle is not mechanically disabled and can be used in helping to recover itself, the vehicle resistance could be reduced an additional 40 percent. It is possible, therefore, to reduce resistance by 50 percent, using these factors if they apply.

Standard Operating Procedure

A successful recovery crew must have a standard procedure for all personnel to follow. If a recovery problem is approached without prior planning, the results will usually be a failure of the operation and damage to equipment.

All recovery operations should follow an 8-step procedure in the following sequence:

a. Reconnoiter the area. A recovery crew must know the problem or situation before attempting to make a recovery. The recovery chief should check the terrain, determine the route for an approach to the load, check for presence of natural anchors that may be used, and determine how close the recovery vehicle can be positioned to the vehicle to be recovered.

b. Estimate the situation. When estimating the resistance to the movement of the vehicle being recovered, add the vehicle and the cargo weights together. Next, determine the effort available. For a recovery vehicle, the effort would be the maximum capacity of the winch.

c. Calculate the ratio. Divide the effort available (winch capacity) into the resistance that must be overcome by the winch and tackle. The result of this calculation is an estimated mechanical advantage needed for the rigging.

d. Obtain estimate of resistance. After estimating the mechanical advantage necessary, figure the tackle resistance. It must be remembered that before a load can be moved, both tackle and load resistance must be overcome. The sum total of these two resistances is referred to as total resistance.

e. Verify the solution. If the recovery operation is to be a success, the solution should be verified. Line forces should be computed and compared with the winch and dead lines capacities. The fall line force must be less than the winch capacity, and the equipment used as dead lines must be capable of withstanding the force exerted upon them.

f. Erecting the rigging. Sufficient knowledge should now be available for the recovery chief to instruct the crew on how to erect the rigging and what equipment to use. He should assign each crew member specific duties to perform. After the rigging is completed, the crew should move to a safe distance from the rigging.

g. Recheck the rigging. The recovery chief will recheck the rigging to insure that it's erected properly and will be safe to operate. The vehicle operator should remove most of the slack from the rigging before it is inspected.

h. You are ready for recovery. The recovery chief signals the operator to recover the load. The operator applies power to the load slowly to prevent sudden shock on the lines in the rigging. After the vehicle has been recovered, disassemble the rigging and clean and stow the equipment.

Knowledge of the recovery procedure is important to success and can be used by the commander to determine the efficiency of his recovery crews.

Recovery Vehicles

When a vehicle becomes immobile, it must be recovered and repaired so it can again perform its normal mission. Similar equipment cannot always be detoured from its mission to recover the immobile vehicle, and in many cases such equipment would not have the capability of doing recovery work. Therefore, it becomes apparent that special purpose vehicles are required that would be capable of performing complicated recovery missions.

Present army standard recovery vehicles are the M-88 full-tracked medium recovery vehicle, the M-578 full-tracked light recovery vehicle, and the M-543 medium wrecker truck as standard recovery equipment.

Due to design, each of these vehicles has a specific place in the field of vehicle recovery.

The M-88 is capable of towing 56 tons, winching 45 tons, and lifting 25 tons. It is not necessarily the most powerful recovery vehicle we have, but it is by far the least complicated to operate and most efficient.

The M-88 is manned by a crew of four: a commander, driver, mechanic and rigger. The operator can operate all the controls of the recovery equipment without leaving his seat. The vehicle is equipped with two winches—a main winch, used along with its mechanical advantage, to recover tracked vehicles, and a hoist winch, which can be used for light recovery problems up to 6¼ tons, but whose main use is for lifting (when rigged over the boom).

The M-88 has a live boom, which lays over the rear deck and is raised hydraulically upright and slightly forward of the vehicle. It will lift a 25-ton load 19 feet with the boom fully forward. The boom can be retracted with its load, giving it an additional 6 feet of lift.

The M-88 is also equipped with a spade mounted on the front of the vehicle to stabilize it during lifting and winching operations. This spade can also be used for bulldozing.

There is a refuel and defuel system that can be used to refuel or drain the M-88 or to transfer fuel to another vehicle. Along with all the equipment mounted in the vehicle, there is enough OEM to support the crew for extended periods in the field, making it possible for them to perform their mission with little or no other support. Its armament consists of a .50 caliber machinegun and a 3.5-inch rocket launcher. Along with their individual small arms, these afford ample protection for the crew during recovery operations.

The necessary eqiupment for towing disabled vehicles cross-country and on highways, and to rig for full mechanical advantages, is provided and stored on the vehicle. Also included on the vehicle is a hydraulically operated impact wrench for easier disassembly and assembly of items that require such action.

The M-578, a lightweight, fully-tracked recovery vehicle, has been designed for recovery of vehicles in the 25-ton and underweight class. It is manned by a crew of three—a driver, crane operator, and a rigger—and is equipped with a tow winch and a boom winch. The tow winch is capable of pulling a 30-ton load, the boom winch a 15-ton load. Both winches have 2 speeds.

The boom will traverse 360° and will lift a load of 15 tons over the rear of the vehicle with the spade down, and approximately 7.5 tons over the side, to a height of approximately 15 feet.

The M-578 is provided with a spade and a lockout system on the suspension for stabilizing the vehicle during winching and lifting operations.

The necessary equipment for towing disabled vehicles cross-country and on highways, and to rig for full mechanical advantages is provided and stored on the vehicle. Also included on the vehicle is a hydraulically operated impact wrench for easier disassembly and assembly of items that require such action. Stored on the M-578 are tools, welding equipment and supplies that are necessary to sustain the 3-man crew while engaged in recovery operations. Armament consists of one .50 caliber machinegun.

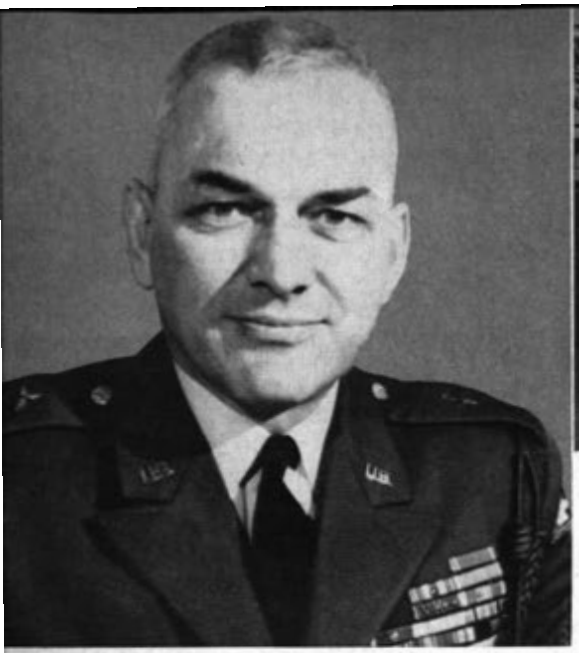
The M-62 and M-543 medium wrecker trucks have been designed for support of equipment in combat. The M-62 and M-543 recovery vehicles are manned by a crew of two—a driver and operator—and are equipped with two winches. The front winch is used primarily for self-recovery and light recovery operations and to stabilize the vehicle during rear winching operations. The winch is capable of a 10-ton single-line pull, with a maximum mechanical advantage of 2 to 1. The rear winch is used primarily for medium recovery. Maximum rear winch capacity is 22.5 tons with a straight-line pull (or 157.5 tons with a 7 to 1 mechanical advantage, which can be rigged with the equipment that comes with the wrecker truck).

The M-62 and M-543 are also equipped with a hydraulic crane capable of traversing 270° and lifting a maximum of 10 tons.

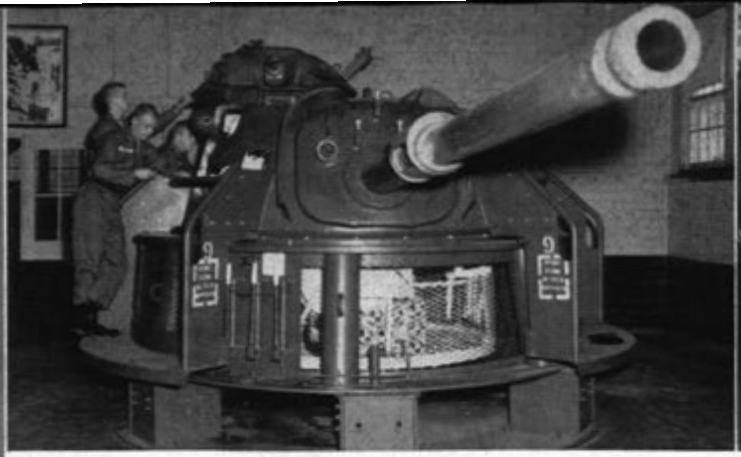
In addition to winching, towing, and lifting capacities, both wrecker trucks are equipped with oxyacetylene cutting equipment.

If the M-62 and M-543 wrecker trucks are properly maintained and have a properly trained crew, light recovery is a very little problem.

Although in the field of vehicle recovery there is a continuous need for study to keep abreast of new equipment and techniques, it is likely that the fundamentals—EFFORT, FORCE, POWER and RESISTANCE—will always have the same affect on successful vehicle recovery.



Brigadier General Albin F. Irzyk,
Assistant Commandant



Officers receiving instruction on tank armament on a turret trainer in the Weapons Department.

One of the large "class
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ARMOR SCHOOL MARKS

Twenty-five years ago on October 1, 1940, the U. S. Army Armor School was born and since its beginning has been a vital force in the development of Armor as we know it today.

On 27 July 1940, Brigadier General Adna R. Chaffee directed Lieutenant Colonel (later Major General) Stephen G. Henry to "plan, organize, and operate The Armored Force School and Replacement Center . . ." And on 1 October of that year Colonel Henry assembled a small nucleus of officers and men and thus was born The Armor School of today. On 25 October 1940, The Armor School was separated from The Replacement Center and on 21 July 1943, The Armored Force School was redesignated The Armored School and The U. S. Army Armor School on 1 July 1957.

The early history of The School was characterized by a tremendous expansion and a continuing effort to make maximum use of its facilities. More than 500 buildings were con
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Then, as now, instruction in armored vehicles was given with the equipment in hand—in this case, the M-3 tank in use in 1941.

Learning by seeing and doing is practiced by the students as they participate in class in the Command and Staff Department.

Field training is an integral part of Armor School courses. Here M-4's participate in an early training exercise.

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Foreign Students receiving communication training.

Major General Andrew J. Boyle, Commandant

25th YEAR OF SERVICE

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such military greats as General George S. Patton, Jr., has had the benefit of assignment, as either student or member of the staff and faculty, of Major General Adna R. Chaffee, one of the early armor leaders and first commandant; General Bruce C. Clarke (1944-49); General I. D. White (1951-52); and General Creighton W. Abrams, Jr., presently Vice Chief of Staff, U. S. Army (1945-48). In the last ten years, The School has trained armor students from 63 nations.

As of 30 September 1965, The School has graduated a total of 214,122 students. This figure includes 59,737 officers, 140,909 enlisted men, and 13,476 officer candidates.

In its quarter century of existence, The Armor School has trained the men who were largely responsible for the success of our armored warfare in World War II and the Korean Conflict, and who today are largely responsible for maintaining our world supremacy in armor.

The Armor School is shown substantially as it is today. This picture was taken in June 1963.

The Motorcycle Department, one of the Armored Force School's original departments, was eliminated early in World War II when the famous "jeep" came on the scene.

The Armor School gives instruction on everything to do with tanks, including how to get them out of the mud, in case they get stuck.

This scene greeted first students upon arrival at the newly formed Armored Force School in 1940.

THE EVOLUTION OF THE ARMORED INFANTRY RIFLE SQUAD

PART II
1940-1965

Cavalry will die a lingering though natural death, but the cavalry idea will certainly not die. It will live on in the form of the motorized trooper, and the mechanized one as well.

Major General J. F. C. Fuller

In connection with the basic organization of the armored infantry in 1940, it should be noted that the Armored Infantry Rifle Squad was established in conformity with TOE 2-27 P (tentative), 16 July 1940. This unit functioned in the maneuvers of 1940 and it consisted of the peace-strength infantry rifle squad of eight members, including the squad leader—a corporal. The squad was, in effect, a standard infantry rifle squad under TOE 7-17, 6 December 1938, mounted in a truck, or later in a half-track armored combat vehicle. The squad's armament was in a transitional state with the M1 rifle, replacing the M1903 (Ref. 1)

The initial formation of the armored infantry is explained in the following extract from *The Army Lineage Book, Volume II, Infantry:*

> The next type of specialized infantry . . . was that intended to provide the foot elements of the new armored divisions. It was called "armored infantry." The first of this type in the United States Army came into being when the old 6th Infantry was converted to armored on 15 July 1940. After that, certain numbers which had been inactive on the infantry list since just after the first World War were activated in 1941 and 1942 to become armored infantry. These were the 36th, 41st, 46th, 48th-52d, 54th-56th, 58th, 59th, and 62d Regiments. Within a few months the new armored infantry regiments were broken up to form separate armored infantry battalions. First and last there were sixty-six of the latter.
> (Ref. 26, p. 49)

In the standard infantry rifle squad the BAR (Browning Automatic Rifle) had been eliminated in favor of the M1 rifle. When the M1 rifle was not available, the M1903 rifle was issued and in units equipped with the M1903 rifle, one BAR and one pistol were authorized in place of one rifle. On 15 November 1940, TOE 7-27 P (tentative), 16 July 1940, was superseded by TOE 7-27, *Infantry Company, Rifle Regiment, Armored Division or Armored Company, Rifle Reconnaissance Battalion, Armored Division,* 15, November 1940, which provided the armored infantry squad with the following wartime organization: the squad leader was a sergeant and the assistant squad leader was a corporal. Both leaders and the squad members were armed with the M1 rifle. (Ref. 2)

The mounting of the standard infantry rifle squad in a combat vehicle posed new problems for those charged with the development of doctrine and tactics for the now highly mobile infantry units which formerly had measured their combat mobility in foot-miles or regulated motor marches. The basic concept that each armored infantry rifle squad should have its own organic vehicle if it was to function in combat asserted itself at this

time. Ogorkiewicz covers this early period in the following comment:

> Ideally each basic infantry unit or squad (section) should have its own vehicle with cross-country characteristics similar to those of tanks to make it possible for the two (infantry and tanks) to work together. Unfortunately, although the development of armoured infantry carriers began during the First World War, even during the Second World War only American armoured divisions had the whole of their infantry mounted in armoured carriers, of the half-track type. Others for the most part, had to make do with trucks. To make matters worse, the trucks were adaptations of medium-size commercial vehicles, ill-suited to off-the-road operation. Consequently, infantry units of the armoured formations have had to dismount well away from the firing line and move into action on foot, instead of remaining as long as possible in their vehicles. By the same token, they could not accompany tanks closely and usually the mobility of the truck-transported or motorized infantry has been so different from that of tanks that the two were apt to operate separately.
> (Ref. 3, pp. 48-49)

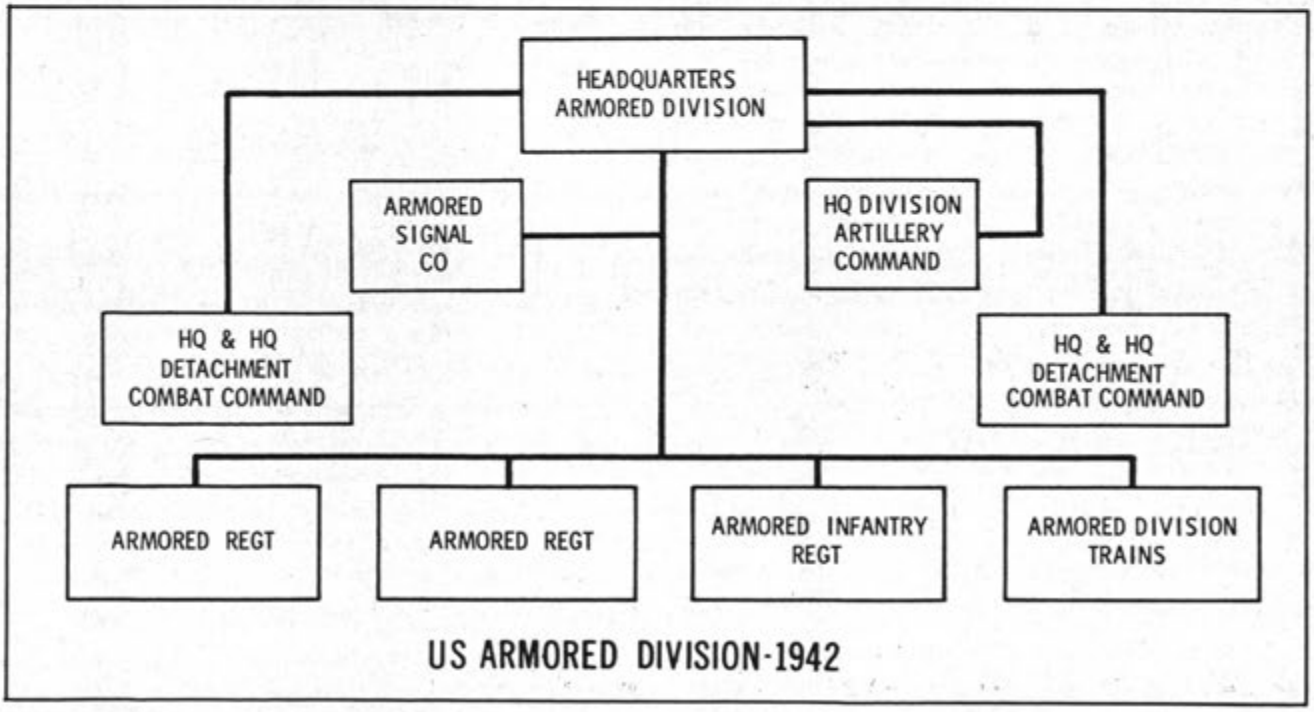
In the United States Armored Force, the infantry combat transportation in 1941 was the lightly armored, half-track M-3, a compromise between the wheeled cavalry scout car and the tracked tank.[9] With no cover provided for the squad and driver, the M-3 was armed with a heavy machinegun, M1917A1 with tripod M1917A1 for mounting for fire support on the ground away from the vehicle. (Ref. 3, p. 390, Ref. 4, pp. 81-85). General Charles de Gaulle, one of the world's greatest exponents of armored warfare, has this comment:

> In proportion as the tanks produce their effect, so the infantry advances. Sometimes this is done on caterpillar-vehicles. Sometimes they make their way on foot. In any case, their task is to take possession of captured ground. (Ref. 4, pp. 141-142)

In the organization of the Armored Division under the provisions of the tables dated 1 March 1942, the total strength of the Armored Division was 14,620 of which 4,848 was in tank units, 2,389 in armored infantry, and 2,127 in armored artillery. Armored Infantry was organized within the division as a regiment of three battalions. Armored infantry differed from standard and motorized infantry which moved in trucks in that its personnel could move simultaneously in lightly armored half-tracks.
(Ref. 5, p. 323)

The relationship of the armored rifle infantry squad to the standard infantry rifle squad is explained in the following extract from a monograph prepared at the Armored School shortly after World War II. These and subsequent comments are included in this study for the value they possess

[9] See "Wanted: An Infantry Fighting Vehicle," by Captain Clinton E. Granger, Jr., in *Military Review*, Vol. XLIII, No. 2, February 1963, pp. 26-35.



US ARMORED DIVISION-1942

from the point of view of armored infantry combat experience and observation:

> Armored infantry regiments were originally copied after regular straight infantry regiments. They were smaller with less men in the rifle companies and had no antitank or cannon company. The number of actual fighting men was further reduced by drivers and vehicular maintenance personnel. The first vehicles used by the armored infantry were the four-wheel scout cars which gave some armor protection but had little cross-country ability. They were soon replaced by the M-2 and M-3 half-tracks. The fire-power of the armored infantry was greater due mainly to the vehicular machineguns which each vehicle carried. Training was basically dismounted infantry tactics with special emphasis on offensive combat with tanks. Training was given in mounted marches, formations and fighting the vehicle. The latter was very seldom used as most of the time armored infantry fought dismounted.
> (Ref. 6)

TOE 7-27, 1 March 1942, continued the Armored Infantry Rifle Squad under the leadership of a sergeant with a corporal as his assistant squad leader. The automatic rifleman and his assistant were dropped primarily because the .30 caliber heavy machinegun mounted on the squad carrier furnished the fire support formerly received from the BAR team. The inclusion of a tripod for mounting the machinegun on the ground away from the vehicle gave the squad a mobile fire base of considerable power. A driver was added to the squad. His principal duty was to drive and maintain the car, half-track, M-3 and to furnish additional close-in fire support for the squad and provide for vehicle defense with the .45 caliber submachinegun with which he was armed. The overall strength of the squad was now 11 men, 8 of whom were riflemen armed with the M1 rifle. (Ref. 7)

Reorganization of the Armored Force was one of the considerable accomplishments of Army Ground Forces in 1942. While the Armored Infantry Regiment was retained, combat experience in Africa and Sicily was to dictate its elimination and the substitution of an armored infantry rifle battalion organization in its place. The new tables were published on 15 September 1943. (Ref. 5, pp. 326-327)

The comment contained in Army Ground Forces Study Number 27, 1946, is significant:

> As a result of combat experience the infantry element in the armored division grew in importance. The organizers of the Armored Force recognized that there were some missions which could be performed only by infantry troops including security measures at night, mopping up, organization for defense, relief of tank units that were in need of fuel and maintenance, and reconnaissance in force. In the initial reorganization of the armored division on 1 March 1942 a third battalion was added to the infantry regiment (armored) while at the same time the number of tank battalions was reduced from 8 to 6 by the inactivation of the armored regiment (medium) and the inclusion of medium tanks in the remaining armored regiments (light) which was redesignated as armored regiments. In the reorganization of 15 September 1943 the regimental organization was dropped and the separate battalion systems substituted. Under this reorganization, by reducing the number of tank battalions from six to three, the ratio of infantry battalions was changed from one infantry battalion per two tank battalions, to one infantry battalion per each tank battalion. The increase in the ratio of infantry to tanks was the result of combat experience plus the development of antitank weapons such as the rocket launcher, the antitank rifle grenade, the panzer-faust, and the extensive use of mines. The British Eighth Army which breached the German line at El Alamein in October 1942, spotlighted the value of infantry. General Montgomery used his infantry to probe the German defenses and to open the gap through which armored units could then pour.
> (Ref. 8, p. 36)

That the members of armored infantry rifle squads required additional and specialized technical training above and beyond that received by conventional infantry squads was recognized by the Army Ground Forces. Mobilization Training Program No. 7-1, War Department, Washington 25, D. C., 12 September 1943, *Infantry Training Program, Individual Training for Infantry Regiment and Armored Infantry Regiment,* provided for 116 hours of technical training for the armored rifle squad. The training schedule was divided into subjects and allotted hours as follows:[10]

Armored Infantry Squad		*Standard Infantry Platoon (Squad)*	
Subject	*hours*	*Subject*	*hours*
Bayonet	8	Automatic Rifle, cal. .30	38
Machinegun, cal. .30	32		

[10] See Appendix E for list of armored infantry training literature as contained in Ref. 9, above.

Tactical training of the Infantry Soldier	16	Bayonet	8
Tactics of the crew and squad, night & day	56	Rifle, cal. .30	68
Vehicular crew drill and maintenance	4	Operations of patrols, day and night	8
		Scouting and observing, day and night	8
Total	116	Total	130

(Ref. 9)

Initial combat experience indicated the requirement of the armored infantry rifle squad for a weapon which could give the squad a primary assault weapon and at the same time enable the squad to have antitank protection for its own vehicle and for the tanks it accompanies or supports. The addition of the rocket launcher, AT 2.36-inch M1, by TOE, 4 April 1943, satisfied this need for additional protection without causing any decrease in the squad's mobility or overall combat capability. (Ref. 10)

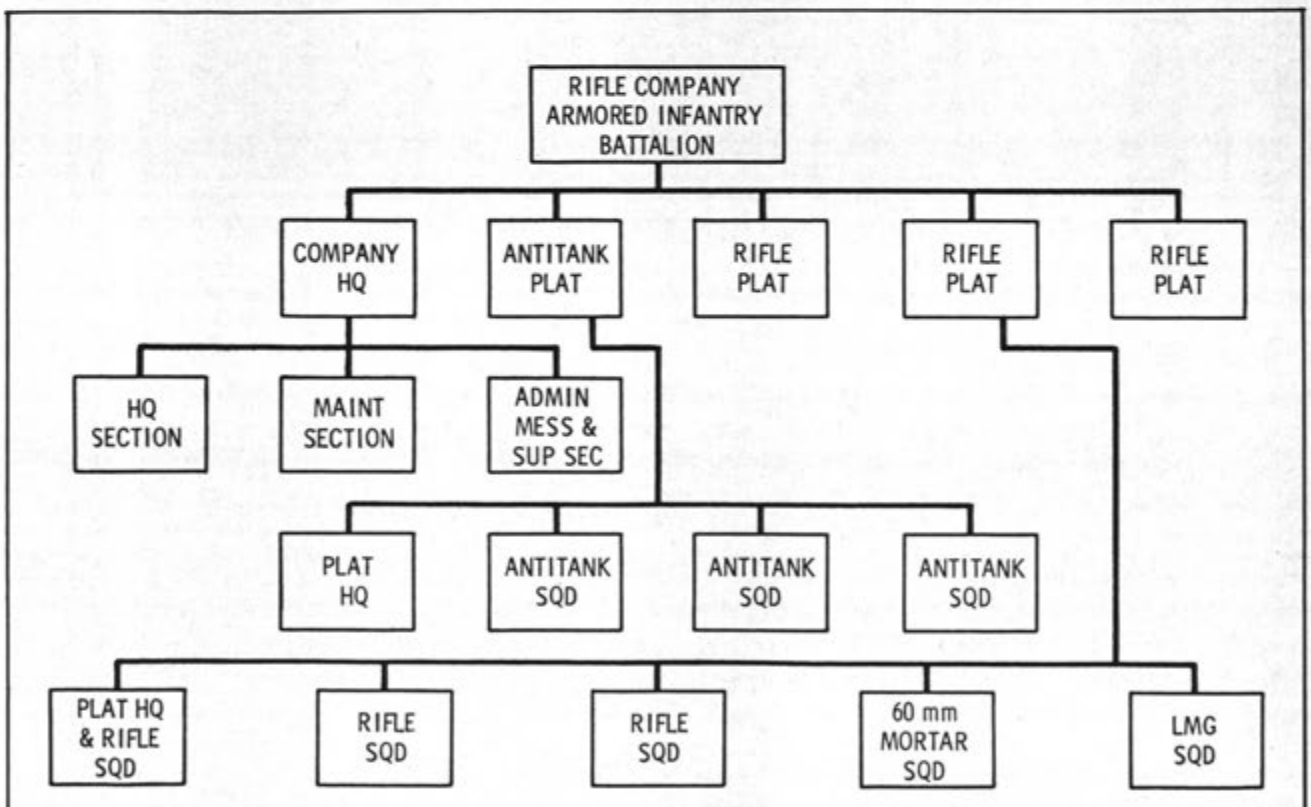
TOE 7-17, 26 February 1944, promoted the standard infantry rifle squad leader from sergeant to staff sergeant and made the assistant squad leader a sergeant. There was a similar elevation in rank for the leaders of the armored infantry rifle squad. TOE 7-27, C2, 7 January 1944, shows the squad leader as a staff sergeant and the assistant leader as a sergeant. The basic reason for the promotion was General McNair's desire to raise the morale and the prestige of the infantry arm. At this time, it will be recalled that the infantry, both standard and armored was vigorously carrying the war to the enemy on the land. The promotion of the squad leaders brought new prestige to the armored infantry rifle squad and higher morale for the leaders themselves. (Ref. 11)

In the armored rifle squad, the higher grades were timely and appropriate for the additional reason that increased mobility and dispersion demanded noncommssioned officer leaders with greater experience and knowledge of tactics, techniques, and weapons. The higher pay and the consequent public recognition of the importance of squad leadership could not guarantee that the leadership, knowledge, and experience required would be obtained. But, in essence, the new ranks and higher pay created a more realistic basis for selection or elimination of squad leaders in the armored infantry.

In connection with the changes above, it should be noted that the squad vehicle M-3 was replaced with the M-3A2 and the the rocket launcher was now the M9.

The need for organic infantry within the armored division is illustrated in the following comment extracted from Army Ground Force Study Number 27:

Both the 1942 type of division and the 1943



THE ARMORED INFANTRY RIFLE COMPANY

type were employed in combat. The 1st, 2nd, and 3rd Divisions were employed under the 1942 table of organization, the 1st later being reorganized in Italy to conform with the 1943 table of organization. The 2nd and 3rd ended the war as old type "heavy" divisions. All other divisions were employed as organized under the 1943 table of organization or as "light" divisions. The "heavy" type was capable of longer sustained action than the "light" type. Both types of divisions were successful. Certain weaknesses were found in both. Both were weak in infantry, particularly the "heavy" division with its two armored regiments of six tank battalions and armored infantry regiment of three armored infantry battalions. The "light" division with three tank battalions and three armored infantry battalions fared better, but needed at least one additional rifle company in each armored infantry battalion in order that tank and infantry battalions could be married up—squad for squad, platoon for platoon, and company for company.
(Ref. 8)

By November 1944, the tactical doctrine of the armored infantry had been forged in the campaigns in Africa and tested on European battlefields from Normandy to the German border. Field Manual 17-40, *Armored Infantry Company,* November 1944, stated it in these words:

> The armored infantry rifle company normally fights dismounted. Under favorable conditions vehicular armament either mounted or dismounted is used to support. If vehicles are used they must be placed in defilade and dispersed. The company moves forward in vehicles until forced by enemy fire, or unfavorable terrain, to dismount. In mounted movement, it is sensitive to mine fields, other obstacles, unfavorable terrain and weather. The armored infantry rifle company is designed for employment with tanks.
> (Ref. 12, p.3)

The similarity between the horse cavalry tactics and those of the armored infantry are readily apparent in the above-quoted extract. A technique of movement used often during World War II and in Korea was the mounting of the riflemen upon the supported tanks and moving forward in the attack.[11] This method could be employed when it was not possible to move forward on the armored infantry's organic vehicles. (Ref. 13, pp. 347-357 and Appendix) (See Appendix G for Chart: *Rifle Squad Mounted on Tanks.)*

The armored infantry rifle company was capable of performing many and varied types of missions. These capabilities and possible missions for armored infantry troops are shown in Field Manual 17-40 in the following categorization. A careful perusal will reveal little difference between the employment of standard infantry and armored infantry once it dismounts. The doctrine was expressed as follows:

> In employment with tanks, the rifle company may be called upon to—
>
> (1) Follow a tank attack to wipe out remaining enemy resistance.
> (2) Seize and hold terrain gained by tanks.
> (3) Attack to seize terrain favorable for a tank attack.
> (4) Form, in conjunction with artillery and tank destroyers, a base of fire for a tank attack.
> (5) Attack in conjunction with tanks.
> (6) Clear lanes through minefields alone or in conjunction with engineers.
> (7) Protect tank units in bivouac, on the march, in assembly area, and at rallying points.
> (8) Assist in forcing a river crossing.
> (9) Assist in seizing a bridgehead.
> (10) Establish and reduce obstacles.
> (11) Attack or defend towns.
> (12) Organize and defend a position.
> (13) Perform reconnaissance and counter-reconnaissance.
>
> Other Missions. These include—
>
> (1) Offensive or defensive operations as part of the battalion.
> (2) Limited objective missions when the enemy is strong in antitank weapons, making it impractical to use tanks.
> (3) Raiding parties.
> (4) Security missions.
> (Ref. 12)

The functioning of the tank and its supporting armored infantry unit exemplified team work of high degree. That this was done under the stress of combat was a tribute to the creative ability of the American soldier. The technique on the tank

[11] (1) Prior to an attack on designated objectives the tanks and infantry were joined together in a rear assembly area. Infantry vehicles were sometimes left in this area and the infantry rode on the tanks up to the attack position where they dismounted and attacked with the tanks. At other times the infantry rode mounted in their own vehicles to the attack position and dismounted there. (2) Hastings, *op. cit.*

and rifle squad level is explained in the following passage from the cited monograph:

> Whenever possible it was found best to join up the same tank and infantry units together in training and combat. Not only would staff sections function better but lower unit commanders and individual tank crews and infantry squads became acquainted and gained confidence in each other. Units gained objectives as a team and not as individual arms. To round out this team artillery forward observers were attached down to include tank and infantry companies from the field artillery battalion in direct support of the unit. This gave a well-rounded team of tanks, infantry and artillery. The artillery forward observer operated dismounted with the infantry and the observer with the tanks rode in a tank. Wherever possible the same artillery battalions were kept in support of the same units.
> (Ref. 6)

TOE 7-27, C3, 2 August 1944, continued the squad leadership with the staff sergeant and sergeant in command. Both were armed with the M1 rifle. The driver was authorized a pistol in addition to the submachine gun, caliber .45. The rocket launcher was now an M9A1 and there were two grenade launchers, M7, authorized for the squad. The TOE did not designate those members in the squad to be armed with the grenade launchers. The addition of the grenade launchers was probably for the antipersonnel effect as a direct defense against antitank weapon crews and for firing pyrotechnic signals. Eventually, in 1945, the General Board, United States Forces, European Theater, recommended that rifle grenade launchers be issued on the basis of one for each rifle. This organization and armament for the armored infantry rifle squad was the one under which the squad finished the war in Europe, as the German armies began surrendering on 4 May 1945, VE Day (Ref. 13)

The next Table of Organization and Equipment 7-27, was dated 16 June 1945, and it provided for the return of the BAR to the armored infantry squad. One private was the automatic rifleman. The squad personnel consisted of nine men (eight riflemen armed with the M1 rifle; one driver for the personnel carrier, M-3A2, armed with a .45 caliber submachinegun). The pistol was withdrawn from the driver. The rocket launcher was the M18. The addition of the automatic rifle increased the effective striking force of the squad. It should be noted that the automatic rifle had been included in the armament of the standard infantry rifle squad throughout the period of the war.

The General Board, United States Forces, European Theater, although its recommendations were published after the end of the fighting, justified the addition of the BAR to the armored infantry rifle squad. The Board stated the battle-proven premise that the basic maneuver and combat unit of the rifle company was the rifle squad. Further, that the rifle squad must have the firepower to make it an effective striking force. It should be noted that the Armored Infantry Rifle Squad did possess its organic base of fire in the vehicle-mounted machinegun and a maneuver element, its riflemen. The vehicle-mounted machinegun was provided with a tripod for ground mounting. Thus it was available to accompany the squad away from the vehicle. (Ref. 14 and Ref. 15)

That the organic infantry of the armored divisions was frequently insufficient is shown in the following extract from the Report, General Board, European Theater:

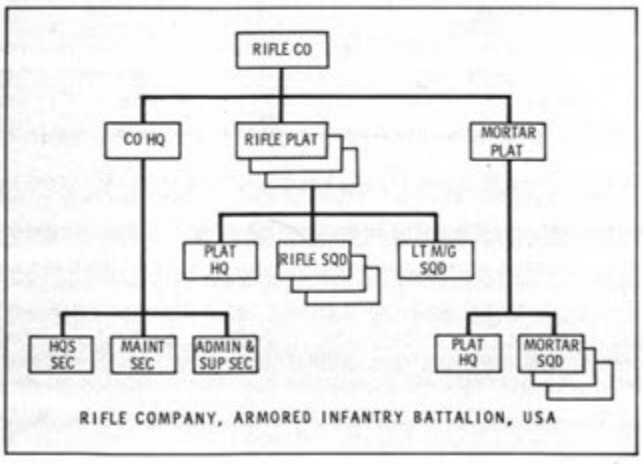
> Analysis indicates that in many of the operations in which the main effort was entrusted to armor, infantry was attached on the usual scale of one regiment per armored division. These attachments were much more frequent in the case of the heavy armored divisions for the obvious reason that while there is parity at battalion level between infantry and tanks in the light division, a one to two ratio exists in the heavy unit. Even the light divisions, although successful in exploitation and pursuit without attached infantry, required additional dismounted strength when employed on secondary missions.
>
> It can be stated that combat experience has definitely shown the need for at least parity between infantry and tanks units in an armored division. Consensus of field commanders is that the ratio of infantry to tank units at company level should be three to two.
> (Ref. 15, p. 12)

World War II combat experience indicated that the need for firepower in the armored infantry rifle squad was a pressing one. It was needed if the tank-infantry team was to function as planned. The following extract illustrates when effective firepower was crucial to success:

> In some instances after committing the tanks, it was found the objective displayed more antitank defenses than was first thought. In such cases it was necessary to have the infantry pass through the tanks and seize the objective before the tanks could move forward. At

times the infantry would be holding in a defensive position and the tanks passed through and made an attack with the infantry following. It was found much better for the tanks and infantry to join in a rear area.
(Ref. 6)

In the post-World War II period, the organization of the armored infantry rifle squad remained generally the same as it had been at the end of hostilities. By 6 February 1948, TOE 7-27 N brought the armored infantry rifle squad in line with the standard infantry rifle squad by reducing its strength from 12 to 9 men. The automatic rifleman was promoted to corporal. Within the squad, the leadership remained the same with a staff sergeant and sergeant in command. There were seven technicians, 4th class (five were riflemen armed with the M1 rifle; one rifleman was armed with the sniper rifle, .30 caliber M1C; one driver for armored utility vehicle, M-44, was armed with .45 caliber submachinegun). There were four .30 caliber grenade launchers, M7A1, authorized for the squad. This increase of grenade launchers followed the recommendation of the General Board, previously noted. There was no specific assignment of the launchers to individual squad personnel. The basic reason for the reduction of the armored infantry rifle squad to a total strength of ten men may be found in the fact that the recent combat experience demonstrated it was difficult to control and direct more than eight other men in battle. Further, that the requirements of future warfare indicated that greater dispersion of all units, including rifle squads, would be the general pattern of future combat. While the standard infantry rifle squad now contained nine men, the additional or tenth man for the armored infantry rifle squad was the driver for the newly issued armored personnel carrier, M-44. The M-44 vehicle was equipped with a machinegun, M1917A1, which was provided with a tripod for ground mounting.



RIFLE COMPANY, ARMORED INFANTRY BATTALION, USA

In 1946, the Army Ground Forces commented as follows:

> The basic doctrines of the Armored Force have changed very little since 1940, but there have been many changes in technique. Maneuverability and gunnery became more essential to success as antitank weapons developed, and the principles of the combined arms and fire and movement were strongly emphasized as a result of combat experience. The combat experience of the British and American armored units had a sobering effect upon the theories of invincibility which some leaders held. They began to appreciate that tanks were not all-powerful and invulnerable, that armored infantry was needed to support them, and that armored tactics could not be based upon the assumption that tanks could force their way through a well organized defense.
> (Ref. 8, p. 29)

The M-59 armored personnel carrier which replaced the M-44, met the requirement for a highly mobile infantry personnel vehicle. In addition, it offered all-around armor protection for the infantry squad. In view of possible operations under nuclear warfare conditions, the overhead cover afforded was of especial importance. In addition to its overall armor, the M-59 possessed limited amphibious characteristics and was air transportable. Weighing 18.7 tons and armed with a .50 caliber machinegun, it became the standard armored infantry vehicle. The .30 caliber machinegun organic to the squad and the .50 caliber machinegun were provided with tripods for ground mounting. Equipped with full tracks, the M-59 was able to negotiate all types of terrain in supporting its tanks. This ability to keep up with the tanks ensured the close-knit cooperation of the tank-infantry team as laid down in United States Army tactical doctrine. Of further importance logistically was the fact that the M-59 provided for a maximum interchange of parts with other organic standard armored vehicles. (Ref. 17, p. 29)

The most significant change introduced into the armored infantry rifle squad by TOE 7-27 N, C1, 18 September 1950, was the replacement of the armored utility vehicle, M-44, by the armored personnel carrier, M-59 (Ref. 18)

TOE 7-27 N, C2, 15 November 1950, eliminated the grade of staff sergeant and made the squad leader a sergeant first class. This change was in accordance with the overall reorganization of the grade structure of the Army. The assistant

squad leader remained in the sergeant grade. This elevation in grade and pay gave the rifle squad leader a position one grade below that of master sergeant, the highest noncommissioned grade. Inasmuch as platoons were often commanded by sergeants in the absence of lieutenants, this recognition of the squad command position through increased rank and pay served to add to the prestige and morale of the infantry. (Ref. 19)

In 1952, there was considerable experimentation in search of a solution for a suitable personnel carrier for the armored infantry squad. The T-18 series of personnel carrier evolved from the M-44 vehicle. Designated the M-75, it was issued to armored infantry rifle squads. Some of these vehicles were equipped with turrets and others had machineguns affixed to pintle mounts. However, the T-18-E2s on trial with units were not equipped with turrets. Under TOE 7-27, 28 August 1952, armored infantry rifle squads were equipped with armored infantry, full-track, T-18 series vehicles. TM 9-2800-1, February 1953, indicates that the T-18E1 vehicle was equipped with a .50 caliber machinegun, with flexible mount for antiaircraft protection. With the machinegun, .30 caliber M1919A6, with M2 tripod, the armored infantry rifle squad possessed two machineguns. (Ref. 20, p. 218 and Ref. 21)

The replacement of the half-track vehicle by a full-track vehicle was the result of the recommendations contained in Study No. 48, *Organization, Equipment and Tactical Employment of the Armored Division*. Ogorkiewicz discusses this important change in vehicles in his book, *Armor*. His comments are informative and indicative of the problem of securing a satisfactory armored infantry squad vehicle:

> The first of the American fully tracked armoured personnel carriers, introduced soon after the Second World War, was of the Kangaroo type. Designated the M-39, it consisted of the highly mobile 76mm gun M-18 tank destroyer minus its turret and armament. It suffered from the same disadvantages as the Canadian and British Kangaroos and was still open-topped. However, it was followed fairly closely by the M-44 which had armour protection all round and which was designed from the start as an armoured personnel carrier. As a carrier, it was definitely more efficient, but because it was built to carry as many as 27 men, it rivalled in size a large bus. In view of the enormous target which it presented, only a few M-44's were built. This model was abandoned in 1950-51 in favor of the M-75. A small number of M-75s were tried in the closing stages of the Korean war, by which this model was joined in service by the very similar M-59.
> (Ref. 3, pp. 392-393 and Ref. 15) (See Appendix D for Armored Infantry Carriers).

Of considerable interest to armored infantrymen was the prospect of fighting mounted. From the beginning in 1940 one of the possibilities of armored infantry combat was the delivery of fire upon the enemy from the carrier and while in motion. In a sense, this was a reversion to the old cavalry tactics of mounted combat. Obviously, the design of the early personnel carriers offered slight armor protection and subsequent models were covered, which prevented the individual squad member from firing his weapon. As noted previously in this study, the tactics of the armored infantryman were essentially those of the old-time U. S. Mounted Rifleman, or Dragoon, who rode a horse to the battlefield then dismounted and fought on foot as an infantryman. This was the tactic of the U. S. Cavalry, the successor to the U. S. Dragoons. (Ref. 22, pp. 18-21)

Field Manual 17-20, Armored Infantry Units, Platoon, Company and Battalion, August 1957 had this to say with reference to carriers in mounted action:

> In the attack, the speed, mobility, and armor protection of the armored personnel carrier must be utilized to the utmost. This is best accomplished when tanks and armored infantry are employed together, each supporting the actions of the other. In order to make full use of the common combat characteristics of tanks and armored infantry, armored infantry should remain mounted in their carriers as long as possible so that—
>
> (1) Elements of the attacking force of tanks and armored infantry can move forward at about the same speed.
>
> (2) The battlefield mobility of both elements of the attacking tank-infantry force is retained.
>
> (3) Casualties in areas swept by small-arms, mortar, and artillery fire are reduced.
>
> (4) Both tanks and armored infantry can move forward supported by artillery air bursts.
>
> (5) A degree of protection is afforded against the effects of atomic weapons.
>
> (6) The energy of the armored infantry is conserved so that they are able to fight effectively when needed.
> (Ref. 23, pp. 56-58)

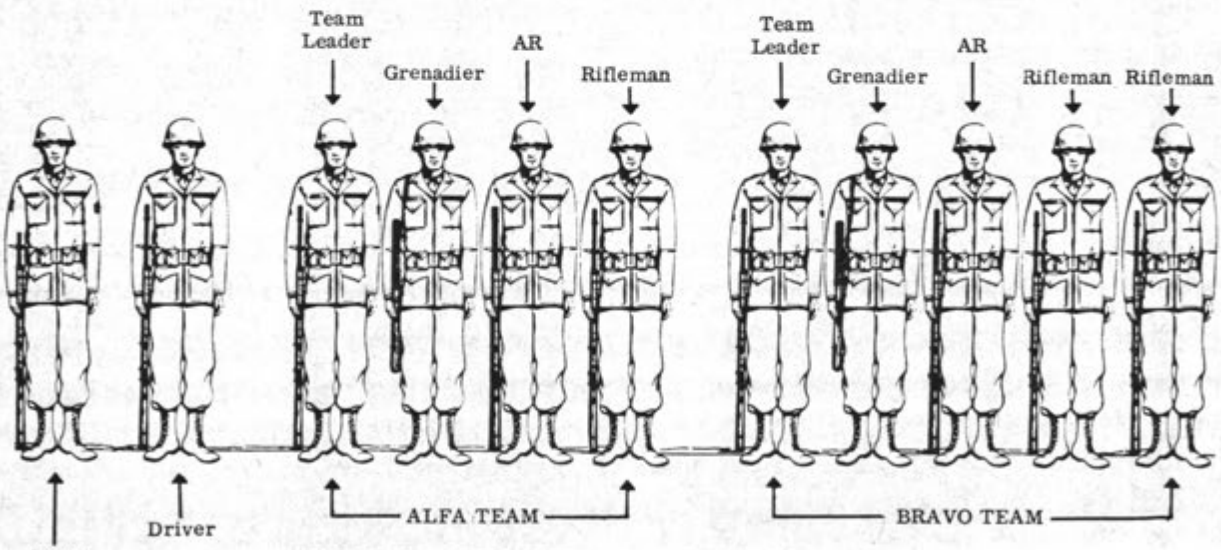
In 1955, the reorganization of the armored infantry squad followed generally that established for the standard infantry rifle squad. TOE 7-27R,

1 February, 1955 provided that the five riflemen be classified as senior riflemen with the grade of corporal, one rifleman was armed with the sniper rifle; two riflemen were armed with the M1 rifle; two of the riflemen were rated as privates, first-class, one was the ammunition bearer, in addition to other duties; the driver was a corporal and was armed with a submachinegun, .45 caliber. The leadership of the squad remained the same: one sergeant first-class as squad leader and one sergeant as assistant squad leader. The automatic rifle team remained unchanged: one automatic rifleman was a corporal. TOE 7-27 C, 5 February 1957 made both automatic riflemen corporals. Otherwise the squad remained unchanged. The squad vehicle was designated as personnel carrier, full-tracked with no armament shown. However, FM 17-20, August 1957 indicated that the personnel carrier was equipped with a .50 caliber machinegun for antiaircraft protection and a .30 caliber machinegun with M2 tripod for ground mounting away from the vehicle.

TOE 7-27 T ROCAD *(Reorganization Objective Current Armored Division)* dated 1 December 1956 began the series of reorganizations within U. S. Army units which were planned to meet the requirements of warfare of the present or of the future. With increased mobility on the land and in the air stressed at all levels of organization, the armored infantry rifle squad was reorganized to form small, hard-hitting fire teams capable of independent action on a widely dispersed battlefield, The introduction of the fire teams into the squad organization of both standard and armored infantry rifle squads greatly increased the flexibility of the unit, but it also demanded that the span of control be exercised by noncommissioned officers of experience. In 1956, the Chief of Infantry, Headquarters, Continental Army Command stated well the problem of control and other factors contributing to the reorganization of the standard infantry rifle squad. There is no valid reason for their non-applicability to the armored infantry rifle squad:

> From . . . the effects of control, capability for sustained combat, and firepower on squad organization, a limiting characteristic of a good squad organization appears: *The squad must contain more men than a single leader can control effectively*. Since the system of providing a leader with an assistant to direct part of the squad while the leader directs both the assistant and the rest of the squad is unsound, a squad organization with subunits is clearly indicated.
> (Ref. 24, p. 54)

The TOE under discussion provided seven riflemen for the armored infantry rifle squad. Three of the senior riflemen were corporals, one of whom was armed with the sniper rifle. Three of the riflemen were privates, first-class. The driver of the armored personnel carrier was a corporal who was armed with a rifle. The total strength of the squad was 12 men. The squad was assigned three grenade launchers but no specific individuals within the squad were designated as grenadiers. The squad vehicles were shown as armored infantry, full-track, T-18 series. The T-18E1 vehicles were equipped with .50 caliber heavy machinegun with



ARMORED INFANTRY RIFLE SQUAD - 1965

flexible mount. A .30 caliber machinegun with M1919A6 tripod, M2, was provided for ground mounting away from the vehicle.

The results that were achieved by the 1960 reorganization of both the standard infantry and armored infantry rifle squad may be summed up in one word: Maneuverability. The reorganization was based on the concept that wide-ranging operations on present or future battlefields would require squads composed of highly-mobile, hard-hitting fire teams with the capability of independent action under combat conditions. The two fire teams gave the squad leader the capability of maneuvering integral units under his overall command. Prior to this change, the squad leader moved his squad personnel as individuals except in the case of the automatic rifle team.

The possible requirements of future warfare call for dispersion of units over broad fronts. To meet this challenge all units down to and including the armored infantry rifle squad must possess the ability to operate independently. In furtherance of this objective, the improved span of control of the squad leader, who now controls two fire team leaders, rather than the entire unit, should be noted. Each fire team, with its ample firepower and flexibility of response in battle areas of considerable depth, requires experienced leadership. Because of the independence of action built into the teams' tactics, the team leader, as well as the squad leader, has to be able to exert maximum control. To accomplish the squad mission under these circumstances, the squad leaders of all grades must be well trained and highly capable of exercising command and leadership under combat conditions.

TOE 7-27 D, 1 May 1960, changed the grade of the squad leader from sergeant first class to staff sergeant. This was in accordance with the army-wide elimination in 1958 of the grade of sergeant first-class. The advent of the fire teams called for two fire team leaders in the grade of sergeant. All of the squad command group carried the new 7.62mm automatic rifles. The automatic riflemen were corporals and were armed with the 7.62mm automatic rifles, light barrel, with bipod. Seven riflemen were armed with 7.62-mm rifles. Two of the senior riflemen were corporals. The driver of the armored personnel carrier was also a corporal. Four riflemen were in the grade of private, first-class. The TOE did not show the armament of the carrier but FM 7-15, January 1962, indicates that the carrier had a mounted machinegun caliber not shown. FM 17-20, August 1957, indicated at that time that the carrier-mounted machinegun was .50 caliber. The TOE also authorized a 7.62-mm, lightweight, general-purpose machinegun, with tripod for ground mounting away from the vehicle. There is no sniper rifle authorized for the squad under this TOE. There are 12 men in the squad.

As far as infantry units are concerned, their organization has been based upon the squad or section. The squad has been commonly defined as the largest group of riflemen that one man can control and lead, although in practice, the basic unit tended to be a light-machinegun or automatic rifle team. In either case, the squad or fire team must have a minimum of four or five men and may be considered as the light weapon equivalent of the tank and its crew. (Ref. 25 and Ref. 3, pp. 47-48)

TOE 7-47 E, Draft, 1962, retained the squad leadership and the automatic rifle teams of the 1960 TOE 7-27 D. Among the riflemen there were now two grenadiers with the grade of corporal who were armed with the grenade launcher, 40mm, the .45 caliber pistol, and the 7.62mm rifle. One rifleman, a corporal, was armed with the 7.62mm rifle. He also served as the driver of the armored personnel carrier. Two riflemen were armed with the 7.62mm rifle and were in the grade of private, first-class. As with the standard infantry rifle squads, the armored infantry squads were reduced to ten men. One of the riflemen of the armored infantry rifle squad for this reason had to function as driver, in addition to his other duties. Under this TOE, each fire team consisted of a team leader, a sergeant, a grenadier, an automatic rifleman, and a rifleman.

In 1963, under TOE 7-47 E, dated 15 July, the armored infantry rifle squad was augmented by one rifleman. The reason for the increase of the squad was based upon the requirement that the part-time driver could not remain with the vehicle without weakening one of the fire teams. With the addition of the rifleman, the driver remained full time with the vehicle and manned the vehicular weapons in support of the squad. The carrier is shown by FM 7-15, January 1962, to have a mounted weapon with caliber not indicated. Assumption is made that it was .50 caliber M2, heavy barrel machinegun equipped with flexible mount. There was a 7.62mm lightweight, general-purpose machinegun with tripod for ground mounting. There was no sniper rifle authorized.

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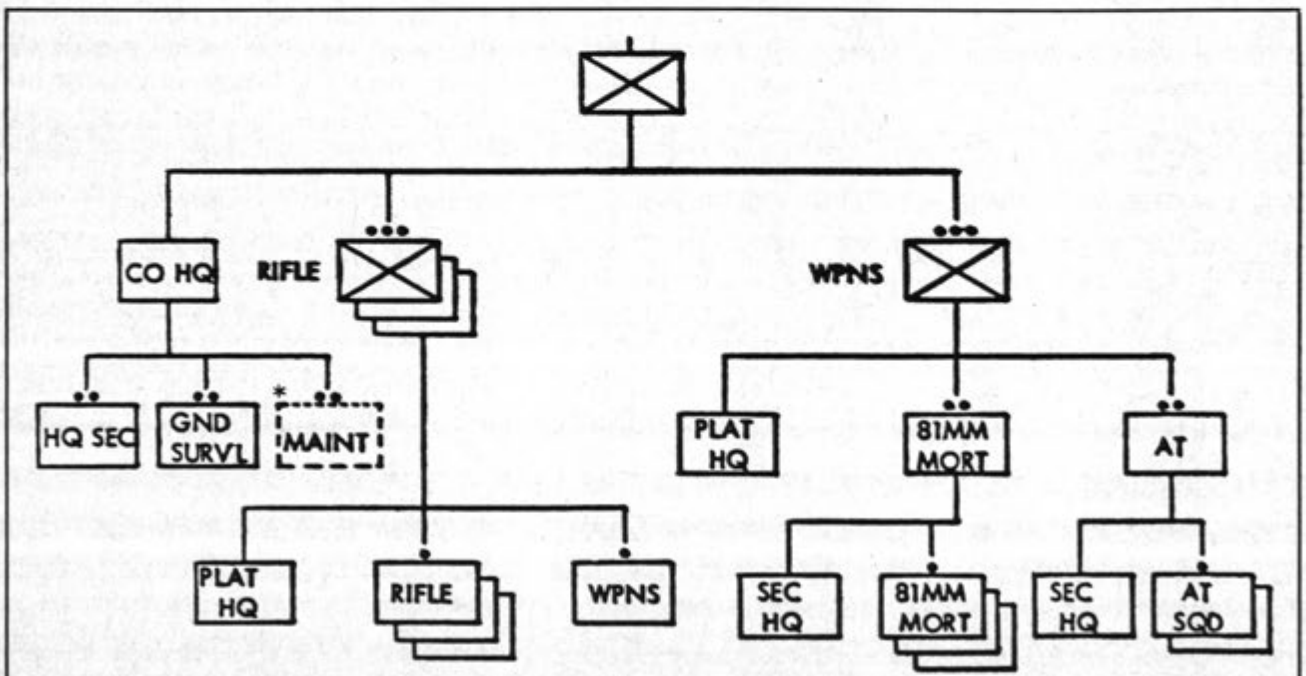

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CONCLUSIONS

The development of the tank contributed to the evolution of the armored infantry rifle squad. The tank overcame the rule of the machinegun and restored partial mobility to the battlefields of World War I. In so doing it established a new requirement for direct cooperation and close support by adjacent infantry units. In the initial stages of the development of the tank and its tactical doctrine, there was no definition of the relationship of the tank to infantry and vice versa.

Until recent modern times, the horse furnished mobility upon the battlefield. Additionally, the horse with his bulk and weight possessed shock power as an added weapon effect. The early tank with its mobility, shock power and crushing ability and its immunity to small-arms fire replaced the horse and changed the concept of infantry tactics. The tank with the close support of infantry could overcome its foes with its fire, shock and crushing power. Together, the tank and the infantry make a formidable weapon.[12]

Armored infantrymen are specialized in that they advance mounted in armored carriers and upon dismounting, fight as infantry. They can operate in combat without tanks or they may combine both mounted and dismounted action in their tactical patterns. Mounted combat from the present armored personnel carriers is difficult if not impossible for the squad personnel within the vehicle. Fires of the carrier-mounted weapons can only be delivered while the vehicle is moving. The addition of numerous gun and rifle ports in the hull would tend to weaken the personnel protection potential of the carrier. The protection afforded by the armored personnel carrier enables the armored infantry squad to get as far forward as possible the delivery of a decisive blow upon the enemy when he is subjected to or recovering from the heavy fire power of the accompanying tanks. The fires of the carrier-mounted weapons assure the squad close support when it is needed.

The armored personnel carrier is not a tank. Its purpose is to give armor protection, together with mobility, against artillery fragments, small-arms fire, and the effects of nuclear radiation. It is highly vulnerable to enemy antitank fire and must not be exposed carelessly to hostile fires of this type. Because of its cover, the armored personnel carrier offers a degree of protection against fallout and nuclear radiation. With nuclear war a clear and present danger, it is conceivable that in a future war *all* infantry squads may be transported in armored personnel carriers.

The close support capable of being rendered by air units of the armored division would have the effect of creating an air, tank, and armored infantry team. The formation of this team would accomplish the complete integration of *all* military weapons of the armored division into a weapon system for land warfare.

Psychologically, the armored infantry rifle squad possesses an advantage over the rifle squad which bolsters the armored squad's collective and individual morale. This advantage is the squad's close identification with a major item of equipment—the armored personnel carrier. This identification the standard infantry squad does not have. In a sense, the personnel carrier functions as a "home," a base to which the squad is always tied regardless of the varying fortunes of combat. By this token, the armored infantry squad may have a slight edge on the standard infantry rifle squad in the matter of stability and integration.

The armored infantry rifle squad now possesses fire power and maneuverability to an extent greater than any rifle squad in our military history. By this token the leadership of the squad will require the highest type of noncommissioned officers. These small-unit combat leaders must be able to act independently and decisively in order to render effective support to the tanks. So that this support will be most effective, the rifle squads and tank crews must be welded into closely knit fighting teams. This association should be as permanent as combat conditions will permit.

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[12] For an example of tanks operating alone, the experience of Lt. Col. Elzie Hickerson, USA, during the Battle of the Bulge is cited. In a personal interview Colonel Hickerson indicated that at Bizory, Belgium during the period of 1-20 January 1945, his unit, the 68th Tank Battalion of the Sixth Armored Division, secured and held a position without the assistance of armored infantry. This was done by using the tank crews for ground patrolling. In addition to the tank-mounted weapons, he had available an 81-mm mortar platoon. Two tank destroyers were used to supplement the available fire power.

AREA FIRE

A PRIME CONSIDERATION FOR ARMOR

What is area fire?

Is it a technique that tankers should use?

How effective is it?

By MAJOR HAROLD L. LARSON

AREA FIRE AGAINST PERSONNEL, unprotected vehicles, or lightly-armored vehicles is considered by most "Tankers" as below their level, unimportant, or a complete waste of scarce ammunition. Ask a Tanker about area fire, and his normal response is "That's what the Infantry and Artillery are for" or "It's not one of our primary missions." This is just the problem. What are we, in armor, going to do, not only to protect ourselves, but to repel and destroy the enemy if proper fire support is not available?

What is area fire? For the purpose of this article, area fire is fire into a known, suspected, or likely enemy target area when target effect is not visible. It is employed to increase the probability of damaging, dispersing, or destroying a target. Area fire can be either direct or indirect fire, but for our purposes we will consider only direct, unobserved fire. To further expand on a definition of area fire, ST 17-12-1 states in part: "Area fire is the firing of a prescribed number of rounds of HE or HEP in a prescribed pattern."

As a secondary mission of armor, area fire does not receive the attention that it rightfully deserves. Properly employed area fire can save your tank, your platoon, and in fact your entire company. Area fire from a single tank can be so devastating

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that it can tie up an entire enemy company. Just think what a full tank company could do if properly employed in an area role.

Armor cannot and should not be employed in this role for any length of time because of the large amount of ammunition required. Furthermore, our main armament is better employed.

Artillery and mortar units are better equipped and trained in this role. They have more sophisticated equipment and procedures, and their ammunition is better suited. However, that day, hour, minute, or even second may come when we are going to need area fire.

I sincerely feel that it is about time we, as commanders or what have you, take a real good look, a close look at our area fire methods, consider some changes, and, most of all, realize just how valuable this can be if used properly.

For the purposes of this article we will consider a hypothetical round and bursting pattern. The method presented herein will have to be adjusted to meet the effects of advanced rounds of ammunition as they are developed. Further, we will use unobserved fire only, for observed fire presents no problem in this respect.

You are a tank commander in a defensive position. Your area of responsibility includes a "T" road junction which has been identified as target "C" on your range card. You have all the information to fire on this target. Your range is 1,500 meters and your crew is well trained and alert. Suddenly you are brought back from your pleasant thoughts by your Platoon Leader's command for fire on target "C." The only identification of the target is "troops."

You can't see the enemy troops but you feel secure as you issue your command to your crew and try to observe. You smile to yourself with satisfaction as you see those brilliant bursts as five rounds go out. Maybe you repeat area fire just to be sure, and then you go back to more pleasant thoughts.

How effective have you been on this target? Stop and think just how effective against troops in the open have you actually been. I hate to jar you back to reality, but you haven't been very effective. Sure, you have induced some casualties, slowed their advance, but you haven't used the full capabilities of the weapon.

The round has a fragmentation pattern similar to *Figure 1*. It is effective between 35-40 meters wide, but only 5-8 meters deep. By virture of its trajectory its pattern is half-moon shaped.

You know your gunner is well trained, especially since you trained him yourself. The first round should have been center of target "C," your second round 100 meters over it, your third round 100 meters short, and your fourth and fifth rounds 15, *yes 15*, meters right and left of target "C." Your short pattern should have looked something like *Figure 2*.

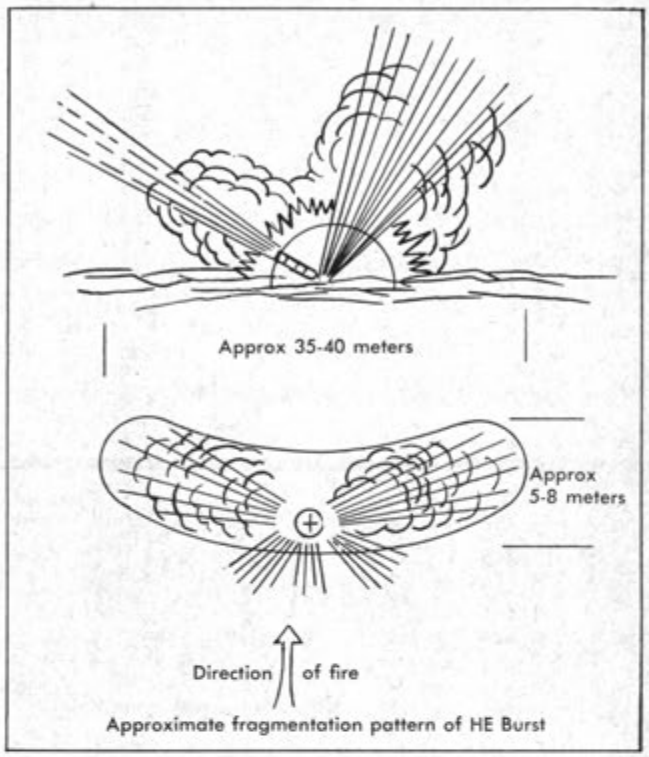

Figure 1

Study this pattern. What casualties did rounds 4 and 5 cause? Very little as round 1 dispersed the troops and inflicted the heavy damage while rounds 4 and 5 only spread the pattern by 30 meters. Rounds 2 and 3 were 100 meters over and short of the target but did serve the purpose of stopping a direct advance into your position and of cutting off the supply of personnel.

What would you have done as Tank Commander or Gunner, if you could have observed the target? You most likely would have brought rounds 2 and 3 closer to the target, and spread rounds 4 and 5 out to cover more lateral area.

At present, the standard area pattern at any range, and I repeat *any* range, is Center, Add 1ml., Drop 2ml., Add 1ml. Right 10ml., Left 20ml., Cease Fire. This is not realistic at every range, but it is a pattern. We could discuss which round goes where and when it goes, but that is not the basic problem. I do feel that the sequence is important, but the pattern *most* important.

Let's give some thought to changing our area fire pattern to something more realistic. Let's concentrate our fire on the main target, and give it some lateral, rather than depth dispersion.

I propose that something along the following

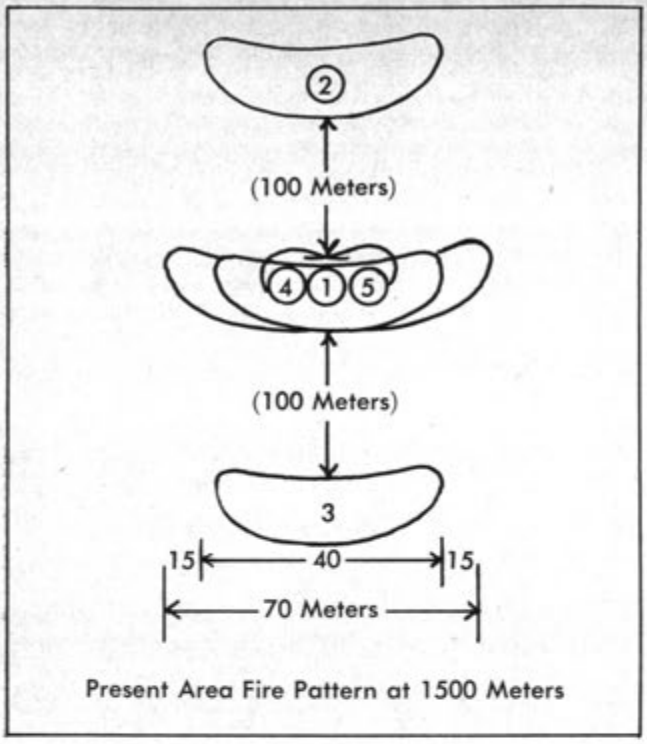

Figure 2

method is more practical and much more devastating.

First, there should be no change in elevation at any range. The normal dispersion of the piece will give the necessary depth. Remember that the bursting depth of our hypothetical HE round is from 5-8 meters and only a slight movement will result in overlapping coverage.

Secondly, deflection shifts should be dependent upon the range and not standard for all ranges. Our standard pattern should be similar to the following:

Range	Mil Shift Right or Left	Meter Shift Right or Left
Less than 1000	40ml.	40 meters
1001-2000	30ml.	60 meters
2001-3000	20ml.	60 meters
3001-max. range	10ml.	30 meters up

In the situation already given our shot pattern would have looked like this.

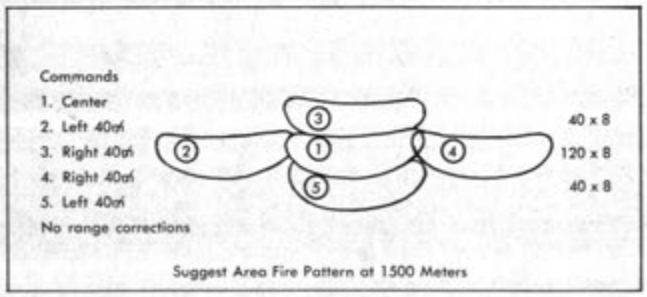

Figure 3

This concentration is where the enemy should be, but still more important, it is spread literally. We have maximum depth of 24 meters and maximum width of 120 meters. There are no gaps in coverage of the area.

Now the fight comes. Which is more important, lateral coverage or depth coverage? Lateral! The well-trained enemy, and we must assume he is, would have avoided a movement through a well-defined landmark, one where prearranged fires may have been prepared. He would try to skirt it, to sneak around it. If this lateral fire did not destroy the enemy, then it either cut him off from the rear or shut him off from the front.

The chart below is a comparison of the present deflection movement and the suggested movement:

Ranges (Meters)	*Mil and Meter Movement at Maximum* Suggested		Present	
Less than 1000	40ml.	40 meters	10ml.	10 meters
1001-2000 meters	30ml.	60 meters	10ml.	20 meters
2001-3000 meters	20ml.	60 meters	10ml.	30 meters
More than 3000	10ml.	30 meters up	10ml.	30 meters

As you can see, at ranges over 3,000 meters there is no true advantage of changing. However, at ranges of less than 3,000 meters, where we normally would be firing, much more lateral dispersion is obtained with the suggested method. This lateral coverage increases with a decrease in range. In the midrange area, between 1001-3000 meters, the suggested method does have some lateral gaps in coverage. I believe this is not a hinderance as the nearness to impact will have a demoralizing effect on the enemy. At ranges of less than 1,000 meters or more than 3,000 meters we have complete and overlapping coverage. In fact, we have laid down a wall of fire destroying those in its zone, cutting off those in front, and shutting off the resupply of personnel forward.

Your next question should be about depth. According to the appropriate manual, a 1ml. shift in elevation will result in a 100-yard change in range at all ranges. Considering normal dispension, a bare minimum of 8 meters should be obtained at short ranges and increased amounts at greater ranges.

What have we accomplished by this method? We have established a perpendicular wall, not a parallel wall, to the line of advance of the enemy. First, we have protected ourselves, and secondly, we have either destroyed him, slowed his advance, or cut off his supplies and demoralized him.

You're still a non-believer? OK, let's examine both the lateral and range coverages at midranges.

Midrange (Meters)	*Defl. & Ground Movement* Suggested		Present		*Range Changes* Suggested		Present	
500	40ml.	20m	10ml.	5m	0ml.	8m	1ml.	100m
1500	30ml.	45m	10ml.	15m	0ml.	8m	1ml.	100m
2500	20ml.	50m	10ml.	25m	0ml.	8m	1ml.	100m
3500	10ml.	35m	10ml.	35m	0ml.	8m	1ml.	100m

In the figure below you will find a comparison

of the suggested method as opposed to the present method at a given range of 2,000 meters.

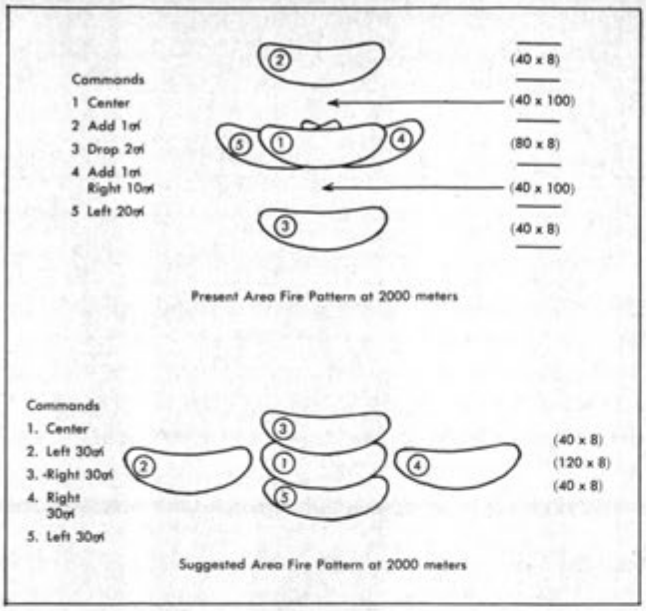

Figure 3

In the present method we have 1,280 sq. meters of coverage, while the suggested method increases this by only 320 meters to 1,600 meters. The big advantage of the suggested method is the lateral dispersion and the reduction of gap area.

In the next illustration you will see a comparison of methods at ranges of three and four thousand meters. It is highly unlikely that we would be at these ranges; however, the comparison is presented for your information.

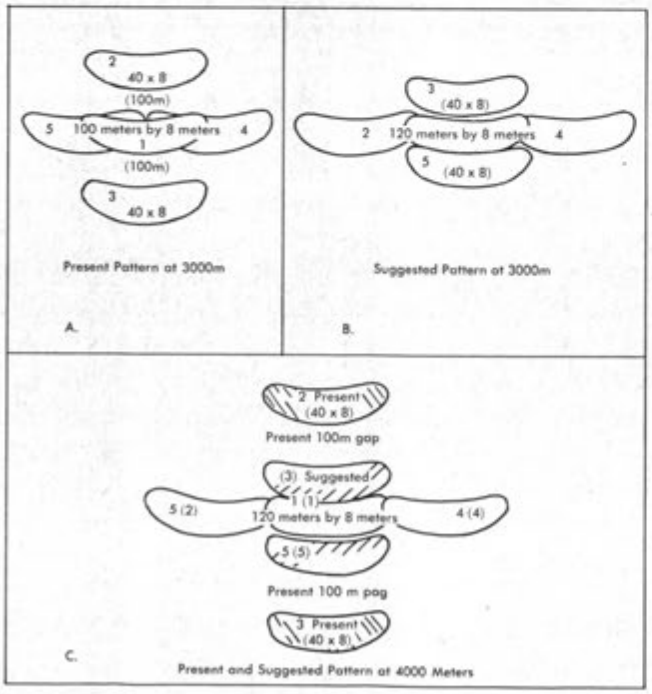

Figure 5 (A, B, & C)

Notice the devastating coverage, that wall of fire, that wall of total destruction. What a feeling of satisfaction and security this would give to me as a Tank Commander!

To me, the present method does not provide enough width, provides too much depth, in fact, wastes four of the five rounds of precious ammunition.

If only one tank can lay down so solid a wall of destruction and death, think what a full platoon could do; 600 meters of solid steel in width. Granted this fire is only 8 meters in depth, but it is like a window. You can see the enemy but he can't get to you without exposing himself to a cut hand; only in this case it undoubtedly would be more than a cut hand. If the platoon were to employ this method in depth, it would give you a 120-meter wide swath 40 meters in depth. Furthermore, the Platoon Leader could adjust the depth simply by applying the 1ml. factor and increase his depth to 500 meters.

The Platoon Leader could prearrange his fires to cover almost any type of target subject to area fires. Fires in depth to cover a defile, fires in width to cover a cross compartment, fires scattered to cover likely targets, such as the road junction pictured below.

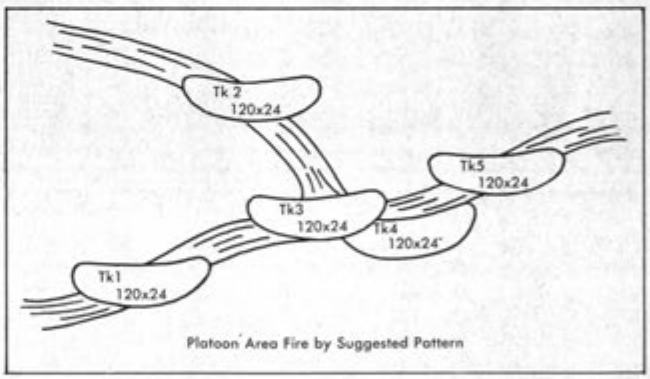

Figure 6

It is time for us to give more thought to area fires, although it is a secondary mission. We should not only consider the main gun but also the coax.

Staying on the subject of area fires, look at the M-13 fire control (elevation) quadrant pictured here. What does it read? Is the gun tube level? How many dials and indexes did you have to check to determine this?

First, you checked the elevation scale to determine that reading. The index is so close to zero that you cannot be sure at first glance whether you have a plus or minus reading. Now you go to the micrometer scale and you read either plus 87

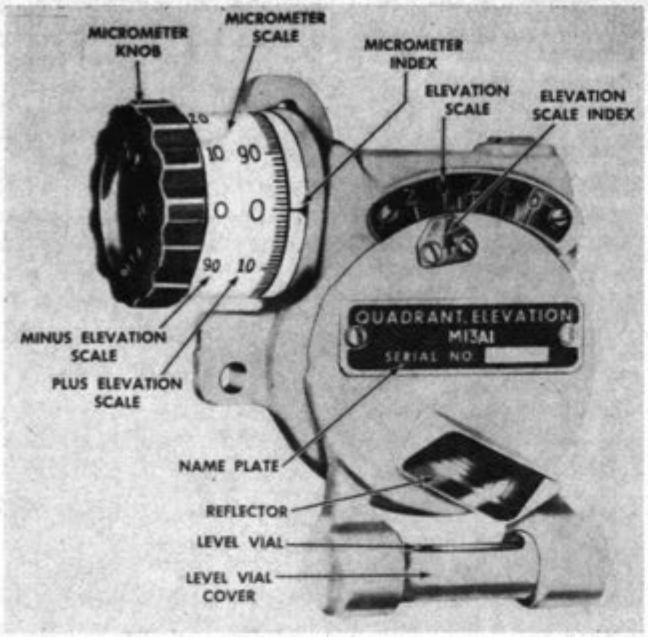

Figure 7

or minus 13, so you have got to "think." If it were plus 87, the index should have been closer to 100 than zero, so your reading must be minus 13. Is it?

Why not make this a bit more simple and accurate by eliminating the "think." I suggest one simple, inexpensive modification which will increase accuracy and reduce the time required to read or set the scales.

A zero setting means that the tube is level. Let's just exchange that zero for a setting of 200. With the tube level we would then read 200. Elevated, the reading would be more than 200, and conversely, depressed it would read less than 200. We must keep in mind that the present zero setting (level) now reads 200.

What does this accomplish? First, we end up with only one reading, somewhere between zero and 800ml. We have no plus or minus readings, thereby eliminating red or black numbers, and the plus or minus factor.

All that is required to modify the M-13 is a new elevation scale; block out the red (minus) readings on the micrometer scale, and publish a manual change. I sincerely hope that the very minor cost involved would be well worth the increased accuracy and speed with which the gunner could lay the piece.

Before closing, I have one additional comment and that involves the Azimuth Indicator. My suggestions here are twofold; the first being a minor modification and the second a complete change. Again, I am not technically qualified to work out the details and present ideas only as "food for thought."

The minor modification simply involves the tilting of the Indicator to maybe a 30-degree angle. This would afford the gunner a better view and would not require him to lean over to read the indicator. This instrument is adequately lighted; however, the index needles are difficult to read around 12 o'clock, due mainly to the angle of sight.

It is my understanding that this suggestion is already under study and that certain models of the M-60A1 already incorporate this modification.

The second suggestion for improvement of the Azimuth Indicator is a major change. I suggest that we give thought to replacing the present model with a "speedometer-type" model. The face would have five adjacent windows. The first window would read with "L" or "R," indicating right or left of center. The remaining windows would apply to the actual azimuth reading. With a device such as this you would have only one place to check; only one reading would be possible, rather than the collection of scales and needles now existing. Further, this new azimuth indicator should be much smaller than the present model, giving the gunner much needed room.

Technically, this change may be much more involved than do I realize, and I must leave that to the experts. The increased accuracy and speed, plus the elimination of "thinking" would ease another phase of gunnery training.

The modifications suggested are made for one reason, and one reason only: to improve *speed, accuracy,* and *destruction* by area fire. In its present form, area fire is ineffective, inadequate, and unrealistic.

Area fire can completely destroy a target without even seeing it. Area fire can be used as interdiction fire, harassing fire, indirect fire, offensive fire, defensive fire, but most important it can be used as destruction fire. Area fire, properly employed, can lay down a perpendicular wall of bursting steel, a denial sheaf of destruction, an irregular pattern of devastation, or a blanket of death to the enemy.

From the Tank Commander to the Task Force Commander, let's give more thought to the employment of area fire.

Check The Book Ad Pages For Christmas Suggestions

ANTITANK WARFARE

By COLONEL HANS von USLAR-GLEICHEN

NOW AS BEFORE, the tank is the main weapon of the Army in a conventional war. This is why I would like to write about the tank and its principal enemy, the antitank weapon.

The history of the tank is not really old if Leonardo da Vinci's (1452-1519) design of a covered armored car (which was never constructed) is omitted. This is how one can determine that the concept to give protection to the soldier in engaging the enemy existed several hundred years ago. A drawing of Leonardo da Vinci's armored car is on exhibit in the British Museum in London. This Italian genius also designed and constructed other weapons, such as a steam powered cannon and various catapults. These were meant to subdue and seize fortresses.

Let us go back to the armored car. A usable design for an armored combat vehicle was made by an Austrian officer in 1911, however, at that time nobody knew what to do with it. As was the case with gunpowder and radar the tank was invented several times before the idea found practical application.

The history of World War I reveals that the first armored combat vehicles, the first tanks, were employed by the British Expedition Corps in the famous armored engagement near Cambrai in 1917. The German Army facing the Corps, was completely defenseless against the unique iron monster. The development of tanks was held so secret that the element of surprise was a determining factor of success. The Germans had no means of defense against the armored vehicles. The only weapon utilized was an infantry gun placed well forward without any protection which was in the position to kill one, or at the most two tanks until the gun itself was knocked out.

In 1939 all modern armies had antitank weapons in their inventory. These, however, were not available in sufficient numbers as was determined at the beginning of the war (Germany-Poland). Their performance was so poor that they were no real threat to the tanks of that period.

During the war years 1939-43 antitank weapons such as guns, guns with tapered tubes, ammunition, magnetic mines, light artillery and bazookas were intensively developed, and even guided missiles were employed. During World War II, the most successful weapon against tank concentrations was the gun employed either as a towed antitank weapon, a self-propelled antitank gun or a self-propelled assault gun.

The development of these weapons, and especially their ammunition, progressed so rapidly that already in 1942 the antitank defense was superior to the tank. However, the trend in antitank weapons was towards larger calibres which made them heavier, and thus less mobile. Therefore emphasis shifted to the development of rockets, light-weight guns and recoilless rifles.

After World War II the development of antitank weapons and ammunition was limited. Because of experiences gained in the war, the main development was now directed almost exclusively toward recoilless rifles and guided missiles. The gun tube in antitank weapons was dropped completely in some armies.

The advantages and disadvantages of these two weapon systems are generally known. The rocket requires only a light tube or a light firing launcher which can be carried by either one or two men. This is quite a change from the tube weapon which weighs several thousand pounds. The guided missile has the disadvantage in

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COLONEL HANS von USLAR-GLEICHEN is a graduate of the Technical University of Berlin, holding a degree as Engineer. During World War II he had commands in armored divisions in Poland, France and Russia. He was formerly on the German Army Staff in the Bundeswehr, where he worked in the development of weapons and problems of standardization. His present assignment is liaison officer to the U. S. Army Materiel Command, with primary mission pertaining to the development and standardization of weapon systems, involving engineering and user tests.

that the gunner must be without cover for 8 to 10 seconds when firing at the target, and during this time he as well as the launcher are vulnerable to enemy fire. With the tube weapon one can fire quickly, meaning that one is in the position to destroy more tanks in less time.

The user who determines the military requirements as well as the engineer who provides the user with the required weapons are both aware of the advantages and disadvantages of the two systems. Therefore it is justified to ask: *Can we or can we not do away with the tube weapon?*

If we are to be prepared to fight a conventional war against the Communist Bloc which traditionally relies heavily on armor and its applicable tactics as demonstrated during the Russo-German war of 1941-1945 the study of this campaign should provide us with an answer.

I quote page 65, paragraph 150 of the US-FM 100-5: "A successful penetration requires the concentration of superior combat power."

The German tactics state that the impact of as many tanks as possible will be a decisive factor in reaching the objective.

Germany has considerable experience in combat against superior armored forces. It is probably the only army, if one excludes Poland and France, which possesses such experience. Therefore a number of combat reports of German antitank and self-propelled assault gun units are quoted below to reveal the success these two weapons achieved. The reports show that it was frequently necessary to destroy a large number of enemy tanks in a short time, and that it was important to offset the superiority of tanks with a small number of antitank weapons. Also that this was often accomplished successfully, and that some superior armored attacks were brought to a standstill in a matter of minutes by brave and daring soldiers, good weapons, and excellent ammunition.

The self-propelled assault guns were developed after Generalfeldmarschall von Manstein, a well-known German Army commander, established a military requirement for a heavily armored self-propelled gun with good cross-country ability and a good cannon. Their purpose was to support the infantry decisively.

Individual Reports

STURMARTILLERIE, Fels in der Brandung, 1965
Maximilian-Verlag, Herford

> (Self-propelled assault gun; Rock in the Breakers)
> Self-propelled assault guns destroyed 13,000 enemy tanks. By the end of 1943 and into spring of 1944 a total of 20,000 tanks were reportedly destroyed. It was found that one brigade of self-propelled assault guns killed 1,000 tanks in 15 months in the Rshew area. During that time the brigade had only an average of 20 guns.
> Soviet tank forces were ordered not to engage in a fight with assault guns.

The official Army News Release reported on Feb. 26, 1945:

> The Self-propelled Assault Gun Brigade 190 destroyed 104 enemy tanks within one month. Four guns were reportedly lost.

An Army Newspaper reports:

> Again, a self-propelled assault gun unit was extremely successful. In the area of the river Orel, this unit destroyed 102 enemy tanks, 59 in one day!
> Major G. directed his self-propelled assault guns to engage the penetrating T-34 tanks. From very short dissances all 20 enemy vehicles were destroyed. That day the brigade had killed 38 tanks.

The official Army News Release reported on November 1, 1944:

> Under the command of Captain R. the self-propelled assault gun brigade 277 lost only one gun in a ten-day battle while destroying 60 enemy tanks, 82 artillery pieces as well as numerous grenade-launchers and other weapons.

The official Army News Release reports:

> Under the command of Major K. the 920th Self-propelled Assault Gun Brigade destroyed 36 tanks and three artillery pieces in a single day. Another three enemy tanks were crippled. The brigade lost only one gun. *Within a few seconds, the two guns destroyed seven T-34.* During the ensuing battle almost all 20 enemy tanks were destroyed.

From all these examples—and I could quote more—it is obvious that the daring crews were able to destroy enemy tanks with their good and fast shooting guns within minutes or even seconds. It was commonplace for a few self-propelled assault guns to destroy numerous enemy tanks. In most instances their own casualties were low.

Summarizing, it appears that the German Army was able to destroy superior enemy tank-forces

> *in a short time-frame,*
> *with inferior forces,*
> *incurring low casualties.*

At any rate, numerous Soviet tank attacks were stopped, and many battles were won by the Germans.

The reader should make his own interpretation of the above quoted reports. Their meaning is quite clear to me. . . . What do you say?

REMINISCENSES ABOUT SYNGMAN RHEE

General Bruce C. Clarke, Ret.

THE RECENT ANNOUNCEMENT of the death of Syngman Rhee in Honolulu will bring back many memories of that dedicated patriot and leader of his country to the many Americans who served in Korea before, during, and since the Korean War.

Knowing him and observing him on many occasions during the period 1953-54 while I was commander of I Corps, X Corps Group; Deputy Commander of the Eighth U. S. Army and trainer of the First Republic of Korea Army, was a stimulating experience. I was able to observe his great influence, not only from Seoul, but from the point of view of the entire Korean Army with which I was intimately associated during that period. He was without doubt the Father of modern South Korea and was so revered and accepted by his people.

His fall from power and abdication was, ironically, the result of his great patriotic strength, determination, and complete devotion to Korea. He had suffered greatly at the hands of the Japanese, including physical torture. He had sought, unsuccessfully, help for his country from the League of Nations. He had returned to his country after WWII as the President of South Korea. He had led his country during the dark days of the invasion of South Korea by the Communists from the North. He never gave up or allowed his people to give up the hope of uniting North and South Korea.

Because his whole life, thoughts, and energy were wrapped up in these matters of vital importance to his country, he had not prepared the way for a turnover of power in Korea as he became too old to carry on effectively. This is often the fate of strong men of nations.

He was a thankful, appreciative, grateful, and devoted Christian. He traveled widely to visit his troops and the United Nations troops at the front. He never failed to inspire the troops on these occasions. His courteous thoughtfulness was remarked upon and deeply appreciated.

Early in 1954 it was decided to train and activate the First Republic of Korea Army Headquarters to take over the eastern part of the front from the U. S. X Corps (Group). General Sun Yup Paik was designated as Army Commander. He had served as ROK Chief of Staff and was a fine soldier. The Army Headquarters was assembled and trained near the U. S. X Corps Headquarters at Kwandaeri in the mountains of eastern-central Korea.

At the activation ceremony President and Madame Syngman Rhee were flown to Kwandae-ri by General Maxwell D. Taylor, the Eighth U. S. Army Commander. After the proper honors, the official party mounted a raised platform facing several thousand Korean officers and men. After my opening remarks I introduced General Taylor who was to introduce President Rhee. When General Taylor appeared before the microphone, he spoke for several minutes in Korean paying tribute

to the Korean people, the Korean Army, General Paik and to President Rhee. I sat next to President Rhee and observed him closely. Tears rolled down his cheeks. Madame Rhee's eyes were also moist. When President Rhee rose to speak he was overcome by emotion. It was a most touching scene. Every American there felt it as did the Koreans. Every American there was also most proud of the ability of General Taylor to make his talk in Korean.

I have often thought that this was Mr. Rhee's finest hour. The hated Japanese had been driven from his land, the communists had been driven back north of the 38th Parallel, Korea was starting to recover from the ravages of the Communist invasion. The ROK Army of 20 divisions, which had proved itself in battle, had now acquired a great measure of prestige through the creation of its own Field Army.

Soon after that General Taylor called me to Seoul to be his Deputy Commander. X U. S. Corps Headquarters turned over its 13 ROK Divisions to the 1st ROK Army Command. X Corps Headquarters was phased out in Korea.

In the summer of 1954 General Taylor was called to Washington for a few weeks leaving me in temporary command of the Eighth U. S. Army. This was during the final phases of the battle of Dien Bien Phu in Vietnam.

One morning during this period President Rhee sent for me. I called on him in his living room in his official residence. He was most disturbed about the Communist successes in Vietnam. He felt that a Communist victory would have a long-range effect in South East Asia.

At the end of his discussion he said:

"I am prepared to provide a corps of three divisions with supporting troops for use in Vietnam.

"I am prepared also to accept your recommendations as to the Corps Commander, the divisions and the makeup of the force."

My reply was that it would not be difficult to make the recommendations he asked for, but the matter of sending such a force was one to be considered on the highest American governmental levels. I promised to repeat his offer to my superior, General John E. Hull, the CinC, U. S. Far East Command, in Tokyo. General Hull forwarded the offer to Washington where it was declined and President Rhee was informed.

This was a great and sincere gesture of deep appreciation for what the U. S. and the United Nations had done to save his country.

One more incident of the close cooperation of our country and Syngman Rhee can now be told. On New Year's Eve 1954-55, as CG, U. S. Army Pacific, I received directions to send Colonel Louis K. Mantell, M.C., Chief of the Urology Service at Tripler General Hospital in Honolulu on the earliest plane to Tokyo. He departed before morning with his bag of instruments without knowing his mission. Upon arrival in Tokyo he was placed aboard a special plane to Seoul. Here he was sped to a U. S. Army Hospital in downtown Seoul. He was immediately ushered into an operating room where lay Syngman Rhee. Without delay, he removed Mr. Rhee's prostate, took care of him until he was able to be moved home and for a few days thereafter, and then he returned to Honolulu.

Six weeks later the Korean Consul in Honolulu pinned the Korean Order of Military Merit on Colonel Mantell for his unusual service to the President of Korea and to Korea. This is proof of Mr. Rhee's appreciation and is further evidence of his vitality for, even at 80 years of age, his recovery was very rapid. His period of sickness was hardly public knowledge.

In 1962 Mrs. Clarke and I were in Honolulu on our way home following my retirement. We arranged with Madame Rhee to call on her and Mr. Rhee in their nursing home overlooking Honolulu. Mr. Rhee was in bed. We went in to see him and stayed only a few minutes. I like to think that he recognized me even for only a short time. At least my name seemed to strike a bell with him. On the way out I asked Mrs. Rhee if she and President Rhee were well taken care of. She said, "Yes, thanks to the help of friends in Honolulu." She went on to say that such help was their only resources because they had left Korea with very little.

Thus, has passed from the world scene, a world-known figure and staunch fighter for and friend of the Free World in the cold war period of the Middle Twentieth Century.

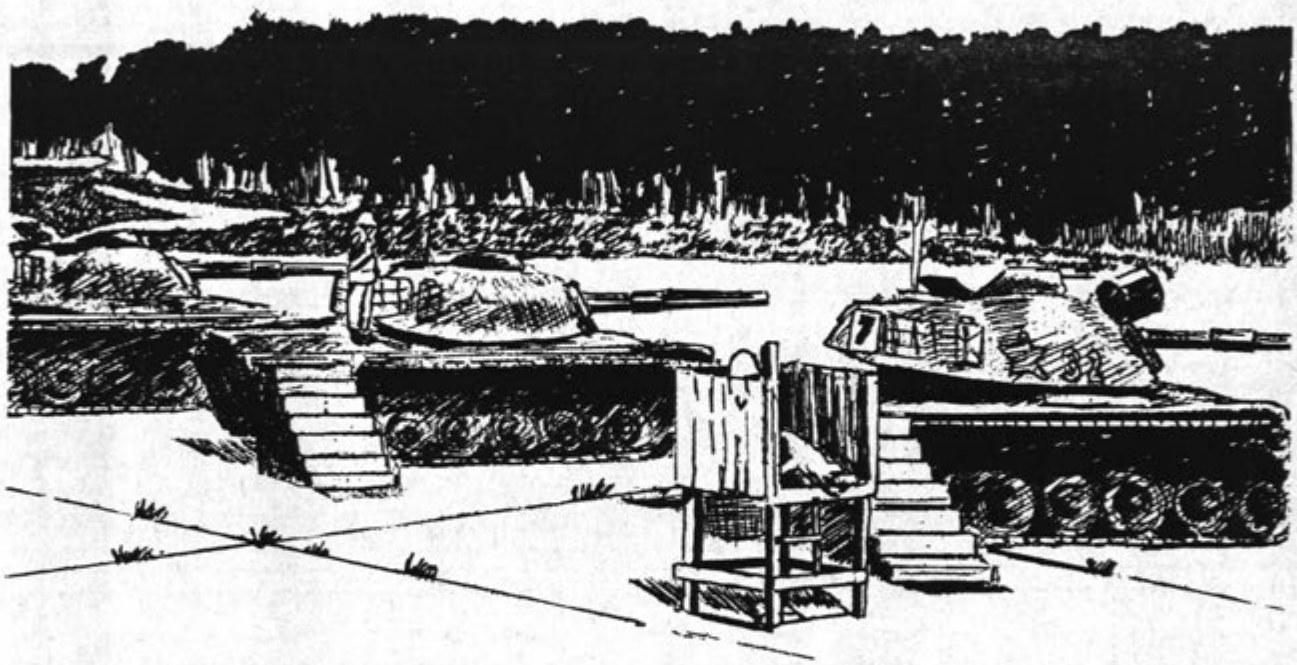
General Maxwell D. Taylor, Commanding General, Eighth U. S. Army, and President Syngman Rhee and Madame Rhee arrive at Kwandae-ri, Korea, to activate the First ROK Army commanded by General Sun Yup Paik (left) 15 March 1954.

How Would You Do It?

U.S. ARMY ARMOR SCHOOL PRESENTATION

SITUATION

You are a platoon leader in a tank company that is firing on the moving target range. Your range schedule is for only three days and you must vacate after the completion of firing on the third day. Due to other commitments the company commander cannot give you any more tanks to fire than those that you have in your platoon. He does, however, assign one turret mechanic to your platoon for the range period. You calculate that you can complete your range firing in the three days by firing double crews on your tanks. And if anything goes wrong, your turret mechanic will be there to take care of it and keep your guns firing.



Everything goes well; you are qualifying your crews on schedule, until on the third day the turret mechanic is injured and has to be evacuated. Shortly thereafter, one of your tanks hoists a green flag and an orange flag, and the tank commander reports that the turret controls are inoperative. If you are to complete firing of table V by the end of the day, and thus complete your mission within the time allotted, you must have this malfunction corrected within the next 45 minutes.

To your dismay, however, you find that it will take from 2 to 3 hours to obtain either the necessary parts to restore the turret controls to operation or another turret mechanic to repair the controls.

HOW WOULD YOU DO IT?

What action would you take to correct this malfunction in time to accomplish your mission?

AUTHOR: MAJ IVAN PAGE **ARTIST: PFC G DESMARAIS**

DISCUSSION

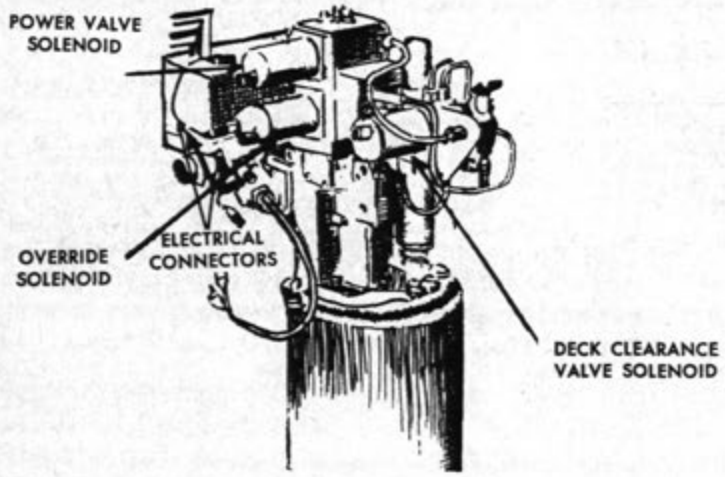
An investigation reveals that the main gun does not elevate, depress or traverse in power, nor does the gun elevate or depress while the gunner operates the range finder with the turret power switch on. The gunner inspects the oil lines and, although he finds no leaks, he notes that the turret motor does not operate during his investigation.

SOLUTION

The cause of this malfunction could be either electrical or hydraulic. If hydraulic there would be obvious oil leakage and the turret motor would run frequently or continuously. The cause then is not hydraulic.

One type of electrical malfunction could involve a failure of the pressure switch or the power relay. With this kind of failure, however, the turret motor would run continuously. Since the turret motor has not operated at all, the cause of malfunction must be the power valve solenoid. In the M48A3 and M60 tanks, there are three identical solenoids located forward and a little above the gunner's power control handle, as shown in the illustration below.

These are the power valve, override, and deck clearance valve solenoids. A field expedient that can be performed within about 30 minutes involves swapping the deck clearance solenoid for the defective power valve solenoid, which must then be reinstalled in the deck clearance valve's former position to insure that hydraulic oil is supplied to the power system. The procedure is as follows:



a. Turn off the turret power switch and the motor relay switch.

b. Engage the turret traverse lock.

c. Push in on the power valve solenoid plunger and hold, then rotate the gunner's power control handle. Hold until the nitrogen pressure gauge reads zero.

d. Disconnect the power valve and the deck clearance valve electrical connections and remove both solenoids. Replace each in the other's position and reattach all electrical connections.

e. Turn on the master relay and turret power switches and wait 6-10 seconds or until the turret motor stops.

f. Test for power control in traverse and elevation by rotating the gunner's power control handle.

Since the above procedure is not authorized except in an emergency, you must replace the defective solenoid as soon as possible.

You must also remember that you no longer have automatic elevation for deck clearance, but must elevate the gun during traverse in order to clear the rear deck.

U.S. ARMY ARMOR SCHOOL TRENDS

NEWS - DOCTRINE - PUBLICATIONS

M-U-S-T

A Hospital-In-A-Trunk

In current Army tent hospitals a patient and the medical staff are only a canvas-thickness away from the weather and all its elements. When it's hot and humid outside, it's hotter and more humid inside the tent hospital. If it's cold and windy the tent stove does little to improve conditions.

But this is going to change, and the sooner, the better.

A MUST (Medical Unit, Self-Contained, Transportable) has been developed to provide a controlled hospital environment. The MUST is a new system that vastly improves every feature and facility of field medical care. It allows patient care in the near equivalent of a modern hospital anywhere, any time. In short, it's a hospital-in-a-trunk, complete with all utilities and supplies; it is easily moved and can be set up in a matter of hours. Its most flexible feature is that by combining the functional elements, entire field medical units, fully equipped, can be assembled, from battalion aid station to field hospital.

The MUST unit consists of an expandable shelter (which by special design is also its own shipping container), a ward-type inflatable shelter, and a self-contained utility system providing electric power, air conditioning and heat, hot and cold running water, and waste water service. These elements are compact, lightweight, and easily movable.

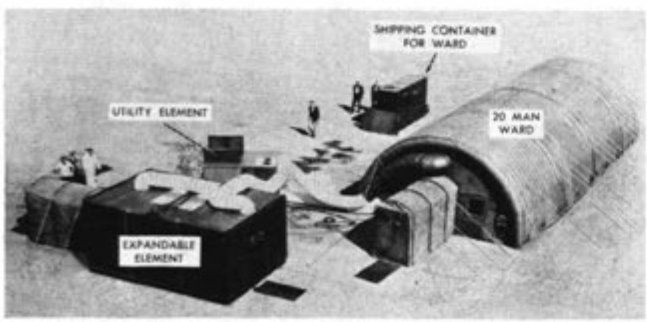
The expandable shelter features modern facilities for performing the most complex and delicate surgery. When folded into a compact package (with all its equipment) for shipping, it can be carried on a 2-½-ton truck or highway transporter. It is also transportable by cargo aircraft and by helicopter, as are the other elements.

The hospital ward shelter includes all basic hospital ward equipment and is capable of providing intensive medical treatment for 20 combat casualties.

The utility element is designed around a gas turbine engine that can furnish 85 kilowatts of 400-cycle electric current plus 10 kilowatts of 60-cycle current. It can maintain 4 ward elements or 11 surgical elements at a temperature of 65° F with an ambient temperature of —65 degrees Farenheit or 80 degrees Fahrenheit with an ambient temperature of 140 degrees Fahrenheit. This unit can also inflate ward elements and provide hot and cold running water and waste water disposal service.

The utility element is 5 feet 10 inches wide, 8 feet 8 inches long, and 7 feet 4 inches high. It has storage space for air ducts, electric cables, and water distribution hoses. It can be transported on an M-104 trailer or M-35 truck, and can be operated either on or off these vehicles.

The self-contained facilities and mobile features of MUST provide the capability of world-wide operaton in any environment, improved medical field treatment (including maximum use of physicians' and nurses' skills), and increased mobility of other combat support units.



NEWS NOTES

Fort Knox Soldier Receives Presidential Citation

President Lyndon B. Johnson presents a Certificate of Merit to SFC (E-7) John L. LaRue at ceremonies recently held at the Pentagon. Looking on are Secretary of Defense Robert McNamara and General Earle G. Wheeler, Chairman of the Joint Chiefs of Staff.

An idea to convert football helmets into helmets used by Armor tank crews has saved the Federal Government $141,500.00 and earned a Presidential Citation for Sergeant First Class (E-7) John L. LaRue, 44, assigned to the U. S. Army Training Center, Armor, Fort Knox, Kentucky.

Sergeant LaRue, a Senior Instructor with the First Training Brigade's Communications Instruction Committee and a veteran of over 23 years' service with the Army, received his award from President Johnson. On hand for the ceremony held on the Concourse of the Pentagon was the Secretary of Defense and the secretaries of the military services.

The suggestion submitted in conjunction with the Department of Defense Cost Reduction Program has long been considered by Armor crewmen, but, according to Training Center officers, until now no one has found a feasible and economical way of converting the football helmet.

The combat helmet and liner now in use is not considered sufficient to do the job required. They are described as uncomfortable by crewmen who sometimes remove the helmet causing head injuries.

The management action generating the savings was initiated when a requirement was given to the Training Center to requisition 2139 tanker helmets. Cost of the helmets amounted to $80.95 each for a total of $173,152. The expenditure had not been anticipated in the current fiscal budget.

In order to provide helmets it was decided to study the feasibility of converting football helmets as suggested by Sergeant LaRue. It was found that 2139 football helmets could be bought for $9.60 each or a total of $20,535. Parts and labor cost to convert the helmets amounted to $11,063, resulting in the net savings of $141,500.

Sergeant LaRue entered the Army in 1940 and saw action during World War II. For the past three years he has held his present assignment.

The sergeant has been decorated with the Air Medal and three Oak-Leaf Clusters, Good Conduct Medal, World War II Victory Medal and the Asiatic-Pacific Theater Medal.

New Swedish Equipment

Bofors 40mm automatic radar-operated S.P. twin gun.

The Bofors S.P. anti-aircraft gun is a lightly armored, all-automatic 40mm close-range anti-aircraft weapon with great mobility, high firepower and automatic tracking, involving target acquisition, slewing-on, tracking and firing against high-speed aerial targets, with the aid of the equipment comprised in the weapon. The weapon is also provided with devices which make it possible to use data obtained from a separate search radar. The weapon can engage ground targets for its own defense.

It has 40mm twin guns, L/70, with magazines, built together into one unit and supported in a traversable turret.

The turret contains guns with ammunition supply, fire control system (radar and calculator) and space for a three-man crew: commander, operator, and driver.

The personnel departments are gas-tight, in order to permit operation in ABC-contaminated areas.

The turret is supported in the hull of the vehicle, which rests on a track unit with hydro-pneumatic spring suspension.

As flotation equipment for crossing streams, a collapsible screen is provided, which is mounted round the turret.

This new U. S. Army five-ton truck, the XM-656 can climb hillsides, swim streams or be airborne to remote battle areas. It is two tons lighter, more durable and requires much less maintenance than the present Army five-ton. Ford Motor Company is the designer and will perform advance production engineering for Army Tank-Automotive Command.

Lockheed Reveals New Ground Vehicle Concept

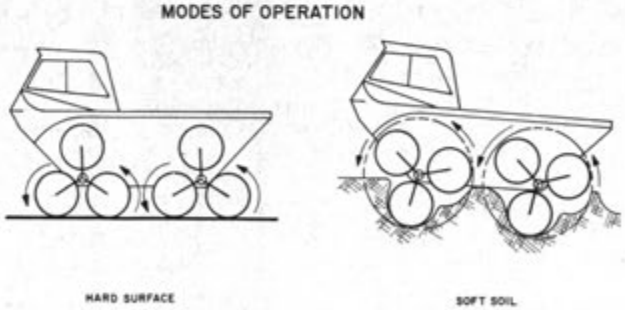
Design details of a unique, multi-purpose ground vehicle, showing promise of a significant breakthrough in land locomotion, were recently disclosed by Lockheed Aircraft Service Company.

Photographs released by the company showed the operation of one-fifth scale vehicle models employed in a series of successful feasibility tests.

The new Lockheed vehicle, capable of "walking" through soft soils—swamps, mud and marshland—can operate with the speed and efficiency of a conventional wheeled vehicle on roads.

Amphibious configurations of the vehicle can "paddle" through water at relatively high speeds and have the ability to "walk" up and over unprepared river and stream banks.

Key to its triple capability are the vehicle's wheel assemblies, called major wheels. Each major wheel consists of several minor wheels mounted on secondary axles which are located radially about the main axle by means of large spokes.

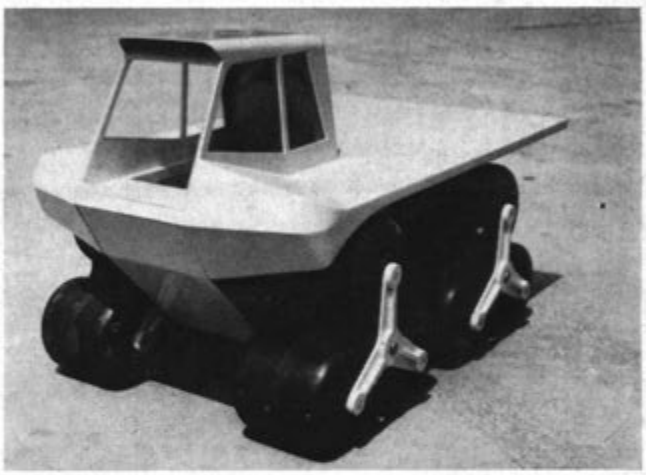


Multi-Purpose Operation of Lockheed's advanced vehicles is possible because of unique running gear—permitting the vehicles to operate well under soft soil or hard surface conditions. The drawing shows operation of major wheel assemblies (for soft soil) and of minor wheels (for conventional roads).

The minor wheels carry wide-base, low-profile, low-pressure, Goodyear Terra-Tires.

The major wheels propel the vehicle in severe soft-soil conditions where conventional wheeled or tracked vehicles would be immobilized. For operation over roads and hard ground, the operator disengages the major-wheel drive and the vehicle runs on its minor wheels, duplicating the movement of the wheeled vehicles we are more accustomed to.

Developed by Lockheed Aircraft Service engineers, Robert and John Forsyth, the new vehicle concept represents an important advance in land locomotion.



The unusual running gear makes it possible, for the first time, to incorporate in one vehicle a capability for high performance on highways, roads and hard ground; in swamps, deep mud and marshland; and in water.

Messrs. Forsyth were first place winners in the tank design contest sponsored by the U. S. Armor Association and are frequent contributors to *ARMOR*.

One Hundred Percent Membership

Headquarters, 1st Brigade, 49th Armored Division, Texas Army National Guard, recently attained one hundred percent membership for all officers and warrant officers assigned to the unit.

General Bruce C. Clarke Honored

General Bruce C. Clarke, USA (Ret.), Vice Chairman for Education, Freedoms Foundation at Valley Forge, Pennsylvania, and former President of the U. S. Armor Association, was honored at his hometown birthplace of Adams, New York, on Saturday, September 25, when the 550 pupil General Bruce C. Clarke Central High School building was dedicated. The new high school is located in Jefferson County, New York, on U. S. Route 11 between Adams and Adams Center, only one and a half miles from where General Clarke

was born in 1901. The Clarkes now reside in Arlington, Virginia.

The Honorable Wilber M. Brucker, former Secretary of the Army and formerly Governor of Michigan, was the principal speaker.

Preceding the dedication, a special conference room designated as "The General Bruce C. Clarke Room" was dedicated. The dedicatory address was delivered by Dr. Kenneth D. Wells, President of Freedoms Foundation at Valley Forge.

This room houses General Clarke's many medals, awards, decorations, flags, and colors, writings, articles, albums, diplomas and other mementos of his forty-two years in the uniform of our country. Among the medals are the Distinguished Service Cross, 3 Distinguished Service Medals, 3 Silver Stars, an Air Medal, Legion of Merit, 3 Bronze Stars and the New York State Conspicuous Service Cross and the Conspicuous Service Medal.

Also on exhibit are General Clarke's decorations and awards from Great Britain, France, Belgium, Korea, Colombia and the German Federal Republic.

General Clarke will also place in the General Bruce C. Clarke Room his Silver Beaver and his Silver Buffalo Awards from the Boy Scouts of America. He is still active in Scouting, serving on the National Executive Council.

Mr. Fred B. Videtto, president of the Board of Education that voted to name the high school building for General Clarke, presided at the dedication ceremony.

General Jacob L. Devers Receives AUSA's Marshall Award

General Jacob L. Devers, Ret., who commanded the Sixth U. S. Army Group in Europe during World War II and an Honorary Vice-President of the U. S. Armor Association and still active in its affairs, was selected by the Association of the United States Army as the 1965 recipient of the George Catlett Marshall Medal.

The award, given annually "for selfless and outstanding service to the United States of America," was presented to General Devers during the Annual Marshall Memorial Dinner in the Sheraton-Park Hotel in Washington, D. C., on October 27. The dinner climaxed AUSA's 1965 three-day annual meeting in the national capital.

The Marshall Medal, named for America's brilliant soldier-statesman of the World War I-Korean period, General George Catlett Marshall, was presented in 1964 to General of the Army Omar N. Bradley. Earlier Marshall Medal awards went to former President Dwight D. Eisenhower; Gordon Gray, once Secretary of the Army; and former Secretary of Defense, Robert A. Lovett.

General Devers is currently the Chairman of the American Battle Monuments Commission in Washington, D. C., a post he has held since December, 1959.

Two 10th Armored Division Veterans

The Honorable Stanley R. Resor, Secretary of the Army, is paid a courtesy call by Mr. Louis Stockstill, newly appointed Editor of the "Journal of the Armed Forces," at the Pentagon, Washington, D. C. Secretary Resor presented Mr. Stockstill with a book "The Ardennes: Battle of the Bulge." The two men served together in the 10th Armored Division during World War II in Europe.

Tigers on the Loose

The 10th Armored Division. . . . A typical armored outfit, is the subject of the two-part Big Picture, "Tigers on the Loose," produced for the Department of the Army at the Army Pictorial Center.

First committed to action in November 1944, the 10th Armored was quickly caught up in the Battle of the Bulge, the capture of Trier, the crossing of the Rhine, the fighting at Crailsheim, and the desperate race to the Alps, which would signify the end of Hitler's Germany.

"TIGERS ON THE LOOSE" was produced at the Army Pictorial Center by Hunter Low, as part of the "Big Picture" television series. The script was written by W. Dixon Kramer. The film was directed by Michael Laurence, Hunter Low, and Stanley Swed. John Toland, author of numerous histories of World War II, served as consultant on the film, which was further reviewed for authenticity by Charles McDonald and Martin Blumenson, members of the Office of the Chief of Military History and each an author in his own right. Lorne Greene, of Bonanza fame is the narrator. "Tigers on the Loose," a two-part episode, release of the "Big Picture," will be televised nationally beginning 13 November 1965.

Armor Magazine Index-Vol. LXXIV, 1965

TITLES

AUTHORS

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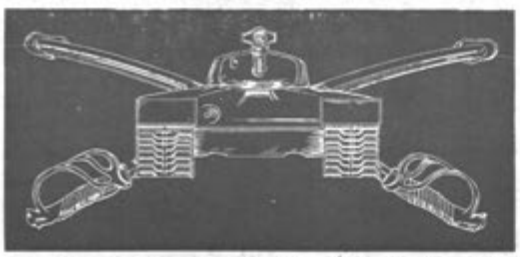

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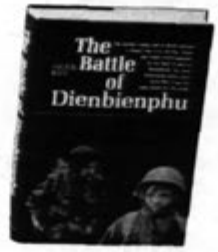

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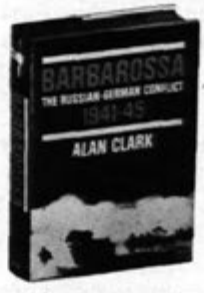

From both Russian and German records, the author takes up the four great phases of the German attack upon Russia: Hitler's disagreement with his own generals, the Battle of Stalingrad, the German failure against the Kursk salient, and finally the desperate attempt to keep the Russians out until the Allies arrived. Illustrated with photographs and maps.

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