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ARMOR

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CONTENTS

LETTERS TO THE EDITOR	2
RECONNOITERING	4
NOTES ON THE TRAINING OF AN ARMORED DIVISION By Brigadier General Hamilton H. Brown	6
GENERAL GEORGE S. PATTON, JR. COMMEMORATIVE STAMP CEREMONY	14
ARMORED COMMAND CONTROL By Lieutenant Colonel Edward G. Edwards	16
EDITORIAL	18
SUM & SUBSTANCE By Lt. Col. O. C. Tenetti, 1st Lt. E. G. Edmonson, Capt. J. D. Lewis, 1st Lt. C. C. Ralph, Capt. T. H. Tyrer	20
GUDERIAN: FATHER OF ARMOR By Lieutenant Colonel Melvin C. Helfers	25
PLANNING AND UMPIRING THE TANK BATTALION TEST By Lieutenant Colonel Dan S. McNeill	28
AN INTERVIEW By Captain Otis C. Harrison	30
RECENT ARMOR DEVELOPMENTS: A PICTORIAL FEATURE	32
ARMOR'S ENGINEER PROBLEM By Brigadier General Paul M. Robinson	34
FROM THESE PAGES	37
A TANKER'S APPROACH TO AN INFANTRY PROBLEM By Captain Norman F. Priest	38
ARMOR ASSOCIATION NOTES	40
ROTATION OF ASSIGNMENTS	42
AMERICAN MILITARY POLICY, PART II By Dr. C. J. Bernard and Dr. E. H. Bacon	44
NEWS NOTES	50
HOW WOULD YOU DO IT? An Armored School Presentation	52
THE BOOK SECTION	55
ATOMIC WEAPONS IN LAND COMBAT A review by Brigadier General E. W. Porter, Jr.	55
INDEX TO VOLUME LXII, 1953	62

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The Story of The U. S. Cavalry

by
Maj. Gen. John K. Herr
and
Edward S. Wallace

Here, graphically presented in text and pictures, is the colorful history of the U. S. Cavalry—from its modest beginnings in the Revolutionary War, through its abolition, so far as the horse was concerned, in 1942, to its mechanized operations in the Korean War.

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LETTERS to the EDITOR

Our Unit Pride

Dear Sir:

I have just finished reading the article "What's Wrong With the Regulars?" in the October 31st issue of the *Saturday Evening Post*, and I have a few comments to make. Why can't we resolve our own problems and difficulties before they become material for articles in mass circulation magazines?

Why can't we get unit pride back in our units? Let's let a man be proud of his regiment, battalion, or company; let him stay with the colors he started with, let him enlist in a regiment.

Let the sergeants be sergeants. Let the sergeant major be a sergeant major and a first sergeant a first sergeant. Let the Company Commander make and break. Efficiency will increase tremendously. Quit making second lieutenants do jobs a corporal could better handle and probably would do a better job—if we can't do our job get rid of us. If noncoms were allowed to be noncoms we wouldn't need so many officers.

Let Armor officers and noncoms wear boots and britches and carry not a swagger stick as the Marines, but a quirt. After all do we not carry on the traditions of the finest of the old branches—the Cavalry? The 4th FA Bn (Pack) at Camp Carson, Colorado, wear boots and britches and I've never run into such spirit.

All of this and many more things would tend to increase the *esprit de corps* of the army and would strengthen in us the realization that love and belief in the ideals of DUTY, HONOR, COUNTRY are greater than even the so-called "fringe" benefits, for they are what made this country great and free.

ROBERT S. THOMPSON
2d Lt., Armor
Fort Knox, Kentucky

Combat Tanker's Badge

Dear Sir:

I write this letter to you in the hopes that you can supply the information I desire.

Since my arrival in Korea, I have been assigned to a tank battalion and most of my combat time has been as a tanker.

The infantry has a combat badge to show their recognition of being an infantry soldier in combat. Has the armor branch adopted anything similar to the infantry? I have heard various stories from armor men and some say that we have what is known as a combat tanker's badge. Is there any authorization for such an award?

Hoping that you can answer my questions or direct me to the proper source for this information.

CORPORAL RONALD SCHNEIDER
7th Recon. Co., 7th Div.

APO 7

● A check with the Pentagon reveals that there is no authorization for the wearing of a Combat Tanker's badge at the present time. If we hear anything to the contrary we will be only too happy to report it to you.—Ed.

A Mobile Minded Quartermaster

Dear Sir:

Due to the importance of supply and service to the successes of mobile forces, it has seemed to me that greater stress could well be made by ARMOR upon experiences of personnel engaged in these little-seen, little-heard, and little-thought-of factors in armored operations.

Those officers and NCOs assigned to armored units overseas may tend to forget their counterparts in the reserve units in the States. Having just returned from a Quartermaster unit supporting

Seventh Army, I can authoritatively state that there is a definite lack of opportunity to develop procedures and theories in supply and service here—comparing Stateside opportunity to that overseas where constant exercises in the field provide the professional officer and NCO a laboratory.

It is the personal experience in performing supply and service missions which, when mulled over, organized, and finally put down in black and white can stimulate others in the field. The journal, ARMOR, should be a convention of ideas in all factors contributing to the success of that arm in the field. Surely it must be recognized that Quartermasters trained to think in Infantry, Artillery, or Quartermaster terms are not as adaptable or contributive to mobile thinking as those Quartermasters developed on wheels.

Supply and Service personnel should be able to hear what mobile warfare needs, even if it is only expressed as wishful thinking. Necessity is the mother of invention, of course; a chain is no stronger than its weakest link.

ALFRED A. AYA, JR.,
1st Lt., QMC-USAR

Portland, Oregon

Traditions of the Spanish Army

Dear Sir:

The Spanish army actually has a strong world-ranging tradition! From its conquest of Granada (1492) down to the end of the Thirty Years War (1648), it was not only the first modern army, but also the outstanding one. It took over Mexico and Peru, dominated Italy and the Netherlands, traveled up and down the Rhine, and in one single action lost six men to 6,000 Dutch militia.

Some of the present Spanish regiments sailed with the Spanish Armada (1588), although actually a plurality of the Armada troops were German Landsknechts and there was a large Italian *condottieri* contingent aboard. Castilian light horse, with Arab steeds, were on the sad trip, these to ride rings about the vestigial English knighthood

with its heavy Percheron draft horses, all Spaniards having fire-arms (at which they excelled), while the English relied nostalgically on the celebrated long-bow.

Spanish troops (The Blues) served against Russia, too, in 1941-42, where they excelled in cruelty and maltreatment of animals. They fought the 'Spanish' Americans fairly steadily from 1808 to 1898, and were badly beaten by the Riffs in Morocco in the early 1920's (at Annual). What they will do next, remains to be seen. Wellington once said his alliance with Spanish guerrillas was the thing he was most ashamed of.

DR. ROGER SHAW

Hartford

An Objective Game

Dear Sir:

I have been reading ARMOR for some time now and, for the benefit of other readers, I would like to pass on a little game that I play which I think is very helpful in getting what is called the "meat" out of an article.

I keep the last issue and when the latest one arrives I read the "Letters to the Editor" column first. These letters are sometimes critical, or present a different view from that of the author of the article. I try to remember what my own views were toward the article and compare them to see if we agree. This does not happen often. I then go back to the old issue and re-read the article to see if I can find out how the letter writer arrived at his objection or views.

This little game provides me with many new slants which I did not catch when I first read the article and I think helps me get more out of the article than I would otherwise.

Maybe some of the other readers would like to try my game and let you know what they think about it.

HARRY J. ANDERSON
Major, Armor

Headquarters, MDW

● This sounds like a good idea. Let's hear from more of our readers.—Ed.

The Custer Myth

by
Col. W. A. Graham

For over three-quarters of a century the battle of the Little Big Horn has furnished a richer field for controversy and speculation than any other single event in American History. In unraveling the story of the battle in which General Custer and five companies of the 7th U. S. Cavalry died at the hands of the followers of Sitting Bull, no two writers have ever been able to agree.

Recognizing the imperative need for a documented source book that would impartially present original source material, unbiased by interpretations and misconstructions, the author has herein assembled a fascinating and absorbing feast for students of Custer's last battle, much of it never before published, which the publishers feel justified in describing as the "source book to end all source books" on Custer.

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Rates: See bottom of contents page.

ARMOR

THE COVER



This photograph, taken in Austria, shows a tank section leader on guard during a recent maneuver held in USFA. So stands "The Armored Sentinel!" ever vigilant to meet any emergency should the cold war boil over. Thereby he joins other members of the team composed of all branches and all services.

ARMOR—November-December, 1953

**UNITED STATES ARMY
THE CHIEF OF STAFF**

17 November 1953

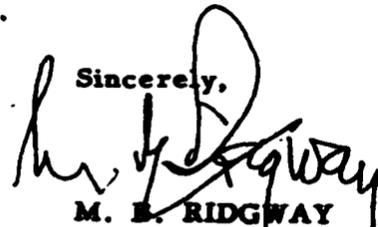
Dear General Crittenberger:

I recently wrote to the Association of the U. S. Army, of which I have long been a member, to express my view of the importance of the Association's work and to encourage its continued support by all of us in the Army.

I also want to express my great interest in your association and every association which is dedicated to advancement in the fields of the various arms and services of the Army. I know of no more significant bond between men and women who have the progress of our Armed Services at heart than to be fellow members and supporters of these outstanding organizations. To join an association of this nature and participate actively in its functions means to promote cooperation and good will, to exchange and disseminate valuable professional information, to develop esprit and mutual respect - in effect measurably to strengthen the national capability for defense.

In particular, I want to emphasize the role of the association journals. These journals not only make a significant contribution to current thinking in the arms and services but provide a unique opportunity for the professional development of the contributing members.

I strongly urge the support of these fine military associations and their outstanding publications.

Sincerely,

M. B. RIDGWAY
General, United States Army
Chief of Staff

Lieutenant General Willis D. Crittenberger, USA-Ret.
President
U. S. Armor Association
1727 K Street, N. W.
Washington 6, D. C.

The letter on the opposite page, received from General Matthew B. Ridgway, the Army Chief of Staff, addressed to Lieutenant General Willis D. Crittenberger, our Association President, is self-explanatory.

This recognition by the Army Chief of Staff of the aims and purposes of the United States Armor Association, and his willingness to take time from a busy schedule to inform us of his feelings is deeply appreciated.

Our primary mission is to serve the Armor arm, the United States Army, and therefore our country, in this special phase of warfare with stress on mobility.

General Ridgway's confirmation of our beliefs is reassuring, to say the least; and the Association, through its publication ARMOR, proudly contributes to the defense of our nation.

His expression of interest in all the associations dedicated to the advancement in the fields of the various arms and services of the Army serves as a stimulus to those so devoted.

Branch journals of the military profession have flourished since the initial publication of *The Cavalry Journal* (the forerunner of ARMOR) in 1888. They have served as an adjunct of official publications throughout these many years and have encouraged many readers in the advancement of the art of the military.

In view of the fact that material for publication in ARMOR is submitted

gratuitously by our authors who desire to share their experiences and views (without the spur of monetary payment) in the furtherance of the military profession, we feel confident that we are on the right course. The man who has experienced the realities of war may express himself within these covers; and here, also, the man who in the future might be confronted with similar circumstances may profit from those who have served before.

As long as we are imperiled by a force with an almost unlimited source of manpower from which to draw, we must rely upon the strength which rests in American industry. We must capitalize upon this potential to increase and sustain our mobility. We must possess a sufficient standing force, ready to expand on a moment's notice should the occasion arise, in order to derive full benefit from our civilian industrial capabilities.

To keep abreast of changes and to be well informed is the mission of every officer and noncommissioned officer in the Regular establishment, Reserve or National Guard. If, in our small way, we are providing information to our membership in their search for professional knowledge and, at the same time, are apprising others of the highly specialized field of mobile warfare, we feel that our efforts are not in vain.

The fact that the Army Chief of Staff is cognizant of our endeavors leads us to believe we can rightly say that we also serve.

The Editor

Notes on the Training of an Armored Division

by BRIGADIER GENERAL HAMILTON H. HOWZE

Introduction

THIS series of articles does not purport to be a complete treatise on the training of armor. The manner of that training is specified in official manuals; however, it has been found very desirable to supplement the manuals with a series of "Training Notes" published to all elements of the 2d Armored Division. Together with the standard Army publications, the Training Notes constitute the training doctrine of the division. The notes are particularly applicable to the training mission of the 2d Armored and to the terrain and weather of western Germany, which approximates that of Maryland and Pennsylvania if one will add a liberal dosage of cold rain and considerable fog and haze.

These articles will draw heavily on the Training Notes and on the 2d Armored Division Battle Drill Manual.

Battle Drill

A complete battle drill has been formulated for the tank, armored infantry, reconnaissance and engineer units of the 2d Armored Division. The drill has been published in loose-leaf form to permit ready substitution of changes and the insertion of new ideas. Each unit of the division is required to maintain proficiency in the battle drill specifically applicable to it, and in its part of the battle drill for the combined arms.

Battle drill is subdivided into extended order drill and tactical battle drill. Actually in our training the two are combined to such an extent that the division between them becomes practically indistinguishable.

Our manual makes no attempt to define battle drill, and thus avoids argument. It is our belief that practice in battle drill as we have developed it will teach us how to do quickly and easily, by drill, what we must do often

in battle. The objectives are speed and coordination, in order to attain quick (and violent) effect on the enemy.

Ordinary infantry close order drill was once battle drill. In the days of close order combat, wherein one army in solid formation confronted another, at arm's length, the two masses maneuvered per regulations governing their close order drill, and then, presumably applying their manual of arms ("Present Battle-Axes"), commenced a chopping and stabbing process that ultimately provided a decision.

The modern idea of battle drill is not new—indeed the name itself is copied from the British, who used battle drill to train their formations in World War II. British battle drill, developing fairly elaborate solutions for a large number of specific circumstances, was somewhat more complicated than is ours. Our battle drill limits itself pretty much to the *mechanics* of combat action. To this extent perhaps it may be considered an elaboration of the ordinary extended order drill.

Capable combat officers argue against a "fixed" solution in combat, on the grounds that the fixed solution instills rigidity in thinking. This is a perfectly valid point which we feel we do not violate. Our manual states: "Battle drill does not pretend to solve



BRIGADIER GENERAL HAMILTON H. HOWZE, a frequent contributor to ARMOR, served with the First Armored Division throughout World War II. Subsequent to the War he held important assignments at the Ground General School, Fort Riley, Kansas, and in the office of the Assistant Chief of Staff, G2, Department of the Army prior to his present assignment as the Assistant Division Commander of the Second Armored Division, Europe.

There begins in this issue of ARMOR a series of articles on the training of an armored division. These articles are compiled on the basis of the experience on the part of the author in his present post as Assistant Division Commander of the Second Armored Division in Germany. As such, General Howze is charged with the training of the tank, infantry, reconnaissance and engineer elements of the division, and the functioning of those elements in conjunction with the supporting fires of the division artillery.

all battle problems. Moreover, when a battle drill formation has been ordered and taken, it may and frequently should be somewhat modified to meet the special situation obtaining. But even if modified later, by battle drill the Commander's decision has been quickly converted into action—a major chore has been accomplished. Very often such rapid and forceful action will in itself surprise an enemy and throw him off balance."

Battle drill thus provides the small unit commander certain tools built to do certain tasks, much as an automobile mechanic is provided wrenches, pliers and screwdrivers. The act of giving the mechanic these tools does not imply that he must proceed in a set manner to fix a defective vehicle: he must first analyze the difficulty, and having done so use the tools to the greatest advantage, proceeding not by rote but through the application of reason—guided by observation, and facilitated by practice. So with the platoon leader.

Training in Battle Drill

The drills prescribed and the flag signals therefor are simple and easy to learn. Preliminary to training in mounted drills we require unit C.O.s to instruct their commands through the use of models: matchboxes with numbers pasted on them do admirably as tanks or carriers. We teach that it

is not necessary to indulge in long-winded lectures on these drills—the quickest and easiest way to learn is to do the drills themselves after the briefest sort of explanation.

We teach that all training in these drills should be conducted at a fairly fast tempo. By a great deal of action—changes in formation and changes of pace—interest is sustained and much may be accomplished in a short period of time. Training must be lively, and good fun—but never sloppy or haphazard.

Flag Signals

The extended order drills utilize flag signals very extensively. The use of flag signals cuts radio traffic materially, a great advantage in an armored organization, and permits the platoon to operate in case of enforced radio silence—enforced either by the desire by the higher command for secrecy or by reason of radio failure.

The flag signals prescribed are simple and conform in most cases to the standard arm and hand signals. They utilize the set of flags issued with each armored vehicle.

Formation signals are given by the use of the green and the orange flag in combination. It does not matter what flag is carried in which hand.

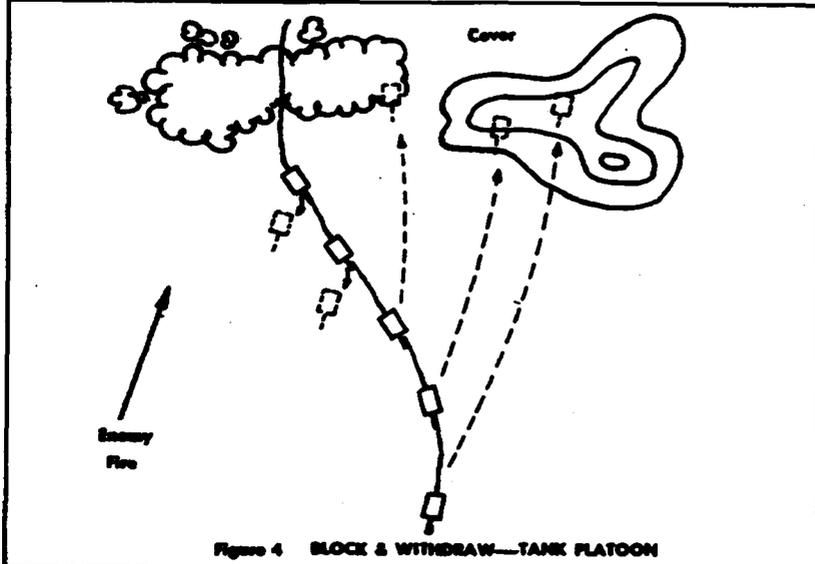
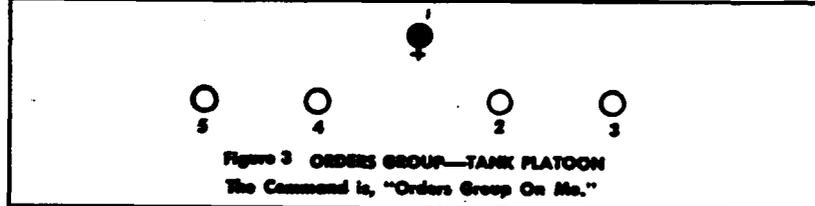
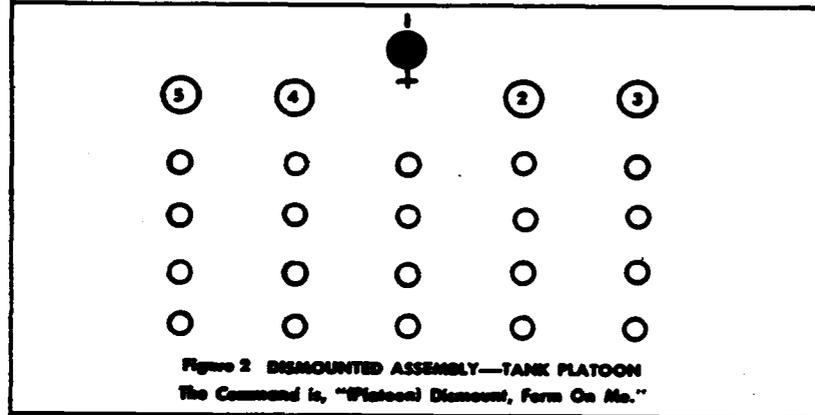
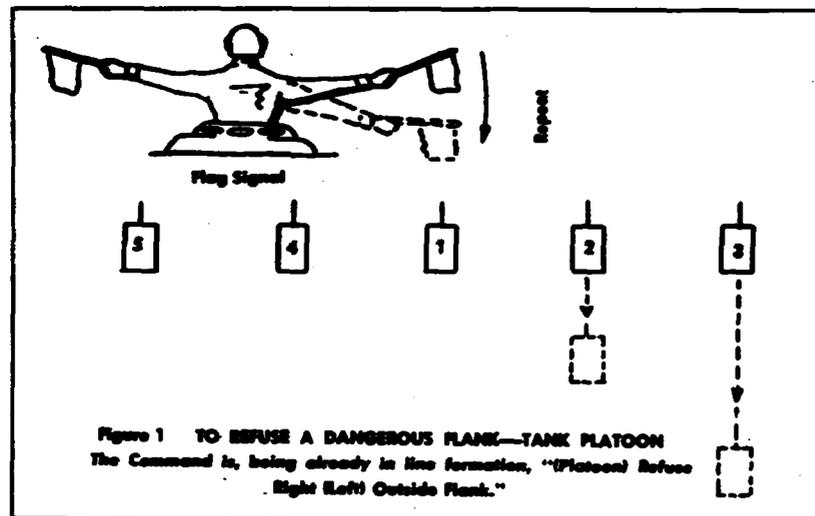
The green flag alone is used to indicate simultaneous individual movement by all elements of the unit. The

orange flag alone is used to indicate individual movements by selected elements: the platoon leader first points the orange flag at the selected element, and then gives, still with the orange flag, the proper signal. This works excellently, with confusion resulting very rarely. The red flag alone is used to indicate that the unit is in a danger area (under enemy observation), and also used to indicate "commence firing," and direction of fire.

"Dangerous Direction"

During the last war, there were many instances in which our tanks were surprised (and sustained varying amounts of damage) because each of the tanks had its attention focused entirely to the front, often merely on the tail of the tank immediately ahead. Some device is necessary to permit the company or platoon leader, by command, to make his unit particularly alert to the possibility of hostile fire or hostile attack from a given direction. We use the term "dangerous direction," which is a little cumbersome, but does suffice.

As an example, assume that a tank platoon is in a right echelon formation covering the right flank of its company which is engaged in a deployed approach march through hostile territory. Obviously, it would be unwise for all guns of this platoon to be directed straight to the front. The



platoon leader would therefore command, "Dangerous Direction, Right Front." The several tank commanders would thereupon direct special attention to the right front, and, terrain permitting, would keep their main armament pointed generally in that direction—especially when the tanks were motionless.

Battle Drill for Tanks

The extended order drill that we prescribe is a simple drill very easily learned. We require that platoons use proper combat distances and intervals between vehicles, and that they do not form a perfect line or column. Some stagger is desirable. We also prescribe that movements be executed with speed, consistent with proper driving procedure; that action be rapid, and formations frequently changed; that practice be had in both systems of control, radio and flag signal. When using radio we require that radio traffic be kept to an absolute minimum, demanding the use of commands, which are easily understood, instead of wordy directions which are to the contrary.

The order of tanks within formations can, where desirable, be varied by order of the platoon leader. This does not mean that execution may be sloppy; it is only desirable that platoon leaders and tank commanders recognize that extended order drill is not inflexible, and common sense will frequently dictate modifications in ordered formations.

The commands for the several drills usually begin with (PLATOON) or (COMPANY). For the words in parentheses, we substitute call sign designations (abbreviated according to usual practice) as specified by the Signal Operating Instructions (SOI).

When individuals or the entire platoon are dismounted, movements to prescribed formations are normally at the double time.

Extended order drill for the tank platoon includes the formations Line, Column, Echelon, Wedge, Inverted Wedge, and Line of Section Columns. A simple signal will also serve to refuse a dangerous flank. See Fig. 1.

A definite formation is prescribed for the dismounted assembly of the tank platoon. See Fig. 2. This is felt to be very useful, so all instruction of dismounted units in the 2d Armored Division is with crews or

squads formed together. It is also far easier to issue orders to a group so formed.

Battle drill prescribes a standard Orders Group. See Fig. 3. It is simple to command, "Orders Group on me," which will bring the group together in a standard order or formation; how much more awkward it is to say, "I want to see the tank commanders, the FO, the CO of attached infantry platoon, and the squad leader of attached engineer squad, in the vicinity of my tank." For one thing, it is easy to forget one or more of these individuals, if one must name them each time.

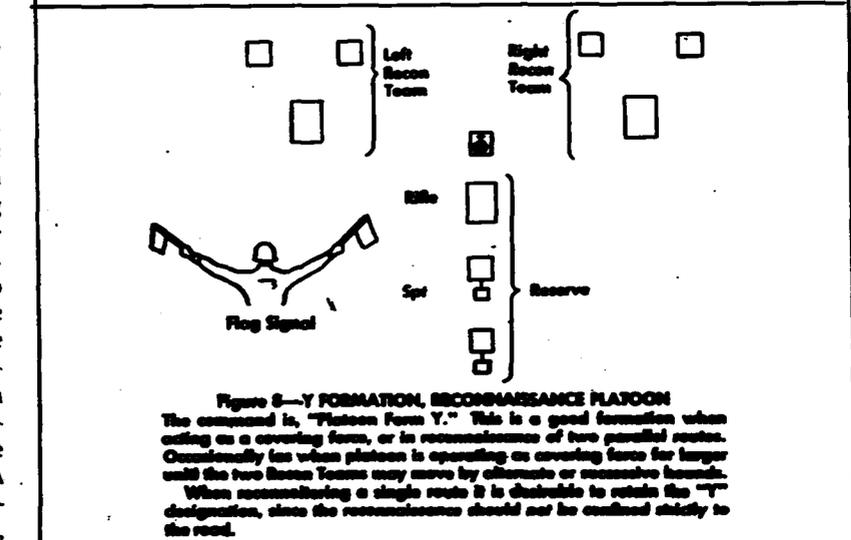
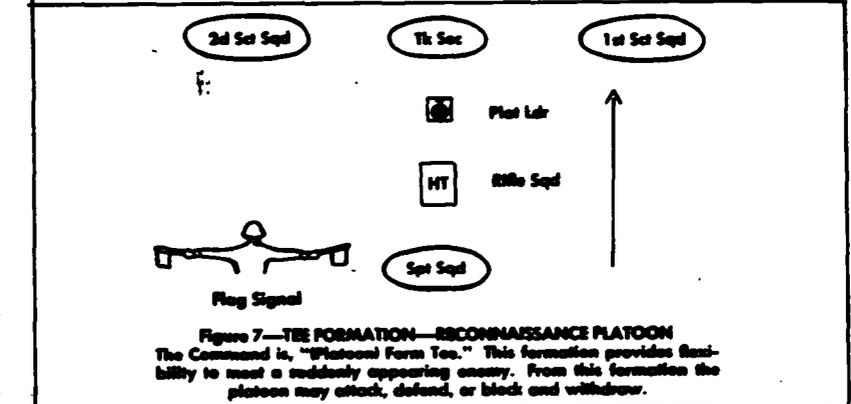
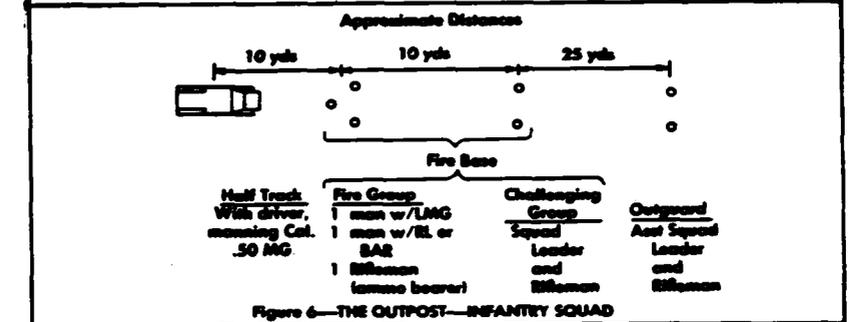
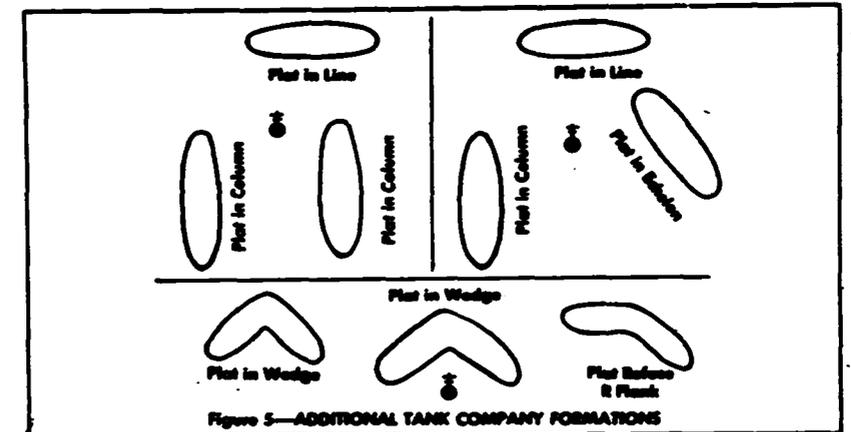
The extended order part of battle drill also requires individual tank movements (green flag if all tanks are to execute simultaneously; orange flag, pointed, to move selected tanks) as follows: Tanks right (left) about, right (left) flank, tanks right (left) oblique, forward, and back.

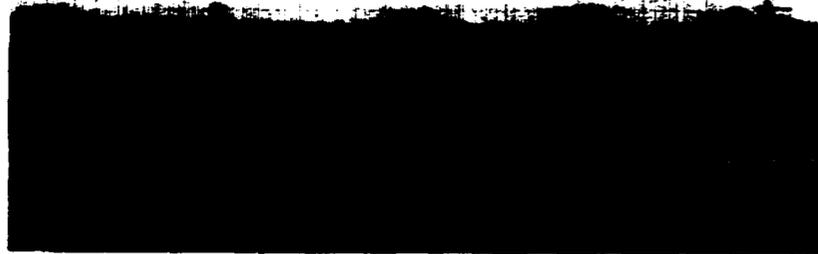
Tactical Drills for the Tank Platoon

In addition to the previously described extended order exercises battle drill requires the tank platoon to practice the approach march, action as a covering force, the hasty attack, hasty defense, delay, movement through woods, air defense, movements through defiles, and what we call "laeger"—a formation for all-round defense, useful to a platoon which must spend the night in hostile territory isolated from other elements.

Most of these amount merely to the execution of extended order drill with a specific tactical situation in mind. The radio may be used by the platoon leader to explain that tactical situation, very simply, to his Orders Group. He may say, for example, "Assume that the platoon is heavily engaged by enemy tanks located in forward edge of those woods, and we have been ordered to withdraw from this ridge. We will practice delaying action." He would then give necessary extended order drill commands.

In illustration of these drills, two paragraphs from the manual are quoted: "HASTY ATTACK. The platoon leader, moving from any extended order formation, launches a tank attack in a direction of his choosing, normally towards an objective likely to harbor hostile elements. A hasty attack order should be approximately this: PLATOON ATTACK,





A platoon of Armored Infantry coming into line during battle drill practice.

2D SECTION COVER. OBJECTIVE, THOSE WOODS. The platoon should react promptly, the section assigned overwatching fire taking suitable position and bringing its guns to bear, the rest of the platoon moving very aggressively towards the objective.

"BLOCK AND WITHDRAW. The tank platoon needs a drill which will permit the platoon to withdraw in good order when it is placed under sudden anti-tank fire coming from a point which cannot be overrun immediately by the tank platoon itself. A suitable command under this circumstance is: **"BLOCK AND WITHDRAW: SECOND SECTION COVER, FIRST SECTION BACK."**

On this command (see Fig. 4) the second section, moving the minimum necessary distance to get into a firing position, places 90mm and machine gun fire, in heavy volume from the stationary tanks, on the enemy. The first section commences backing its tanks towards cover under the overwatching fire of the second section. When the first section reaches a suitable firing position in cover it will cover the withdrawal of the second section.

"NOTE: This drill should not encourage a defensive attitude on the part of tank platoons. On the other hand, sometimes there is no alternative but to take cover when the enemy places you in a position in which



Battle drill teaches how to do quickly what must be done often in combat.

you cannot overrun and destroy him. An emergency drill to meet this situation must be frequently practiced."

Tank Company Battle Drill

Extended order drill for the company follows the same principles as for the tank platoon. The formation of each platoon within the company formation is *not* prescribed by the manual; it may be ordered by the CO, or in the absence of such an order by the platoon commander, to fit the terrain and the tactical situation.

Company formations are prescribed for column, line, wedge and inverted wedge.

Additional formations, with no title assigned them, are indicated in Figure 5. To take these formations (and others which may be determined useful at the moment) the company commander merely gives orders (no prior conference necessary) to the several platoons which will move them to relative positions shown. These formations, and variations thereof, as well as passage of platoons past one another and even through one another, should be continuously practiced. It is not necessary that all platoons always be moving simultaneously; we practice movement of platoons by bounds, and successive steps forward (and to the rear).

Battle drill for the tank company includes drills for the approach march, covering force, hasty attack, hasty defense, delay, passage through defile and laeger.

A sample of the company drill is the hasty defense. Somewhat similar to the hasty attack, a typical order would be: **"HASTY DEFENSE: FIRST AND SECOND PLATOONS DEFEND IN PLACE. THIRD PLATOON ASSEMBLE IN COVER BEHIND FIRST PLATOON."** Platoons in this drill should adjust their positions sufficiently to provide best possible firing positions in their vicinities, and to present their frontal armor, if possible, to the enemy.

Battle Drill For Armored Infantry

Similar to that prescribed for the tank platoon and tank company are the battle drills for the armored infantry platoon and company, mounted and dismounted. The same principles apply. Additionally the armored infantry squad has a prescribed battle

drill for dismounting from the carrier, prepared for action front, right, left or rear.

An informal but very important extended order drill, *dismounted*, is prescribed for the armored infantry platoon. The formations prescribed in FM 7-17 are used except that we do not require the use of a platoon Vee, the platoon wedge and the platoon echelon, inasmuch as we adhere to the principle that squad formations within the platoon formation may be varied on the platoon leader's or the squad leader's command as against the fixed squad formations prescribed by the manual.

From the simple Column or Line formation the platoon leader should work his platoon through a wide variety of formations, dependent, if he chooses, on an assumed tactical situation and on the terrain. With the aid of a whistle (unfortunately not an item of issue) to call attention, he changes platoon formations by giving hand signal (not flag signal) commands to each of his several squads, increasing and decreasing their speed of movement, changing their formations, and changing their direction of movement. He includes "side-slipping"—moving a unit by the flank, useful to avoid going over exposed terrain, and for passage through a corridor, etc. He also includes commands to open fire and to cease fire, and range signals.

When halted, men drop to one knee. They may be placed in a prone firing position by further command or signal.

The platoon is moved, in comparatively rapid succession, through formations presenting wide and then narrow fronts; formations "refusing" the right or left flank, road march, approach march, and firing formations. The platoon practices changing direction, and moving to the rear as well as to the front, and moving over varied terrain. Subordinate commanders must be cautioned to use horse sense in the execution of these drills, so that they do not permit their units to take off cross country, out of control, merely for the lack of a restraining signal by the platoon leader. Visual contact should be maintained wherever possible.

Care should be taken NOT to require too much double time—for when the rear elements must catch up,



A tank section moves in envelopment, guns pointed in "Dangerous Direction."

the leading elements may be halted.

The Orders Group may be called together periodically to discuss errors and future exercises. This should not be done too often—one of the prime results to be gained by extended order drill and battle drill is the development of the ability to execute the several movements and actions through the *use of commands*, given at a distance either by radio or signal.

The dismounted drill, if carried on with many variations in formation and action, works up interest and enthusiasm among platoon members. We make the drill a good workout, with a liberal use of imagination (we hope) on the part of the leader. He should require promptness and vigor

in execution, and provide periodic rest periods.

The Outpost

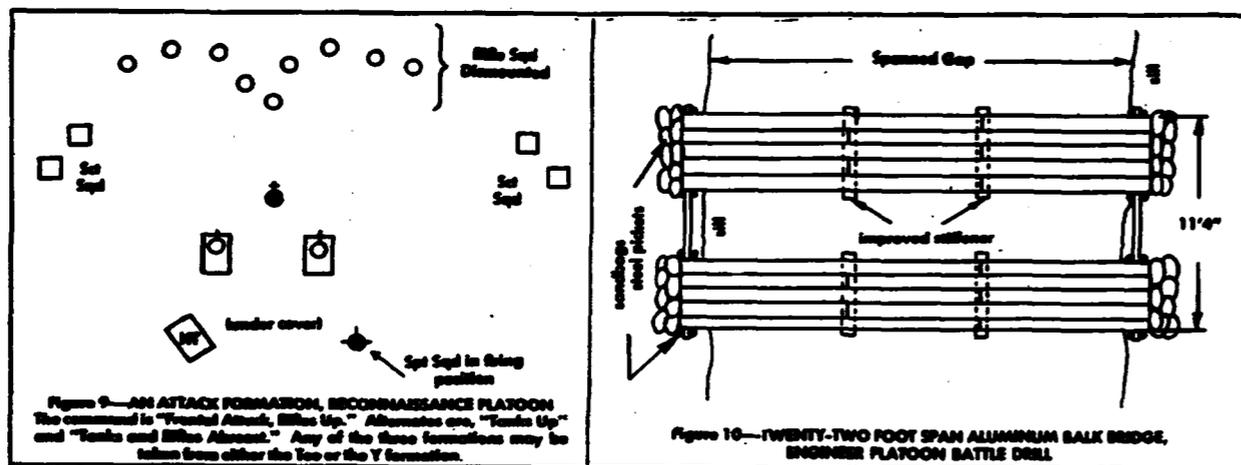
We have found it desirable to prescribe a squad battle drill for the outpost. Since the armored infantry squad frequently operates at a strength of less than 10 men the drill is built around a strength of 8; the presence of the ninth and tenth man will permit strengthening elements as the squad leader desires.

Being mounted or dismounted, the command is **"SQUAD, FORM FOR OUTPOST."** At this command, the squad takes the formation indicated in Figure 6.

The squad leader may then take



The left reconnaissance team of a platoon moving in the "Y" formation.



this formation to the selected locality for the outpost, and emplace the various elements of it. It should be noted that when the outpost is emplaced tactically, different distances apply: from Outguard to Challenging Group perhaps 5075 yards, from Challenging Group to Fire Group about 25 yards. In practicing battle drill, actual emplacement tactically need not always be done, but it should frequently be done.

This drill will permit a platoon leader to outpost up to four routes of approach simultaneously. As soon as possible after ordering them established the platoon leader should inspect each outpost, making such corrections as he sees fit.

It is to be noted that this is an outpost, as against a mere outguard or listening post: it has the function of stopping or delaying an enemy force with such effectiveness as to permit the unit being protected adequate time to alert itself and defend itself. The bazooka will normally be ordered if the outpost is susceptible to armored attack. The carrier may be made part of the Fire Group, or left under cover, at the platoon leader's discretion. In order to provide rest for a squad on such outpost duty, it is necessary to relieve the entire squad by another squad.

Tactical Drills

The tactical battle drills for the infantry platoon cover the same situations as those for the tank platoon, with a few additions. So with the company battle drills—they follow the principles which apply to the tank company. Again the formations for the platoons within the company are

not prescribed by the manual, being left to the judgment of the company commander if he desires to exercise it, or, more frequently, to the platoon leaders.

Battle Drill for the Reconnaissance Platoon

And so do the battle drills for the reconnaissance platoon follow the principles which apply to tank and infantry platoons. Reconnaissance battle drill is slightly more intricate because of the organization of the platoon, which gives to the platoon leader all the elements of a small army: light reconnaissance elements, tanks, riflemen, and an indirect fire element.

A typical formation, extracted from the manual, is shown in Figure 7, and another one in Figure 8. These are extended order drill formations, frequently practiced.

Tactical drills prescribed for reconnaissance are these: action as covering force, hasty attack, hasty defense, delay, air defense, the securing of a road junction, movement through a defile, and laeger. In Figure 9 is shown one formation of the platoon in executing a frontal attack. (The word "frontal" should not dismay the reader: ultimately, from the point of view of the platoon, every attack becomes "frontal" even though it is delivered on the flank or rear of the enemy.)

Engineer Battle Drills

Engineer units are required to maintain proficiency in the execution of the following battle drills: installation of a hasty mine block on a road; breaching a mine road block; construc-

tion of a hasty abatis; construction of a pioneer road to permit passage of combat vehicles through thick woods and again (the drill being quite different) through thin woods; the construction of a tank crossing over marshy ground by use of log mats; maintenance of a tank crossing under heavy use by tanks and carriers; construction of an M-4 balk treadway bridge (22 foot span and 28 foot span); and M-2 raft assembly (in connection with the construction of a tank ferry or a floating bridge).

These exercises have markedly increased the overall efficiency of our engineer battalion.

Experience in the drills has led to several improvisations of great value to the armored engineers. One of these is special grappling tongs to remove abatis, another is the pre-constructed log mat, and a third is the M-4 balk treadway bridge. The latter utilizes the regular engineer aluminum bridge barks which, provided with suitable stiffeners, can be combined to form an improvised tank bridge over small gaps. This is an interim measure, the best available to us, but not satisfactory because the bridge must be placed by exposed personnel working for perhaps 20 to 30 minutes in the open. Figure 10 shows a 22 foot bridge in position.

Battle Drill for the Combined Arms

We believe that it is undesirable to prescribe formations and actions in too specific teams, because great variations in composition of a combined arms force are to be expected. The combined arms battle drill is designed generally to meet the needs of the reinforced company (tank company

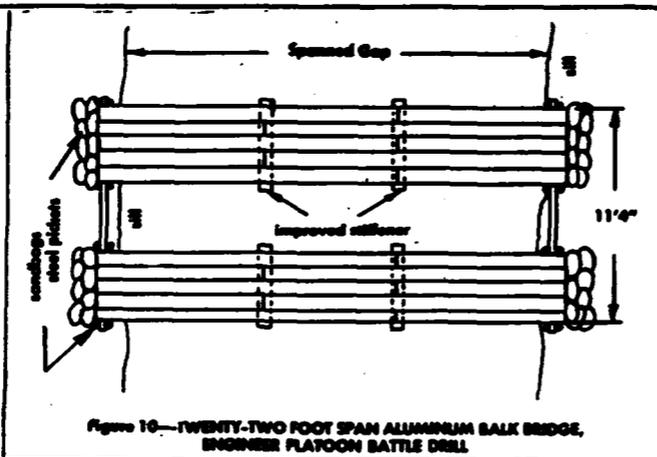


Figure 10—TWENTY-TWO FOOT SPAN ALUMINUM BALK BRIDGE, ENGINEER PLATOON BATTLE DRILL.

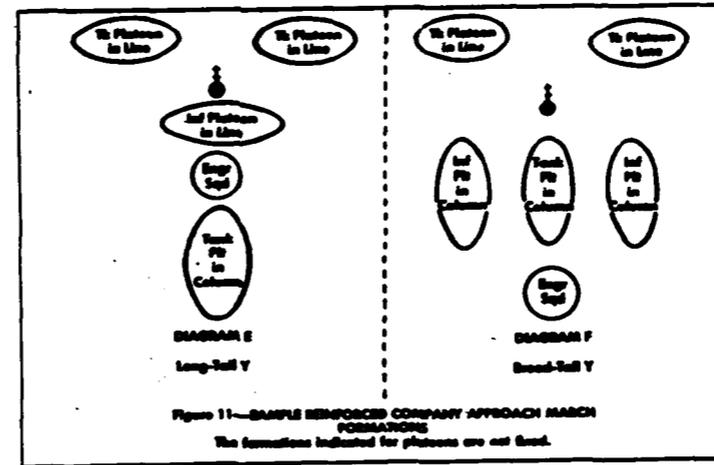


Figure 11—SAMPLE REINFORCED COMPANY APPROACH MARCH FORMATIONS. The formations indicated for platoons are not fixed.

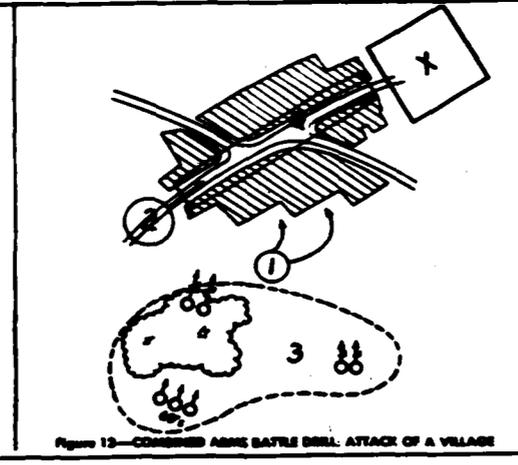


Figure 12—COMBINED ARMS BATTLE DRILL, ATTACK OF A VILLAGE.

reinforced by one or more platoons of infantry, or infantry company reinforced by one or more platoons of tanks). No flag signals are prescribed for the force as a whole, but flag signals may be used by subordinate elements as prescribed for them.

Generally speaking, a mortar platoon is not shown in the combined arms battle drill formations. It may either be placed appropriately in the formations, or put in firing position supporting the formation.

Formations

Formations are prescribed for the attack forward (infantry mounted, infantry dismounted; tanks leading, infantry leading, or tanks and infantry moving abreast), and for the envelopment. Figure 11 illustrates two such formations.

Tactical Drills for the Combined Arms

Drills are prescribed for the approach march, action as a covering force, hasty attack, hasty defense, delay, village fighting, and crossing an obstacle.

For village fighting, a reinforced infantry company may be formed in teams as follows: (1) a purely infantry element (two platoons) capable of working through, over or under houses; (2) a tank and infantry element (one platoon of each) capable of working through the principal streets and adjacent enemy held houses; and (3) a fire support element (the mortar platoon with one or more of the rifle platoon machine gun squads attached to it).

Practice must be had in employing

these elements in different villages. The initial commitment of these elements in a village may be as shown in Figure 12. (Not mentioned further is the obvious desirability of getting artillery and tank overwatching fire support from elements not under command.)

It is particularly desirable to designate, for all to thoroughly understand, Area Q (for example) as a "killing ground"—that is, every living person appearing in that area ahead of Team 2 (in the street, or in the doors or windows) will be immediately killed by Team 2. Team 1 drives the enemy into the killing ground—but does not enter it itself—as Team 2 works down the street. The area beyond the village (Area X) is often designated a killing ground in addition to or as substitute for Area Q.

Conclusions

It would be vanity indeed to claim that the 2d Armored Division is thoroughly proficient in all the battle drills. Nevertheless we have attained a reasonable standard of proficiency, and this has materially assisted us in our constant effort to achieve and

Should an Armored unit desire a copy of the 2d Armored Division Battle Drill, single copies of the chapters applicable to the particular unit may be obtained by writing The Adjutant General, 2d Armored Division, APO 42, c/o Postmaster, N. Y., N. Y.

maintain combat readiness. The battle drill manual, carried by commanders during training, is of considerable use as a reference document.

The use of battle drill has brought about a very desirable uniformity in training methods throughout the division. It is a very comforting thing for a commander to recognize that briefly given commands will bring about intelligent reaction and quick obedience by any other element of the armored division put under his command. The use of battle drill has minimized the time of reaction, by our small units, to any given tactical situation.

It is reiterated that the use of battle drill has not made us more rigid or stereotyped in our combat exercises—but it has brought about coordination and speed in the application of the power which is inherent to armor. The extended order drills are useful always as a means of control: the tactical drills get something done, in a hurry, when the lack of speed in itself will seriously compromise the chance of success. Each one of our junior officers is taught to disregard the battle drill approach to any tactical problem if his judgment indicates.

Published in our Training Notes is this quotation, "Mobility means quick decisions, quick movements, surprise attacks with concentrated force: to do always what the enemy does not expect, and to constantly change both the means and the methods—to do the most improbable thing whenever the situation permits: it means to be free of all set rules and preconceived ideas." We buy that, and we buy the Battle Drill, too.

General GEORGE S. PATTON, Jr.



Commemorative Stamp Ceremony

Each year on the eleventh of November, all Americans pay tribute to those who made the supreme sacrifice upon the field of battle in the defense of our great nation and the American way of life.

In addition to performing this time honored custom, November 11, 1953 had a special significance to all military personnel the world over. For on this date the first commemorative stamps honoring the late General George S. Patton, Jr. and the Armored Forces of the United States Army were issued at Fort Knox, Kentucky, the "Home of Armor."

The Armored Center, commanded by Major General John H. Collier, who acted as the official host for this gala occasion, was honored to have been the first military installation ever designated for the first-day issue of a stamp.

Second-day issues were made throughout the country, but of special interest was the fact that an Army Postal Office was given the signal honor of making the initial issue in Europe. APO 42, the postal unit of the Second Armored Division, stationed in Europe, commenced their sales on the eighteenth of November. This was also a first in that an APO had never been so honored before.

Many military and governmental dignitaries attended the ceremonies at Fort Knox. The Honorable Albert J. Robertson, Assistant Postmaster General, Bureau of Finance, represented the Post Office De-

partment at the first-day sale ceremony of the General Patton Memorial stamp.

Major General Collier, as official host for the day, opened the festivities with an address of welcome to all who attended.

General Jacob L. Devers, former chief of the Armored Forces at Fort Knox and who commanded the Army Field Forces at the time of his retirement, was the principal speaker. Extracts of his remarks are quoted:

"Today another richly deserved honor is added to the many that have been bestowed by a grateful nation and its grateful allies upon one of our most illustrious generals, George Smith Patton, Jr., whose death in 1945 brought to an untimely close a magnificent military career of over 40 years. His masterful leadership of men, his tactical brilliance, his high courage, and splendid martial spirit raised him to the stature of an almost legendary warrior hero.

"The issuance of a stamp commemorating General Patton and paying tribute to American armor, which became his mighty instrument of victory, symbolizes American respect and boundless admiration for a great soldier whose habit was success, a great soldier whose exploits fired the imagination and enthusiasm of patriots, and one who wore the stars of command with a distinction few in history have matched. . . .

"It is particularly appropriate that the Patton stamp should be issued first on Armistice Day, not only because Armistice Day coincides with the anniversary of General Patton's birth, but also because it is a victory day—and Patton was a man of victory. . . .

"On November 11, 1918, came the dawn of a great hope for just and lasting peace on earth—a hope that was all too soon dispelled by the clouds of another and far greater war. Unlike most Americans, Patton, with clear foresight, anticipated World War II. Furthermore, he anticipated the kind of warfare—the swift, hard-hitting enemy armor—that we would face, and he diligently worked toward building a strong armored force for America. Subsequently he proved, through its strategic use, that armor was an essential factor in the attainment of victory. . . .

"In this era of deadly peril we can have no better precepts to guide us than those which General Patton so often enunciated and to which he adhered throughout his career.

"*In yourself demand the impossible.* In no respect was Patton ever a defeatist. Confidence was one of the most powerful weapons in his arsenal, as it should be in ours today. He deliberately chose the most impossible terrain to fight across. He deliberately chose the most impossible course to follow. The so-called impossible was a challenge he could not resist, and accepting it, he proved by victory, time and time again, that—to the determined man—the impossible does not exist.

"*Always risk.* Nothing worth while can be achieved without risking something. If we believe in ourselves, as we should, we ought never to hesitate in moving toward our goal. If we cringe from facing the issue until every possibility of failure is

eliminated and absolute success is assured, we will walk through the valley of hesitation to defeat.

"Linked with this is a third precept: *Never listen to the advice of fear.* Fear is the deadliest of our enemies, the most potent ally of the power that threatens us. Fear is the negation of the confidence that ought to imbue us. We are the most powerful nation on earth, and we ought never to forget that we cannot be defeated *unless we defeat ourselves* by giving way to fear, by dropping our guard, by allowing our determination to decay. . . .

"And so today we honor George Smith Patton—who never evaded any issue—who moved straight to the heart of every situation—who took no counsel of fear or advice of cowardly caution—who sought always to do what best advanced the cause for which he fought, no matter how tough the job.

"We can have no better guide as we face the uncertain future."

General Devers also noted the recent death of Mrs. Beatrice Ayer Patton, the late widow of General Patton.

Lieutenant General Floyd L. Parks, Commanding General of Second Army, presented the eulogy in General Patton's memory.

The presentation of special stamp albums was made by the Assistant Postmaster General. These albums were accepted by Mrs. George S. Patton III.

The invocation and benediction were given by Chaplain (Colonel) H. F. Donovan.

A review of 12,000 troops and more than 100 tanks followed the assembly. This review, composed of troops from the Third Armored Division and School Troops, The Armored School, jointly honored the dedicatory ceremonies and the observance of Armistice Day—a day of special significance to all members of the Armed Forces.



General Jacob L. Devers making the special address commemorating Armistice Day and the Patton Stamp.



L. to R.—Lt. Gen. F. L. Parks, Gen. J. L. Devers, Mrs. G. S. Patton, III, and Maj. Gen. J. H. Collier.

ARMORED COMMAND CONTROL



by LT. COL. EDWARD G. EDWARDS

MUCH has been written regarding the limitations placed upon the use of armor in Korea.

Armor's principal "stock in trade," gunnery, maintenance and communications, formed the keystone upon which Korean armor warfare of the last two years has been built. Mobility, firepower and its resultant shock action could not be exploited to a degree worthy of mention. This was true because of the very nature of the war, with its stabilized front, where trench and bunker warfare were the order of the day.

Mobility and flexibility were neither lost nor forgotten. However, they were limited in the main to movement from and to the main battle positions where tanks were placed in fixed firing positions. This routine was broken occasionally by forays forward of the OPLR and special tank firing missions from the OPLR and the main battle positions.

One such tank firing mission, ac-

LEUTENANT COLONEL EDWARD G. EDWARDS served in Europe during World War II. He recently returned from Korea where he was assigned as Commanding Officer of the 73d Tank Battalion. He presently is on duty with the O & T section, G-3 Department of the Army.

complished by the 73d Tank Battalion not long before the cease fire, proved that the flexibility of armor, when coupled with good gunnery, maintenance and communications, can be exploited to accomplish a mission no other weapon can accomplish as efficiently or effectively.

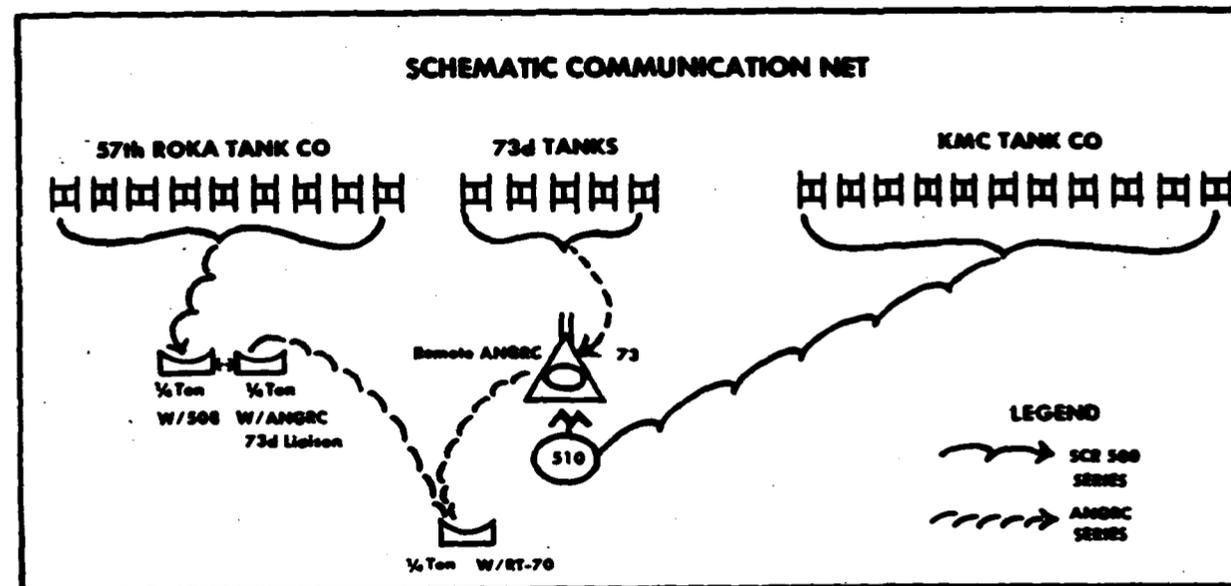
The enemy over a considerable period of time had constructed positions in front of the 1st ROK Division and was "inching forward." These enemy positions were so located as to threaten the friendly OPLR and greatly curtail friendly patrol activities.

The Corps Commander arranged with the 7th U. S. Infantry Division Commander to have the 73d Tank Battalion conduct a tank shoot to destroy the enemy positions to the front of the 1st ROK Division.

Plans were made to accomplish the mission and were coordinated with the Commanding General and regimental commanders of the 1st ROK Division. The plan included the coordination and control of the fires of the 57th ROK Tank Company on the main battle position in the Division left sector and the Korean Marine Corps Tank Company on the main battle position in the right sector. It was planned that eight tanks

of the 73d Tank Battalion would move into firing positions which were to be prepared on the outposts in the center sector to destroy specific targets at ranges of from 300 to 1500 yards. Map and ground reconnaissance was accomplished by all concerned and zones of fire for each element, to cover all designated targets for the operation, were established. The ROK Regimental Commander agreed to have the tank positions prepared as requested. It later developed that only six of the eight tank positions could be constructed. Enemy direct and indirect fire prevented the work parties from completing two of the positions.

The greatest problem to be solved was the matter of communications and control. There was no common radio being used by the three separate tank units taking part in the operation. The 73d Tank Battalion was equipped, just prior to the operation, with the ANGRC series radios. The ROK tank units were equipped with the 508 series radios. To solve this communications problem a liaison officer of the 73d Tank Battalion in a jeep with an ANGRC 7 radio was assigned to the 57th ROK Tank Company in the left sector to provide contact between the command of that



unit and the 73d Tank Battalion forward command post in an OP in the center sector. Both the KMAG advisor and the commanding officer of the Korean Marine Corps Tank Company were located at the 73d Tank Battalion OP with an SCR 510 radio for communication with their unit. Command communication was to be established by the use of the remote control component of the ANGRC series jeep-mounted radio which was to be wired to the Command OP.

At 0625 hours on the day of the operation eight M46 tanks (two were taken as spares), one M32 tank retriever, and one M39 Armored Personnel Carrier of A Company, 73d Tank Battalion moved out of the company area, closing into the forward attack position at 0745 hours. At 0920 hours, six tanks moved out of the forward attack position and up the steep slopes into their assigned firing positions. While moving into firing position one tank had its track jammed when it became entangled in a mass of barbed wire which wound around the drive sprocket. This tank could not negotiate the last few yards on the hillside into its firing position and did not participate in the action. Another tank while moving into its position threw a track while maneuvering on the steep slope approximately fifteen yards from its position. The tank commander used four rounds of 90mm HE to blow out the front of the prepared position so as to obtain a field of fire. This tank successfully

participated in the action without the protective advantages of the previously prepared hull defilade position.

At 1000 hours all tanks opened fire across the entire division front on order of the 73d Tank Battalion Commander. Fire continued at a rapid rate until 1130 hours when the order to cease fire was given. At this time the four M46 tanks which experienced no trouble getting into position, moved back out of their firing positions into complete defilade. The M32 retriever was dispatched from the forward attack position to the outpost area. The tank with the thrown track was promptly repaired. Five tanks withdrew to the forward attack position under their own power. The retriever recovered the tank with the jammed track under heavy incoming direct and indirect enemy fire. All vehicles returned to the company area before the end of the day.

During the one and one-half hours of firing no problems were encountered in the shifting of the fires of designated tanks to targets of opportunity picked up from the OP or in directing the increase or decrease of the rate of fire by radio.

The statistics for the operation were as follows:

Tanks Participating: 25 (5-M46, 9-M36, 11-M4A3).

Tank Ammunition Expended: both 76mm and 90mm—1,228 rounds.

Damage inflicted upon the enemy: 22 Bunkers destroyed, 26 Bunkers damaged, 6 Machine gun positions

destroyed, 2 OP's destroyed, 1 OP damaged, 7 Direct fire weapons destroyed, 5 Direct fire weapons positions destroyed, 7 Caves sealed, 202 Yards of communication trench damaged, 5 Secondary explosions, 1 Enemy counted KIA, 92 Enemy estimated KIA, 155 Enemy estimated WIA.

Enemy fire received: 32 rounds of 57mm Recoilless Rifle fire, 43 rounds of 60mm mortar, 8 rounds of 76mm artillery, 102 rounds of 82mm mortar, 5 rounds of 122mm artillery.

Damage inflicted by enemy fire: 2 Tanks slightly damaged by direct fire, 4 Tanks slightly damaged by shell fragments. No personnel casualties.

From this operation the following lessons were learned:

Separate armor organizations each equipped with different type tanks, M46, M4A3, and M36, can be organized under a single command to perform a coordinated mission.

The fact that all tank elements in such an operation are not equipped with the same series of radios can be easily overcome by the use of liaison personnel with the jeep-mounted ANGRC radios stationed near the NCS of units in the operation.

The remote control component of the new family of radios affords good communication from an OP which can be at a great distance from the command radio.

Communications can be established in a minimum of time for the control of armor action over a wide front.

During the past several years, many members of the United States Armor Association have expressed their opinions regarding the requirements for active membership in this organization. These views have varied from (1) allowing the requirements to stand in status quo, as spelled out in the constitution, to (2) a complete revision thereof.

As the constitution presently provides, an officer, except a general officer, must be "assigned to, detailed in or serving with Armor" in order to be eligible for active membership. This has imposed restrictions on many other officers who are thoroughly interested in the art of mobile warfare.

This means that an officer who is presently serving with an Armor unit, but who may be assigned basically to another branch of the service, is eligible for active membership. However, upon his transfer to another assignment, other than an Armor unit, he becomes an associate member. This applies to regular or civilian component officers.

Further, many officers of the Marine Corps are vitally interested in armored warfare—our files contain hundreds of Marine Corps subscribers. Their interest is genuine in that they are assigned to or closely working with Marine Corps armor units. In Korea, many of them worked with Army armored units; hence, they have an appreciation for the capabilities, limitations, and potentialities of self-propelled units.

During World War II, the close association of Tactical Air personnel with front-line Armor units created an inseparable tie which proved most vital to the successful completion of a ground mission

at Division level or higher. Today, this tie is still evident in our planning, training and maneuvers.

Appreciation of the other combat arms by armor personnel, and *vice versa* we believe, has brought a mutual admiration for the role performed by each branch in the accomplishment of its assigned mission as part of the team. It is felt that those persons so interested in the art of mobile warfare should be entitled to active participation in our Association.

In respect to our own branch personnel, we feel that every Armor officer should be an active member of his branch Association. Whether or not ARMOR magazine is readily available through unit subscription or by other means, the Armor officer should be an active member and contribute his strength and assistance to the organization in furtherance of its aims and purposes, while, at the same time, receiving the benefits of a professional Association in return, as well as a personal copy of the magazine for future ready reference.

Armor is an integrated arm. It is composed of personnel, as depicted in the Armor patch, from all the ground arms. In addition, it is dependent upon all the technical services for support in order to maintain its characteristic role of mobility.

To limit our voting membership to those presently engaged in Armor, not only limits our potential readership but denies privileges to many who otherwise might take an active part in the formulation of our policies. Our editorial policy constantly strives to obtain articles from outside our branch so as to keep all our members abreast

of the entire military field rather than to be confined solely to the field of Armor.

Perusing our current issue of ARMOR, you will see articles written by officers assigned to the Ordnance Corps, The Adjutant General's Corps and the Infantry. Glancing at back issues through the years, you will see practically every subject pertinent to the military profession covered in some phase or other.

Our diligent council has discussed the *pros* and *cons* of this subject over the course of many meetings, and now feels that the time is appropriate to expand our membership. This proposed expansion is intended to admit present or former officers and warrant officers of the Navy, Air Force, Marine Corps, and Army, as active voting members, and present or former enlisted men of all the services, as associate members, regardless of branch or component. This will allow many mobile minded officers outside the Armor branch to take an active voting part in the affairs of the United States Armor Association, the oldest of the ground arms associations—an organization which is proudly celebrating its sixty-eighth birthday this November.

In consonance with this proposal to broaden our base, the council further directed that a poll be taken to approve an increase in the number of members of the Executive Council from twelve to eighteen. This will allow for expansion to give wider representation through the enlarged council, not only to key Armor installations but also to other branches and services as deemed appropriate.

As stated in paragraph 6, Article IV of the By-

laws "It is desirable that a number of the members of the Executive Council be residents of the vicinity of the headquarters of the Association." Certainly, representation can be well chosen from the wealth of personnel available from all services and branches in the Washington, D. C. area. The reason for having some members in the vicinity of the Association's headquarters is that it allows for the immediate attention to business matters.

As heretofore mentioned, but deemed worthy of reiteration, much thought has been given by the council prior to the presentation of these proposals to our active membership for a vote. Subcommittees of the council investigated all the facets before making a firm recommendation pertinent to the amending of the constitution. When you receive your notice of the annual meeting, it will contain proposed changes to the constitution, and it is hoped that you, too, will give it serious thought when casting your ballot. If you are planning to attend the sixty-fifth annual meeting at Fort Knox, Kentucky on January 29, 1954—and we hope you are—you will have more time to weigh your decision before the final vote is taken.

Irrespective of the outcome, we are striving, as we come to the close of another year (and volume LXII of ARMOR), for a bigger and better organization in order to further the aims and purposes of the United States Armor Association to disseminate knowledge of the military art and sciences with special attention to mobility in ground warfare, and to promote the professional improvement of its members.

CAST YOUR BALLOT!

Sum & Substance

A regular feature in ARMOR, where you may express your views in approximately 500 choice words—the effective medium between the letter and the article. This section is open to all on any subject within the bounds of propriety. Name and address must accompany all submissions. Name will be withheld upon request. No pseudonyms.

To keep an Armored Division moving requires full support from all the Technical services. ARMOR focuses the spotlight on the 123d Armored Ordnance Battalion, 1st Armored Division to find out some of the problems—and how to solve them—involved in rendering adequate Ordnance support to an Armored Division.—Ed.

The writer of the following, a 1941 graduate of the United States Military Academy, served in the European Theater of Operations as S3 of a Field Artillery Battalion. Subsequent to the war he attended the University of Michigan for three years, then was assigned as an instructor in Mathematics and Ordnance matériel at West Point. Following his successful completion of the Ordnance Advance Course in June, 1953 he assumed command of the 123d Armored Ordnance Battalion, First Armored Division, Fort Hood, Texas.

The 123d Armored Ordnance Battalion of the 1st Armored Division was reactivated at Fort Hood, Texas in April 1951. At this time it was manned by a small cadre of trained officers and noncommissioned officers and enlisted men without basic training. This situation necessitated going through a basic training cycle, then advancing into technical training, which made it a slow process of becoming a battalion capable of carrying out its support mission; however, by February and March of 1952, the 123d Armored Ordnance Battalion was capable of performing its mission.

The mission of the Armored Ordnance Battalion is to furnish ordnance supply and maintenance support for all ordnance items used by an armored division. It must perform this mission and still remain mobile enough to keep up with the fast-moving combat command.

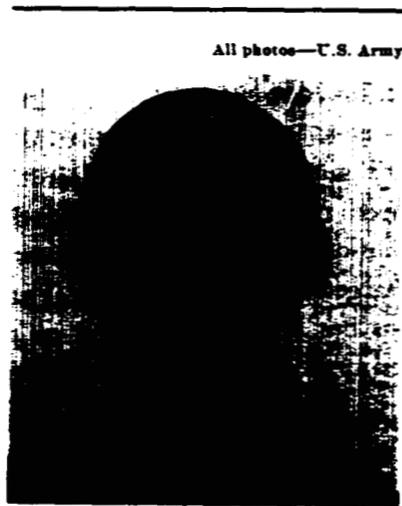
The Armored Ordnance Battalion consists of three identical lettered companies and a Headquarters and Headquarters Company. Each letter company normally supports a combat command, with the Headquarters and Headquarters Company supporting

the division headquarters and division trains units which have the greatest density of wheeled vehicles.

The large amount of ordnance items in an armored division requires more spare parts than it is advisable for the armored ordnance unit to carry. This requires close contact with supporting depot companies or with Post Ordnance when in garrison.

In a combat type operation the Armored Ordnance Battalion must be careful not to keep a job that requires too much time for repair. In these instances the item must be replaced and the repair job evacuated to a heavy support ordnance unit. It is estimated that the Armored Ordnance Battalion can repair and return to the using unit 80% of the work requiring field maintenance and must replace and evacuate 20% of its work in order to remain mobile and give close ordnance support to the armored division.

In addition to the mission of fur-



Lt. Col. O. C. Tonetti

All photos—U.S. Army

nishing field maintenance support, a large percent of the ordnance effort is spent in advising, training, and supervising organizational maintenance in the using units. It is also part of the Armored Ordnance Battalion's mission to furnish technical assistance on command inspections and to perform spot check and technical inspections of all the ordnance items in the armored division.

The Division Automotive Officer is responsible for the overall supervision of the organizational maintenance within an armored division and attached units. It is his duty to insure that no unauthorized maintenance is performed by the using unit, to assist the using unit in the maintenance program by instruction and advice. It is the responsibility of the Division Automotive Officer to keep the Division Ordnance Officer advised as to the status of the ordnance equipment in the hands of the using unit, also to report abuse or malpractices of supply economy and good maintenance procedures within the division. He maintains a spot check team using the road block system to determine the condition of organizational vehicles. This information passed on to the unit supporting the unit found deficient will aid the Advisor-Instructor team in the performance of their mission.

The Division Ammunition Officer is responsible for the control and processing of transportation orders, ammunition issued and turned in from all units within the armored division. In combat an ammunition supply point may be established, if necessary; however, an ammunition company or detachment will normally be attached to the division to handle the ammunition since there are no personnel provided by the TO&E to handle the ammunition. All ammunition issued

is handled by the unit ammunition personnel. The Division Ammunition Officer has the overall supervision of an "Ammunition Parking Area." This area is for temporary storage of ammunition for the units. The area is located near the ranges and convenient to all units of the division.

To aid in the gaining of technical knowledge by the enlisted personnel of the battalion, an extensive "On the Job" training program is in operation, enabling the men to acquire necessary skills by practical work. Qualified service school instructors are utilized for this training.

The complex hydraulic and electrical systems in the new family of tanks require constant training of our personnel to insure the support of an armored division. This training is achieved by service school attendance and by our internal training program.

LT. COL. O. C. TONETTI

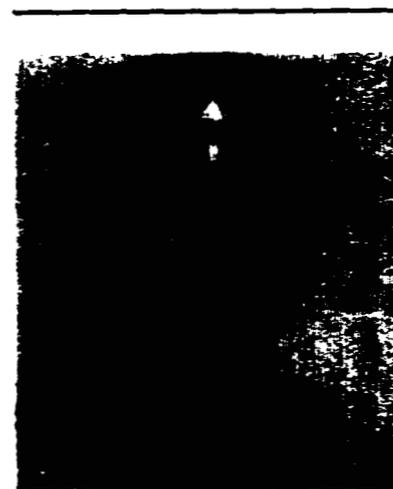
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The writer of the following served with a Tank Destroyer Battalion during World War II. Subsequent to the war he served in Korea as an enlisted man. Upon recall to commissioned status he was assigned to the Tokyo Ordnance Depot. Returning to the United States in early 1953 he was assigned to the 123d Armored Ordnance Battalion, recently assuming command of the Headquarters & Headquarters Company.

The Headquarters & Headquarters Company, Armored Ordnance Battalion is organized under TO&E 9-66. It includes the personnel for the Battalion Headquarters (including the office of the Division Ordnance Officer, Division Ammunition Officer, Battalion Headquarters, and office of the Division Automotive Officer). The Battalion Headquarters Section is further subdivided into the battalion administrative section, personnel section, supply section and communication section.

The Headquarters Company is composed of a Company Headquarters Section, Battalion Ordnance Supply Section, Salvage and Recovery Section and Maintenance Section.

The objective of this unit is to provide planning and supervision of all ordnance activities of the division, to include communication, supply, administration and recovery activities.



1st Lt. R. G. Edmonson

The Company Headquarters is the "housekeeping" section of the Company. Here we find the messing, billeting and supply facilities for the company. The supply section is charged with the responsibility of caring for all the items of supply for the company, which includes all of the many special tools required for maintenance and salvage and recovery operations.

The Ordnance Supply Section is without a doubt one of the more important sections in the battalion. Without this section all maintenance is bound to be stopped. This section controls the supply of all parts and major items in the hands of the using units. To deprive the using units of spare parts or major items (tanks, trucks, instruments, weapons, etc.), would impair the operations, mobility, and fire power of an armored division. Maintaining mobility is the key to the effective operation of an armored division. The supply section is also charged with the responsibility of evacuating unserviceable items to higher echelons for repair. Each ordnance item no matter how large or small must be funneled through this section into the division. The same channels are followed for items being returned for repair or turn-in to higher ordnance units.

The Salvage and Recovery Section consists of six 45-ton tank transporters and five 5-ton wreckers. The mission of this section is to augment the evacuation facilities of the combat units in the field.

When the armored division is in the field or in combat, the salvage and recovery section has a tremendous assignment. Usually this section works around the clock. These men must be muscular and have a keen sense of responsibility. The work is very heavy and requires imaginative powers in the assembling of the rigging to recover vehicles and prevent further damage to the vehicle being recovered. There are many qualifications necessary in selecting personnel for this section. Some of these qualifications are physical stamina, driving ability, mechanical aptitude and dependability. Usually these men work under the most adverse conditions. It is not uncommon in combat operations to find a disabled tank covered by enemy fire. This always presents a special problem to the transporter crew in attempting to recover the vehicle.

The Maintenance Section has the mission of supporting all non-tactical unit equipment in the division. The equipment consists primarily of wheeled vehicles. There are no track laying vehicles supported by this section. The maintenance section is completely mobile and can move on very short notice. All equipment is mounted on trucks or shop vans. The personnel of this section work in close coordination with the salvage and recovery section. Supplies for the section operations are furnished direct from the Battalion Ordnance Supply Section. All 2d and 3d echelon maintenance of the vehicles in Headquarters Company plus the direct support mission of maintaining vehicles of the non-tactical units of the division, falls upon the maintenance section. The work load is controlled by the Battalion Maintenance Officer, who is responsible for the allocation of the work load between all the maintenance sections in the battalion.

1ST LT. ROBERT G. EDMONSON

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The writer of the following served in the European Theater of Operations during World War II with the 13th Armored Division. Upon recall from enlisted status to active duty in 1950 he was assigned to a military post in Germany. Returning to the United States in 1953 he assumed command of A Company, 123d Armored Ordnance Battalion.



The tracked vehicle repair section removing the power pack from an M47 tank.

The mission of the lettered ordnance company in the Armored Ordnance Battalion is to support a combat command whether in combat operations or in garrison operations.

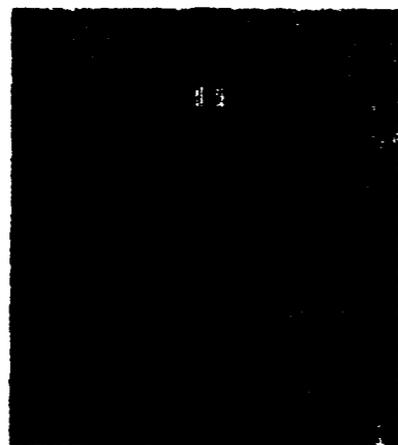
All organizations within a combat command must be served with ordnance maintenance as close as possible to the front lines to keep as many vehicles, artillery pieces, instruments and small arms on the line as possible.

The Company is organized as follows: A Company Headquarters consisting of Company Headquarters, Company supply, Company mess and Company Shop Office. The Company Shop Office is responsible for coordinating the functions of a Shop Supply Section, Service Section, Wheel Vehicle Section, Track Vehicle Section and an Armament Platoon consisting of an Artillery Section, Small Arms Section and Instrument Section.

The Shop Office, which is located in the company headquarters, receives the work coming in from the organizations. The work is inspected, parts predetermined and requisitioned from the service and supply platoon. When parts are available the work is sent to the appropriate section for repair. In any case where minor repairs are needed, a small contact team is sent to the using organization when in garrison or the vehicle, artillery position or

unit requiring the work, when in combat, and is repaired on the spot. This team saves the time of evacuating the job to the repair shops and at the same time permits the unit to have the job repaired without losing the item to ordnance.

In most cases repairs are made by contact teams while in combat or field exercises. The contact team may also give assistance to the using units by instructing the organizational mechanics in the performance of their



Capt. J. D. Lewis

duties. The contact team is very valuable to an ordnance company in the performance of its mission. In the event that this team should locate a unit in need of ordnance assistance they may offer any assistance they are capable of offering to the unit. Roadside repairs are authorized and encouraged by ordnance personnel.

The mission of the Service Section is to repair any item not normally repaired by any other section in the ordnance company. Jobs that may be performed in the service section are body and fender work, painting of vehicles, welding, manufacture of special tools, all types of carpenter work, and canvas and leather repair. The Service Section has a machine shop truck in which there are lathes, shapers, drill presses and many other related items of equipment. In the body and fender repair this unit is limited only to minor repairs such as straightening trailer tongues, bracing broken fenders, patching punctures in body and spot painting. The welders assigned to this section must be capable of welding armor plate or in some cases making a part to replace one that has been broken and cannot be obtained through normal supply channels without undue delay. This section is frequently called upon to modify vehicles and other items of ordnance equipment to permit the equipment to be operated safely or more conveniently as the situation warrants. A very good example of the work this section may be called upon to do was in Europe during World War II when the tanks could not break through the hedgerows. Forks were made from obstacles found on the beaches and welded on the front of the tanks. These forks merely lifted the hedges out of the ground and drove on through.

The wheeled and tracked vehicle sections receive and repair all vehicles from the using units. If a vehicle is received that is damaged beyond repair by field maintenance or would require undue repair time, that vehicle is evacuated to a higher echelon. The initial inspector at the shop office is the person who determines whether the vehicle can be repaired by the shops or not. Normally the vehicle will be evacuated when a major item replacement will not repair the vehicle. The ordnance wheeled and tracked vehicle repair shops are capa-

ble of replacing such items as engines, transmissions, clutches, grinding valves, differentials, relining brakes and repairing electrical and fuel circuits.

The Artillery Section is responsible for the repair of all artillery pieces within the Armored Division. This section is capable of making the repair on the spot or in the ordnance shops. Normally the section can make the repair in a few hours and if at all possible at the emplacement. If the repair cannot be made in the unit or in the ordnance shops the piece is evacuated to a higher echelon.

The small arms section usually makes repairs at the using units. A large part of the small arms repair could be made by the using organization provided the proper personnel were assigned to them. The small arms team contacts the battalion aid stations where they pick up weapons, repair them if needed and return them to serviceable stock.

The instrument section cannot operate in the forward areas very effectively. Therefore most of the work in the instrument section is direct exchange and in this way the using units are not without the particular instrument over any extended period of time.

CAPT. JOHN D. LEWIS



The writer of the following served in the European Theater of Operations during World War II with a Tank Destroyer Battalion. Subsequent to the war he was released from active duty and reenlisted as a Master Sergeant in ordnance. Upon recall to active duty in 1946 he was assigned to Europe with an ordnance unit in direct support of the U. S. Constabulary. Returning to the United States in 1951 he assumed command of B Company, 123d Armored Ordnance Battalion.

The potential firepower and mobility of an armored division in the field is measured by the state of operative readiness of its ordnance equipment. Failure of one artillery piece, machine gun, or tank may mean the loss of a platoon or company of tanks. The mission of the ordnance company is direct support in the field of operation. This is backed by organized



Capt. T. H. Tyner

maintenance, availability of supplies, and continuous flow of ammunition to the troops on the line.

Direct support not only includes working in the ordnance company shop area, but includes constant contact, supervision, and maintenance within supported unit areas as well. This constitutes well established and well trained instructor-advisor teams working continuously with the equipment and personnel using the equip-



The artillery section repairing the seat on the breechblock of a 155mm howitzer.

ment in the field. These teams consist of artillery and small arms repairmen, track and wheel vehicle repairmen, each man carrying his own tool set. The number of personnel depends on the specific assignment. The vehicle is equipped with special tools and fast-moving items of supply such as carburetors, fuel pumps, spark plugs and voltage regulators.

The ordnance direct support company is equipped with personnel, tools, and general supplies to effectively support approximately one-third of an armored division. This is equivalent to one combat command. The breakdown of the Company is as follows:

The Company Headquarters, the Automotive Platoon (consisting of wheel vehicle and track vehicle repair sections), the Armament platoon (consisting of artillery, small arms, and instrument repair sections), and the Service and Supply Platoon.

This Company is 100% mobile and is capable of advancing with the movement of their supported units. This sometimes means leaving teams behind to complete maintenance jobs on heavy equipment and later join up with the advance. Well organized teams, as mentioned previously,

equipped with tools and fast-moving vehicular parts, are working on the line and patrolling main supply routes in the zone of operation. This is evidenced by the fact that repair of equipment where it fails saves time and unnecessary delays of field operation. To move this amount of equipment, a company has approximately sixty organic vehicles. Sixty vehicles in a bivouac spaced seventy-five yards apart cover a very large area. Also there must be space provided to park vehicles in the bivouac area.

Security is dependent on outpost guards, well camouflaged equipment, trip flare and/or other warning devices. Internal communications are maintained by a telephone net. Work at night is carried on in blacked-out shop vans and maintenance tents.

Contact with division maintenance and supply is by continuous wave radio or voice radio where distances permit. The radio nets must be kept open 24 hours a day to facilitate the flow and control of ordnance equipment.

The Ordnance Company may be called on to assist in battlefield recovery of armored equipment. Each armored unit in the division is equipped with one or more tank recovery vehicles. The using unit would normally move the damaged tank near the main supply route and notify the Ordnance Support Company. Upon inspection of the tank and finding that it was not economically repairable or that the time limit for repair was too great, it would require evacuation. Division maintenance would be notified by radio as to the location and a tank transporter would be sent out from Headquarters Detachment to move the tank to the rear. At the same time arrangements would be made for immediate replacement.

We place a great deal of emphasis on service to the division. Our job is to provide the service wherever and whenever it is needed. Tanks keep getting bigger and faster and it taxes the ingenuity of armored ordnance personnel to the utmost to keep them rolling at top speed. We are proud to be a member of this great armored team.

CAPT. TED H. TYNER



The writer of the following served as an enlisted man for more than 13



1st Lt. C. C. Ralph

years and saw duty in the Pacific during World War II. Commissioned in 1950 he was assigned as an Infantry Regimental Maintenance Officer in Europe. Returning to the Zone of Interior in 1952 he assumed command of C Company, 123d Armored Ordnance Battalion.

The mission and responsibility of C Company includes direct supply and maintenance support for two tank battalions, one quartermaster battalion, two field artillery battalions, one armored infantry battalion, Headquarters, Reserve Command, and Headquarters, 17th Armored Group, an attached unit to the 1st Armored Division.

The responsibility of direct support includes technical advice and assistance to the operators of ordnance equipment by sponsoring "Advisor-instructor teams" and actively participating in the Command Spot Check Program and technical inspections of ordnance equipment in the hands of the units which we support. Basic loads and replenishment of organizational spare parts are closely supervised to assure that operating supplies are on hand or on requisition at all times. A unit cannot discharge its responsibility for organizational maintenance when short of supplies.

An Inspector-instructor team is in operation which we call the "Advisor-instructor team." A majority of the

officers get the wrong impression when they hear the word inspector. The team is composed of eight men representing automotive, instrument, armament, and supply. Units that indicate a lack of preventive maintenance are the first units scheduled for Advisor-instructor service. Each using unit receives the inspector service as often as necessary or when it is called for by the respective battalion commanders. All commanders have a standing invitation to call for the team any time they feel it necessary. In cases where maintenance and supply procedures are found to be unsatisfactory, a follow-up inspection is made within 30 days. As a result of these visits, the exact status of the maintenance and supply, to include status of the small arms, basic load in each company or battery, is known. A complete report of each ordnance activity can be given to the battalion commander, which is thoroughly appreciated, as the purpose of the Advisor-instructor service is to help using units and not "gig" them. Any ordnance unit which does not have an Advisor-instructor team should initiate one immediately, as it creates good will between ordnance and the using units. Battalion commanders take positive action to correct existing deficiencies once they are aware of their existence.

As a direct support company, we are required to be completely mobile. Our supply is operated from trucks with the exception of the heavy units which could be loaded in a short time. All sections have the greater part of tools and equipment mounted on shop vans. This company is prepared to move, with TO&E, from garrison on a three-hour notice and can be operational within the hour after closing in bivouac area. Once in the field we can evacuate an area in an hour provided vehicles in the shops do not present a towing problem.

We, as supporting ordnance, try to detect incipient failure and initiate corrective action in the using units before a major problem presents itself. It must be remembered by all echelons that it has been conclusively proved that one good hour of instruction to the user by fully qualified ordnance personnel at the position of equipment saves five hours of repair at a later time.

1ST LT. CARL C. RALPH

ARMOR—November-December, 1953

Doctrine of Guderian as written in his now famous book, "Panzer

Leader," is well known to the mobile minded. Not so prominent is

the fact that he set down these theories in an earlier publication in

1937. These he put into practice during the early days of the War.

Heinz Guderian



Father of Armor

by LIEUTENANT COLONEL M. C. HELFERS

EVERY living organism has a father. By analogy a vital movement or organization soon claims a father. Oftentimes the originator or first head of a movement or organization is recognized as its father as, for example, Washington is known and accepted as "Father of his Country." Not always is this the case. Sylvanus Thayer, although connected with West Point as a cadet from 1807 to 1808, did not become its head until 1817, fifteen years after its founding. However, his influence on the Military Academy and its development was such that he is generally remem-

LIEUTENANT COLONEL M. C. HELFERS, retired, served in Europe during World War II, with the Third Army in an intelligence capacity. He is presently the Chief of the Foreign Studies Branch, Office of the Chief of Military History, Department of the Army.

ARMOR—November-December, 1953

bered as the "Father of West Point."

Guderian's influence on Armor is very similar to Thayer's influence on West Point. Without attempting to develop this analogy—for, as the Romans already knew, every simile limps—one point in Guderian's career as a Panzer leader deserves special mention. Not until late in 1928, while he was detailed for four weeks to the Swedish Army, did he actually drive a tank for the first time. This was only shortly after he sat in one for the first time. It was eleven years after the British committed tanks for the first time in battle.

There are many interesting things in Guderian's career which bear on the subject at hand. Noteworthy is his thorough study after 1928 of the literature, mainly foreign, on tanks. Guderian does not minimize the value

he derived from the writings of Fuller, de Gaulle, Heigl, Nehring, Kurtzinski, Von Schell, and Liddell Hart. Neither does he minimize the value of his study of military history, in this respect particularly the Cavalry engagements of 1914 and battles in which tanks were committed in World War I. Guderian tackled his problem like any intelligent man would. He thoroughly, not superficially, studied the past not only of his own nation's experience of the subject at hand but also the experiences and writings of other nations. It might be added here that this foreign study in no way affected his loyalty and his love for Germany, a loyalty and love which in some circles has been interpreted as reactionary, but which is nothing more than a sincere desire to see his country live and its honor re-

stored to its former world standing.

For the student of the history of Armor there is no real substitute for the reading of Guderian's book, *Panzer Leader*, or better still the German version, *Erinnerungen eines Soldaten*. The reader, at this point, may be interested in a brief sketch of his military career.

General Heinz Wilhelm Guderian was born on 17 June 1888 in West Prussia. On 28 February 1907, after six years of cadet training, he joined the German Army as an officer candidate. He attended the War Academy for one year, 1913-1914. His World War I experience was limited almost entirely to staff duty at division and higher level, mostly in signal communications. From 1918 to 1934 his assignments alternated between troop duty and the Defense Ministry, concentrating on motorized units or agencies charged with motorization after 1928. In 1934 he became Chief of Staff of the Inspectorate of Motor Transport Troops. 1935 saw his appointment as Commanding General of the 2nd Panzer Division; 1937 the appearance of his military best-seller, *Actung! Panzer!* which he wrote at the suggestion of his immediate superior for the purpose of presenting the case of armored warfare. Early in 1938 he was named Commanding General of Germany's only armored corps; later in the year he was designated Chief of Mobile Forces. In Poland and in France he commanded the XIX Panzer Corps. He commanded the Second Panzer Army, which started the Russian Campaign with three armored corps, until 26 December 1941, when he left his command, having been relieved for failing to meet Hitler's impossible demands. His request for a court-martial was denied and he spent the next thirteen months on inactive duty, during which time he suffered considerably from a heart ailment. In February 1943 he was recalled and named Inspector of Armored Troops. On the 21 of August 1943 he became the last Chief of the German Army General Staff, a rather impossible position in view of the increasing power of Himmler and the SS. On 1 April 1945 he was furloughed for a second time, thus ending an active military career of over thirty-eight years. His last promotion, that of general, was on 19

Attention! Tanks!

July 1940. Hence, as in World War I, he received only one promotion during the war years. His highest decoration was the Knight's Cross of the Iron Cross with Oak-Leaf Cluster.

This biographical sketch is sufficient to show in outline the part Guderian played first in the build-up of German armored forces and later in their employment in battle. Of particular note is his next to last assignment, that of Inspector of Armored Troops, which he continued to hold after he became Chief of the German Army General Staff. It is here that he stressed the importance of systematizing the literature on armor and getting the lessons of battle down to the



Consulting with a subordinate officer during the Blitz across France.

fighting units without delay. Most important though is that uniqueness of his career which permitted him to formulate in peacetime his theories about the employment of Armor, at the same time being a leading participant in the organization and training of armored units, and to see his theories sustained in battle, again being a leading participant as commander of large armored formations. It is this uniqueness, this dual role, which clothes him with the mantle of "Father of Armor" and which rules out other early champions of Armor, such as General Chaffee, who unfortunately died before he could carry his theories into effect, General Patton, who like Rommel benefited from

what Guderian had already done, and General Fuller, whose contributions were mostly with the pen.

The armored sweeps of Guderian in Poland, in France, and in Russia are so well known that they need only be mentioned here. It was here that his theories were put into practice. They were not found wanting. Not so well known is the fact that Guderian had previously placed his theories in writing for those who expected to "run" with Armor "to read." This he did most succinctly in 1937 in an article on "Motorized Combat Troops" in Volume II of *Guide to Modern Military Science—The Army*.² A translation of Guderian's combined answer to the questions—Are tanks merely an auxiliary weapon of the infantry? Are they also capable of independent commitment? Is independent commitment their primary mission?—is given below without abridgement or change other than italicizing the one paragraph which the writer considers the most significant. It is left to the reader to decide whether the nominating committee at Valhalla has not already agreed on the name of Guderian as the "Father of Armor."

"Many people believe in the traditional viewpoint that the Infantry is the 'Queen of Battle,' that as such it is and will remain the principal arm, and that all other arms exist exclusively as auxiliaries to the Infantry and must therefore take this basic assumption into account in their organization and combat tactics. One of the sad lessons of World War I is that the increasing effectiveness of weapons, especially of machine guns, first led to the complete elimination of the Cavalry from the battle field and then forced the Infantry to take cover behind barbed wire and in trenches and, if its attack was to make any progress, to have recourse to other arms to a degree that could no longer be reconciled with the above royal title. During World War I infantry attacks launched after 1915 succeeded only when they were supported by artillery superior to that of the enemy, by the employment of chemical agents, or by a sufficient number of tanks. As a rule, however, the effect of the artil-

²Frankt, Hermann, editor, *Handbuch der Neuzzeitlichen Wehrwissenschaften*. Berlin: Walter de Gruyter & Co., 1937. 2 Volumes. See "Kraftfahrkampftruppen," pp. 382-402, in Volume II.

lery fire and chemical agents, on which the Central Powers relied primarily for the success of their attacks, was not sufficient to break through the enemy lines and thus bring about decisive results because of the Infantry's inability to exploit initial successes with the necessary speed. Decisive victories in battle did not seem feasible until toward the end of the war, when masses of tanks and close-support planes were committed in surprise attack. These two recent weapons were not fully developed by the end of the war, and both remained auxiliary arms until 1918. Since then their technical development has advanced rapidly, thus permitting equally fast tactical progress. Owing to this development, the German Air Force has attained full independence as the third service of the Armed Forces, while the German Tanks Troops—remaining within the framework of the Army—together with their essential technical service units are in the process of developing into a new major branch, the Armored Force, without the cooperation of which a decisive combat action of the future can hardly be conceived.

"In ground combat the tank is above all an instrument of attack. It is well armed with guns and machine guns and therefore has strong firepower; it can surmount trenches and wire entanglements; it is proof against machine gun and infantry weapons fire; it is considerably faster than all non-motorized weapons; and it can be directed by modern means of communication when integrated into major units.

"As soon as the necessary motorized technical service units are made available, tanks—together with these units—may be organized into major units (divisions and corps), which will be suitable for every type of independent commitment, such as attack and pursuit, defensive offense, and cover for a withdrawal. Rigid passive defense is the only type of action in which it is better and more economical to employ infantry divisions with sufficient anti-tank protection.

"Armor is the instrument of attack, surprise, and mass commitment. With its support victory in battle may be realized and exploited. The experience of World War I has shown that in all attempts at major breakthroughs the attacker was denied ultimate vic-

tory on the battlefield because he was incapable of exploiting initial successes into complete breakthroughs. This failure was caused by the lack of fast and powerful forces capable of achieving breakthroughs and launching pursuits. Today such forces are available in the form of integrated armored units. The problems that must now be solved are to organize these units so that they will do justice to their assigned mission and to implement the training of the necessary commanders. As early as World War I the Allied armies had the bitter experience that tanks committed in small units and in close attachment to infantry suffered heavy losses, if they



He gives last minute instructions to a commander on the Eastern Front.

were not altogether annihilated, and that the Allied forces did not even derive the potential advantage from such sacrifice. These serious consequences of committing tanks piecemeal arose despite the fact that the Germans had hardly any organized antitank defense system and, aside from artillery guns, no armor-piercing weapons, if one disregards the few 13-mm. antitank rifles that fired single rounds and whose performance was unsatisfactory. Armies that might be involved in a future war will have to anticipate the employment of tanks and make appropriate defensive preparations in peacetime, because the unrealistic commitment of tanks, based on erroneous assumptions about

the effectiveness of defensive weapons and the potentialities of tanks which in turn would lead to faulty organizational measures, will have much more serious consequences than in 1918.

"In answer to pending questions one may state that in the future tank forces should primarily be employed independently if they are to be most effective, that the essential auxiliary and technical service units should be organically integrated into the armored formations, and that—in exceptional cases arising from the tactical situation—the latter should also be made available for direct support of infantry. It would be appropriate, however, not to base the organization of the entire armored force on such exceptional circumstances and thus repeat the organizational mistake from which the German cavalry suffered so much in 1914.

"No matter what type of organizational structure will be adopted for the armored force, the principal mission for which it is intended will exert a strong influence on the future technical development of the armored vehicle.

"Tanks that are designed primarily for operating in conjunction with slow infantry units have no need for great speed, long radius of action, or heavy armament; on the other hand, they must be capable of remaining a long time under the fire of numerous defensive weapons and of protecting themselves against enemy tanks. Tanks destined for this mission will have to be heavily armored with an armor-piercing gun and several machine guns, and their engine weight and fuel capacity will have to be reduced in favor of thicker plates of armor. But it must be realized that, to be effective against modern defensive weapons, protective armor must be of great strength, which in turn means that the cost and weight of infantry tanks will be considerable.

"On the other hand, tanks which are to operate primarily on independent missions must have great speed, a long radius of action, and at least some of them must be equipped with long-range guns. To comply with these requirements, the strength of the armor may be reduced, whereas greater emphasis will have to be placed on powerful engines and ample supplies of fuel and ammunition."

The degree of realism obtainable in a field problem is limited only by the imagination, ingenuity, and initiative of the testing group. Control of the group being tested must be balanced carefully between experience and common sense.

PLANNING AND UMPIRING THE TANK BATTALION TEST

by **LIEUTENANT COLONEL DAN S. McMILLIN**

ONE of the earliest and most important assignments of the 19th Armored Cavalry Group was the testing of all tank battalions of Western Germany, with the exception of its own attached battalions. Undoubtedly the testing of the units of the 2d Armored Division proved most informative and most instructive to our group. Utilizing all the splendid resources and the wealth of armored experience within the division, the combat command and division staffs introduced features into the tests that took the problem itself out of the ordinary and placed it in the category of a thoroughly planned and enthusiastically executed combat test.

Army Training Test 17-7 prescribes the basis on which the tank battalion proficiency test is to be administered and rated. The excellence and all round scope of this annual test is limited only by the imagination, in-

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itiative and ingenuity of the testing group. During both the planning and execution phases, experienced personnel have found that there are three primary factors which must be included in order for the problem to be taken out of the realm of an ordinary field maneuver and become an intensely interesting and educational type of combat attack to the participating unit.

First—The tank battalion test must stress training in conjunction with the actual test itself. Today, with limitations placed on time, money, and personnel, every occasion for concurrent training must be exploited to the fullest extent. Here is one of those relatively scarce opportunities to train your unit in the value of combined arms working in one closely integrated combat team—armor, infantry, engineers, artillery and air. Write and conduct each test so that major errors are corrected as they occur, and the tested unit personnel see the correct methods of employment. Far more is accomplished by on the spot corrections during the test than by calling attention to the errors during the final critique. As part of your test,

write in and employ both aggressor and friendly air. Never for a moment allow your tested unit to forget the ever-present threat of aggressor air or the assistance which is theirs by calling on friendly air. The intelligent use of air during the problem may well mean the success of either the attack or defense phase. The actual use of air at every opportunity trains your tankers in the capabilities of the fast fighter-bomber type aircraft of today's modern warfare.

Second—Stress and demand realism throughout. Without realism any field test at once becomes another routine combat drill, in which the enthusiasm of the participants, umpires included, fluctuates from zero to a minus 10.

In recent tests conducted for battalions of the 2d Armored Division, exceptional use was made of pyrotechnics to supply realistic tank and artillery fire and air strikes to the attacking battalion. A generous supply of blank ammunition for all types of weapons afforded the necessary realism for the tankers and armored infantrymen. Throughout the entire test, an artillery fire simulator team, tied into the action by radio com-

munication, and well supplied with pyrotechnics, moved with aggressor and friendly forces. Charges of TNT, set at strategic points, represented mines, artillery and booby traps. Concentrations of artillery were represented by smoke. The careful planning and execution of this phase of the plan was so well accomplished that at one point during a particularly heavy "shelling" of a combat team attacking through woods, one veteran tank commander was heard to remark, "D . . . if I don't feel like starting to duck again."

A tank destroyed by ground fire or air attack can be realistically portrayed by an umpire rolling a red or green smoke grenade under the vehicle. At the same time, the destroyed tank runs up an orange flag and turns its tube to the rear. This method gives realism to the combat area, and at the same time affords a certain amount of satisfaction to the tank commander and gunner, as he can look to the front and actually count the number of "burning" aggressor tanks.

On the final objective, closely coordinate with the artillery and bring in a live artillery concentration ahead of your assaulting armor. It adds to the test and allows the many new and inexperienced men now in the army to see the close support which modern artillery can offer. If the umpires are in thin-skinned vehicles, drop them off at observation points prior to going into the final assault phase.

In furtherance of realism, insist on the use of camouflage in the assembly and attack positions and carry this camouflage throughout the problem. What appears to be an evergreen tree in the distance turns out to be a tank. In one tank battalion of the 2d Armored Division, the use of camouflage on tanks and APC's was so skillfully carried out that it was difficult, except in completely open areas, to pick up any of the attacking force. Allow tank crews to use their own initiative in the arrangement of natural camouflage. Point out the good examples, and at the same time explain why other tanks are poorly camouflaged. A photographer, employed to take pictures of various phases of the problem, can be invaluable in supplying material for use in later training conferences.

The umpires themselves are a ma-

ior factor in the building of realism. They must carefully evaluate the effect of friendly and aggressor fire and assess casualties accordingly. Means of marking vehicular casualties has been previously covered. Personnel casualties can be tagged and sent back through normal medical evacuation channels. A check of the number of casualty tags at the aid station against the number issued gives a good reading on the effectiveness of the battalion evacuation plan.

An aggressive and determined aggressor force perhaps contributes more toward realism in the test than any other single factor. Select your aggressor force and commander carefully. Pick a commander that is known for his energy, imagination, and ability to size up a situation and react quickly. He should be intimately acquainted with the terrain over which he is to operate. Lacking previous knowledge of the area, the aggressor commander should make a thorough reconnaissance of the battle zone, study the critical terrain and approaches, and formulate plans for the attack and the defense. Since it is the tank battalion and not the aggressor force being tested, it is well to acquaint the aggressor with the friendly attack plans. In this way a meeting engagement can be effected, and the action will take place on the critical terrain features and approaches. In addition to adding realism to the problem, an alert, intelligent aggressor commander can offer excellent comments on actions of the tested battalion for the umpires to use in the final analysis and rating.

Third—Similar to practically every other phase of military operations, the tank battalion test is successful only in proportion to and type of control that is exercised. Control, control, control—this must be stressed throughout. Only one word of caution here is that the problem must not be overcontrolled to the point that the action and the enthusiasm of the unit suffer. First in the control channel come the ability, common sense, and experience of the umpires themselves. Umpires must be carefully selected and experienced enough to render sound, logical decisions throughout the test. The tank battalion can be made or broken by this test, so they deserve the best in umpiring.

During the conduct of the attack

or defense phase, it is an artificiality to bring the action to a halt administratively. (This administrative halt is reserved for an emergency in which lives or property may be seriously endangered by the action.) So often on maneuvers or tests one hears an umpire inform the company or tank platoon commander—"You are held up here for one hour." Not why, just that they are held up. This is a combat situation, and the umpire must give a realistic combat reason for slowing up or halting the action. "You are being fired upon by 4 SP guns and 6 tanks from the high ground on your right flank." This gives the command something concrete on which to base its actions.

All umpires' vehicle radios, both friendly and aggressor, must be on a common channel. In this manner, control can be carefully maintained throughout the problem. By calling the aggressor umpire, any umpire of the tested unit can ascertain just what is facing his force at any particular phase of the attack or defense, and he can make his decision accordingly. In fast moving action, it is the only means by which the chief umpire can keep units located in the attack area. With the play of the aggressor forces on a one for one basis, and by close effective radio tie-in, all meeting engagements, attacks, and withdrawals can be umpired to the mutual satisfaction of both the friendly and aggressor forces.

In conclusion, I have presented only a few points that go into the organization of a well rounded and well executed test. ATT 17-7 must be carefully studied and integrated into the problem as a testing basis. Keep realism and control foremost in your mind when drafting your problem. Remember, it serves as a training medium as well as a test. Your umpires must report in sufficient time that they may be minutely briefed on the plan and terrain. Finally, all umpires must allow the tank battalion to fully exploit the basic principles of armor—mobility, firepower, and shock action. Today with a premium placed on the use of ranges and maneuver areas, as well as the limitations on training time, this test affords an unusual opportunity to present to your command the terrific power and massed offensive action that belongs only to armor.

An

INTERVIEW

by CAPTAIN OLIN C. HARRISON

INQUIRING REPORTER (to a company commander who has just received his third consecutive rating of SUPERIOR on a big inspection): Captain, to what do you attribute your company's success in getting these splendid inspection ratings?

Capt. Smith: That's easy. My men just do their work well—in fact, very well. The credit must go to them.

Reporter: Come, come, now, Captain; don't be coy. I know your company is made up of average soldiers, and that they are in general no better and no worse than those in other companies which never get ratings like yours. The secret must be in the way you operate. Now, what do you yourself do to get such fine results?

Capt. Smith: I didn't mean to be coy about this, and I certainly don't mind telling you all I can about my methods. I repeat that my men are responsible for the company's ratings. That has to be true; there is a vast amount of work to be done in a company, and obviously I can't do it all. I can't even check on every single thing, though I do check on as many things as I can. Realizing this, I have tried to make sure that my men know what they are to do and how to do it; perhaps most important, I have tried to make them want to do their work and do it well.

The most important single item in my company is a chain: the chain of command. Now to be perfectly realistic, we can't think of this as a normal

chain, made up of one link after another. Rather, it is in a triangular form, with the biggest link at the top, to which are attached several slightly smaller links to each of which is attached several still smaller links, right on down to the smallest. I am the big link at the top; the next links are my officers; then the noncommissioned officers follow according to their jobs, right on down to the squad leaders; and the smallest links are the men in the squads.

Each "link" is responsible that the links attached to him carry out the orders he issues. But more than that, he is responsible that his links know how to carry out his orders—and that includes doing their everyday jobs. I know you can't take a new man and expect him to automatically know all about his duties; he must be taught methods and procedures. If he doesn't know, he must be encouraged to ask questions; and his questions must be courteously received and must be carefully and correctly answered. If one of my links asks me a question, I feel that I must give him the answer; if I don't know it, it is my job as the company commander to get it.

So you see, I don't use the chain of command just as a means of disseminating orders and instructions; I use it to insure that every man knows his job and how to do it. If a man doesn't know this, I consider that it most likely is the fault of his immediate superior, who hasn't seen to it that the man was properly taught.

I'm afraid we sometimes have a tendency to forget that the main purpose of each link in a chain is to hold up the links under it—not to exert pressure on them.

Reporter: That sounds fine, but it also sounds impossible to me. The way you put it, every link in your

chain of command must know everything about the jobs of every man under him, and you have to know everything about every man's job. From what I have seen of the Army of today, I'd say you can't achieve that standard.

Capt. Smith: I don't claim to know everything about every job in my unit, nor do my links know in detail the jobs of all the men under them. But we must know enough about the jobs of the men under us to be able to tell whether they are doing their work right, and we must be able to tell them where to get the answers to their questions if we can't answer the questions in detail ourselves. That takes a lot of studying of manuals, regulations, etc., but it pays off.

Reporter: That seems plausible, and I can see how your methods tend to insure that your men are competent—that they have the ability to do their work. But how do you inspire them to want to do their jobs well? That's what appears difficult to me.

Capt. Smith: Well, in any job my company has to do—whether it is policing the company area or engaging in a fire fight with an enemy—I want my men "on my side." I find that I don't have to baby them or coddle them to get them on my side; in fact, my experience is that such methods don't get good results at all. But I do want my men to respect me, and to feel that I am fair and just. I try to gain their respect by proving that I know my job, that I can and will work just as hard as I ask them to, that I have no favorites and that I don't have it in for anybody. Then, I try to make sure that all the links in my chain of command operate the same way.

Speaking of fairness and justice, I find that it is absolutely necessary for

So far as is known, this interview did not actually take place and the characters are fictitious. However, junior officers, aspiring to command responsibilities, will do well to emulate these qualities of outstanding leadership as evinced by the results obtained through the continuing and untiring efforts of the Company Commander, Captain Smith.

me to have definite policies on how to deal with certain situations, problems, and events. My "policy file" isn't elaborate; it consists of a few pages in my notebook, and a lot of it I carry in my head. I don't think it is essential that my men know exactly what all my policies are; but I do want them to feel that I am taking action according to a plan, and not just according to how I feel that day. For example, I try to be at least somewhat consistent in the matter of non-judicial punishment, and not to give one man two weeks extra duty for an offense while another man, with a similar record, gets only a reprimand for a similar offense.

Another thing I try to do is to keep my men informed, as much as possible, about what is going on. Anyone who has ever been in a command position knows how easy it is to attend a briefing, be it for an attack or an inspection, then unthinkingly come back to his unit and start issuing orders without ever explaining why these orders are being issued or what their result is expected to be. I find that by calling my men together and going over with them the job at hand, I get more efficiency because they are in position to take intelligent action if something doesn't go according to plan—because they know what the end result is expected to be. And there is immeasurably more enthusiasm among my men when they know what we are aiming for—which is only natural.

Perhaps I can illustrate this. Suppose you and I are in Brownsville; Jonesburg is 10 miles away, over a steep ridge; there are no roads between the two places, only rough foot trails. I give you a small package and say, "Take this to Dr. Doe in Jonesburg." It is likely that you will take

all day to get there. If I add, "It is important that the package reach Dr. Doe as soon as possible," you will hurry right along and make pretty fair time. But if I say, "The package contains serum which can save the lives of 50 people who are desperately ill," you will knock yourself out to get there faster than anyone would think humanly possible.

This psychology works on most humans, including those in the Army. Yet I have seen a great many commanders who expect enthusiastic, backbreaking effort from their men in response to a directive that has no more meat in it than "Take this to Dr. Doe in Jonesburg."

Back to my main topic: I also want my men to keep me, and their other leaders, informed of how they are feeling and thinking and of what their problems are. My men are certainly free to go to the Chaplain or the IG if they want to, but I feel a definite sense of failure when they do so. I try to make them feel that they can come to me, and to the other officers in the company, and discuss any problem they have—whether it has to do with the company or is a strictly personal matter. My officers and I try never to forget that a problem which seems trivial to us may well be vitally important to the man who is struggling with it. I can't give you a hard-and-fast rule on how we deal with the problems presented to us, because they vary so much. I can say that we listen carefully, try to get all the facts, and try always to give either help or good advice. Sometimes the advice might be as simple as "Quit worrying about such trifles and get back to work"; but even then the man may feel considerably better for having gotten something off his chest. **Reporter:** You still haven't told me

anything about how you build your company up to a peak just at the right time to enable you to make such fine ratings in your inspections.

Capt. Smith: I haven't said anything about that because I can't. I don't have outstanding peaks of performance if I can help it, because a peak usually means a depression either before or after it. My experience is that once a unit is rolling along, it rolls easily. If it is a good company, the men know it and take pride in it; then they'll work that much harder to keep it good and to improve it. Momentum, once gained, can be maintained with comparative ease if a constant effort is exerted. That brings up another thing I try very hard to do: keep the company's general condition as nearly perfect as possible all the time, instead of working in spurts. For example, before the last inspection my company put in very little extra time, while I know that some of the other units were working day and night. Yet we came out on top.

Reporter: Captain, this has been very enlightening. I have one last question.

Can you give me what you consider to be the most important item in your catalog of policies and procedures for successful operation of a company?

Capt. Smith: I think I can. I believe my guiding principle is that my company is made up of the men who are assigned to it.

My vehicles are important, my weapons are important, and so are many other inanimate items.

But any time I forget that my men are my company, and aren't just in my company, I'm going to deserve what I am almost sure to get—poor results from greater effort.

CAPTAIN OLIN C. HARRISON, Armor, served in Europe during World War II. Subsequently, he was assigned to Fort Knox. Having recently completed an overseas tour of duty with the 14th Armored Cavalry Regiment, he returned to The Armored School where he was assigned to the Training Literature and Reproduction Department.

RECENT ARMOR DEVELOPMENTS

FROM time to time new pieces of equipment are revealed to the general public. On occasion the entire vehicle, in its original form, is being displayed. In other cases, it might be an adaptation to be installed on a piece of equipment already in use. Here we have depicted both types. One type is a brand new British tank and the other three are new adaptations for standard American vehicles.

In the upper left-hand picture is the "Caernarvon," the new heavy tank of the British. Official details on this vehicle are scarce, but the British Information Service, who supplied this photo, state that it has better armor and a more powerful engine than the "Centurion." This new tank will probably complement the already tested "Centurion" rather than replace it. The "Caernarvon" will soon undergo exhaustive trials both in England and abroad.

In the lower left-hand corner is depicted the M48 Medium Tank with a blister-type machine-gun mount which was designed by the Detroit Tank Arsenal and approved by Army Field Forces to reduce the casualties in the ranks of tank commanders. It permits operation of the gun without exposing the gunner. This new turret-type mount provides for all around battlefield surveillance, aiming, firing, clearing jams, reloading, and even for replacing the gun or sight without requiring the commander to expose himself. The mount is operated manually.

In the upper right-hand corner, the T141, primarily an anti-aircraft weapon, is shown for the first time. It consists of twin 40mm guns (the Americanized Bofors), mounted on the chassis of the Walker Bulldog light tank, the M41. Each gun fires two-pound projectiles at the rate of 120 rounds per minute to a range of three miles. This weapon is one of five ordnance items built on the same chassis. It exemplifies the effort of the Ordnance Corps to reduce the variety of engines, transmissions, etc., in order to simplify the production, transportation and supply problems of the Army.

In the lower right-hand corner the T51 recovery vehicle is shown. The T51, our largest recovery vehicle, was conceived as a means of saving both a disabled tank and its crew under fire. It consists of an M48 tank body carrying a power boom capable of handling our medium and heavy tanks in recovery operations. It is powered by an Ordnance-Continental engine, air cooled, super charged to 1000 horsepower. The load hoisting capacity is 30 tons. **THE EDITOR.**

Photo—Courtesy of BIS and US Army





by BRIGADIER GENERAL PAUL M. ROBINETT

Adequate engineer support is essential to the maintenance of Armor's mobility. To keep abreast of constant changes is a continuing challenge to Armor and Engineer personnel.

ARMOR'S ENGINEER PROBLEM

THE tracked vehicle gave the Army increased cross-country mobility but it also made new and very enlarged engineer problems. Some of these problems were satisfactorily solved before or during World War II but many probably still remain today. Even a superficial nontechnical survey of the problem should serve a useful purpose at a time when the future of American ground force organization and concepts of battle remain in the balance and when we are more than ever on the defensive. It is especially important to study the training and planning phases before the opening of a campaign and the meeting engagement where the training and planning are put to the test. A comprehensive and exhaustive study would be a major undertaking and far beyond the scope of this article.

The ponton bridge was very successfully employed in the American Army as early as the Civil War, where it played an outstanding role in General Grant's campaign which brought the conflict to an end. Continuing as a favorite for river crossings, it was

not greatly modified until modern equipment made this necessary during and after World War I. But even these first improvements were not adequate for the heaviest equipment of World War II. For a time, however, existing bridging equipment and not tactical considerations had a dominant influence upon military characteristics of cross-country vehicles, which the mechanical genius of the automotive industry made possible. In the end this restrictive influence was overcome and a new bridge was designed capable of carrying modern tactical equipment required in organization. This was the armored engineer ponton bridge, the brain child of Maj. Gen. Lunsford E. Oliver, who, at the time, was the Armored Force engineer at Fort Knox.

The armored engineer ponton bridge developed prior to United States entry into World War II proved its worth on many occasions throughout the war. A rather unexpected one was in connection with the landing of Combat Command B (CCB), 1st Armored Division, on the coast of Algeria in November 1942. Over the objections of the Royal Navy the bridge was successfully married up with three British prototypes of the landing ship tank (LST) and,

with the assistance of improvised waterproofing, was responsible for placing approximately 130 combat vehicles and personnel ashore in a very few hours. This was a feat that could not have been anticipated either by the French or by the Germans and was largely responsible for the early collapse of the relatively strong defenses of Oran. Prior to the landing in Africa, American doctrine had naturally conformed to American equipment and water transportation. It contemplated the landing of tanks on the beaches from boats only capable of landing single tanks. The mass of armored equipment would be unloaded at docks after they became available. After Dunkirk the British, responding to the suggestions of Churchill himself, with commendable imagination had developed three LST's from shallow-bottomed tankers used to transport oil from Venezuela to the refineries at Aruba and Curaçao. These were the ships available to CCB. But without General Oliver's ponton bridge equipment carried as a deck load and launched over the side of the grounded tank carriers and without waterproofing the reduction of Oran would have been a slow business.

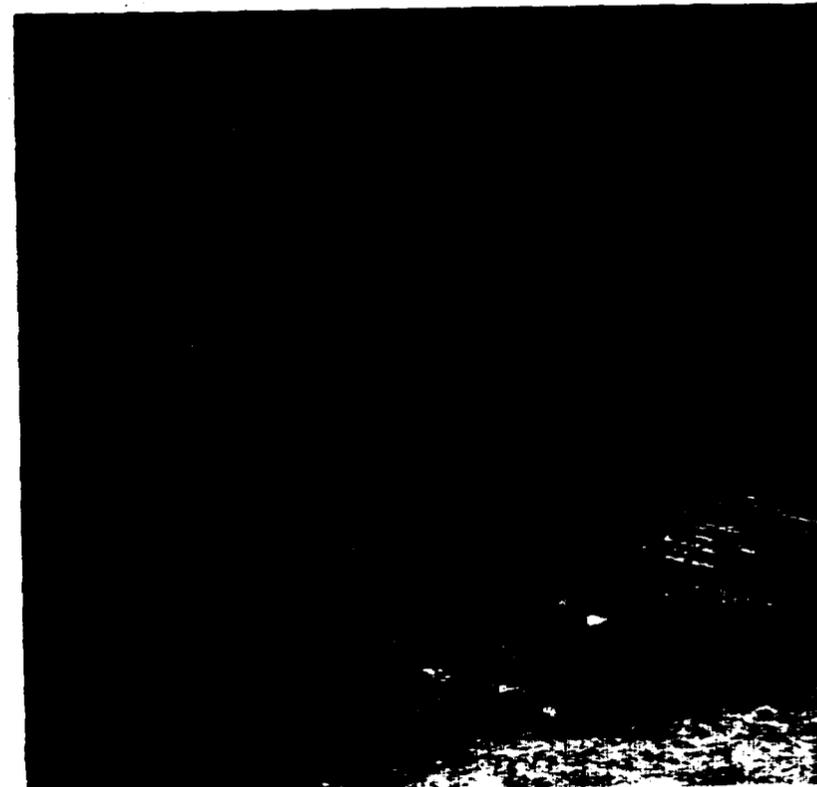
The unprecedented success

achieved by Armor at Oran was the stimulus needed to insure the production of a fleet of landing ships tank within a new shipbuilding industry that was established along the American inland waterways. It was these ships that featured in many amphibious landings around the world and made the great invasion of Europe relatively easy to accomplish. Waterproofing was also perfected. Standard kits were built for each type vehicle and all maintenance personnel trained in their use. But it must be noted that the planners had not envisaged the full complexity of the problem of landing armored equipment over the beaches before the African operations began. This is not written in criticism but only to point out the challenge posed for the planners.

Even though superior in floating bridges the United States was behind in fixed bridges prior to World War II. In this field the British Bailey bridge was superior to anything American engineers had developed. It was quickly adopted, however, and made enormous contributions in all the great operations in Europe and in many lesser ones including the African Campaign. But again will American planners always be so fortunate as to receive ready-made an answer to their problem?

American road building equipment was superior from the very beginning. It did extraordinary service on distant shores around the world. But the initial equipment included the 5-ton R-4 dozer which was much too small for the support of an armored division. Initially all engineer equipment organic in the armored division, except the ponton bridge, was inadequate for the purpose. In addition, all tank recovery equipment was inadequate. This last equipment did not pertain to the armored engineers although it probably should have because the mere handling of heavy material, such as tanks, is frequently an engineer problem. During the course of the war great improvements were made and the engineer equipment caught up with the heavy combat equipment, but this was only after trial and error.

The greatest engineer shortcoming in World War II, one that probably still remains, was in the detection and removal of mines. Mines are always



Obstacles such as the Rhine River presented a constant challenge to the American Forces during World War II. To conquer them was victory—to fail—defeat.

a menace to an armored command tending as they do to destroy mobility—one of the most important assets of such an organization. As the war progressed the engineers intensified the study of the problem and brought out equipment for both detection and elimination of mines. Some of this equipment, notably the detector, proved successful. But other items such as the "snake," the Mine Explorer TIE3 and the "plow," for example, were not notably successful.

To overcome mines some commanders had a tendency to fall back upon expediency and consider the tank as just another piece of expendable equipment without due regard to the principle of economy of means. There may be occasions where the wholesale expenditure of tanks on reducing a minefield may be justified, but resources must be great and the anticipated results equally great before such a procedure can be justified. On one occasion in Africa a British brigadier expended 30 tanks in breaking a minefield which held up his advance to the east. He succeeded in getting through the minefield but accom-

plished no important results after he had done so. The enemy had already withdrawn from that part of the front, a withdrawal which was indicated by the very nature of the terrain itself. No doubt there were many similar instances of wastefulness during World War II.

The passive threat of mines and of man-made or natural barriers to mobility is of such transcendent importance to the mobile army that special engineering units provided with specialized equipment, itself under continuous study, should be created. At least one of these units should be located at The Armored School where it should be employed in improving and developing new equipment and techniques for overcoming all obstacles to cross-country mobility. This offensive engineer unit should not be hampered by the thinking of the engineer unit charged with the development of equipment and measures for stopping tanks nor by the short-range thinking of armored officers. The mission of such a unit should be so clear that it could not be diverted to some secondary engineering

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problem. The defensive and offensive units should always be pitted against each other, but if anything, the offensive unit should be the stronger. Thus, a healthy competition would be developed between the two which should contribute to the solution of both problems.

Armored combat units themselves should strive constantly to improve their own capabilities to overcome mines and obstacles. Measures appropriate to all echelons of command from the individual tank to the higher levels should be developed and personnel instructed in the execution of these measures. This should result in a reduction of the number of vehicles immobilized because of faulty operational procedures or poor judgment on the part of the vehicle commanders or drivers and in speeding the reentry into battle of those immobilized through unavoidable accidents or enemy action.

All those who commanded Armor during World War II can recall many incidents where improvisations, made possible by fertile minds, paid enormous dividends. One that received the recognition of General Eisenhower was the device designed by Sergeant Curtis G. Culin, 102d Cavalry Regiment, which made possible the reduction of the German defensive positions in the hedgerows of Normandy. Culin devised a simple arrangement consisting of a number of prongs made from angle iron which were welded to the front of the tank, thus permitting it to force its way through the hedgerow rather than be stopped or belled down. Although this improvisation was highly commendable, the problem of the hedgerows could have been resolved in training before they were encountered in actual battle, thereby saving lives and precious time. It is suggested that the failure to anticipate the difficulties of traversing the hedgerows and to provide suitable methods and equipment of doing so is still worthy of careful exploration and study by the Army Engineers.

Another example, already referred to, was the joining up of the American ponton equipment with the British prototype LST which, with improvised waterproofing, made possible the successful armor landing in the vicinity of Oran and the quick re-



"On the spot" improvisations hastened the end of the war but prior planning is still worthy of careful exploration by both Engineer and Armor personnel.

duction of that city. But improvisations such as these will become less necessary or even unnecessary when deliberate planning and experimentation have explored the engineer problem to the ultimate limits of human ingenuity.

During the time I was commandant of The Armored School no engineer officer or troops were available. Experimentation at that institution was, therefore, restricted to the field of improvisation. Many fine contributions of this order were made by individuals but no broad and thorough attack of the engineering problem was possible at that time. No doubt there have been improvements since then, but armor officers should always be aware of the engineering aspect of their problems and seek to bring into the mobile arm those Army Engineers who are keen to explore the question of increasing cross-country mobility. This would help to overcome icy inertia that otherwise will eventually freeze ground forces to static warfare. It is a psychological fact that the average human being is defensive-minded and likes to become established in fixed situations—even thinking men conform to the pattern of the average—and this fact is one of the fundamental reasons why the defensive is believed by many to be stronger than the offensive. It also explains why all the great captains have been mobile-minded and offensive in their thinking and acting. They were never willing to undertake the defensive

unless the overriding considerations made it mandatory that they do so and even then they preferred the active defense or, if this were not possible, defense by counterattacking the opposing force after it had become disorganized.

Mobility should not be overemphasized, even in the mobile arm, until it becomes a handicapping catchword. Mobility must be joined to power and directed on vital objectives if it is to be truly decisive. Armor must, therefore, embody in proper proportions all the powerful means of destruction.

It is the combined mobility and firepower encased in the best possible protective covering that make Armor the arm of decision when employed in suitable terrain by a great commander. Adequate engineer support is essential to the mobility of such an arm. Without this support the power inherent in heavy cross-country equipment would be sacrificed and its cost could not be justified. Neither engineers nor armor personnel should be satisfied with the progress so far made. Both should strive for greater mobility in all types of terrain. Improvements in cross-country equipment and engineer support must still further reduce the retarding influence of natural and man-made obstacles to mobility under all climatic and weather conditions. This is one of the most important challenges to the Army Engineers of today and of the future.

FROM THESE PAGES

65 Years Ago

At the beginning of a war these controversies between extremists as to the relations and duties of the different arms of the service are productive of baneful results. If our infantry commander accepts the claims and statements of the cavalry and fosters expectations of it which are not fulfilled when the time for action comes, he is disagreeably and sensibly surprised, and a commander who is surprised in a campaign is already half beaten. If he shares the unfavorable opinion of the capabilities of cavalry as represented by some writer whom he has read, who is inimical to that arm, then he will not apply it, is not in harmony with it, and unity of action is rendered impossible, and failure is the natural result.

Controversy can only cause mischief. The best results are only secured by both arms acting in entire harmony; they must become so thoroughly acquainted with one another on the drill field as to gain a clear understanding of how each can make application of its special and characteristic strength to re-enforce the characteristic weakness and compensate for the deficiencies of the sister arm.

Letters on Cavalry

PRINCE KRAFT ZU HOHEN LOHE INGELFINGEN

50 Years Ago

As we read the various reviews and criticisms of the South African War, and particularly of the English and Boer cavalry, I believe we have reason to feel more enthusiastic than ever over that arm in our own service. The weakness of the English cavalry at the outset of the war was often shown as it endeavored to cling to old traditions by holding its cavalry to shock action as its only defense, and making it necessary to come into actual contact with the enemy before a blow could be delivered.

In contrast to this, the dismounted action of the Boer cavalry was effective, prompt and generally unexpected in the particular quarter owing to their extreme mobility.

The long line of battle front presents many different phases of combat. Cases will still arise where cavalry intact and protected by the nature of the country can surprise, charge and deliver a blow by contact and shock. Fresh mounted troops will still be able to do good work against an enemy that has been routed and is retreating in disorder. The training of our cavalry for work of this kind should not be neglected.

The principal role of our cavalry to-day, however, is to be able to make quick movements, and when the fight comes, to fight on foot, the horses simply being a function of their mobility.

Some remarks on the Link Strap and Pistol Holster

LT. GEORGE V. H. MOSELEY
First U. S. Cavalry

25 Years Ago

The combat employment of a military weapon is based primarily on its characteristics. Consequently it is necessary to know its powers and limitations to un-

derstand its tactical use. Machine guns have certain peculiarities possessed by no other weapon; these make them particularly suitable for employment with cavalry.

In discussing the use of the machine guns, certain principles laid down in the employment of Cavalry, should be kept in mind, viz:

1. Cavalry's mobile armament may secure the power of movement by diminishing enemy fire.
2. The proper employment of fire power will always aid the success of mounted combat.
3. Rapid movement and fire usually go together.
4. Mounted and dismounted action should be supported by fire power whenever necessary.
5. The characteristic action of cavalry is rapid mounted movement supported by effective and intense fire.

From these principles it is seen that machine guns must and do fulfill certain requirements, viz: mobility, rapidity in going in and out of action, flexibility of fire, ease of control, sustained intense fire power of great volume, all around traverse, and direct as well as indirect fire.

Employment of Machine Guns

LT. WILLIAM P. CAMPBELL
7th Cavalry

10 Years Ago

Warfare has been and always will be a conflict between the offensive and the defensive. New inventions will often instill fresh power into the one or the other form of action. The offense always seeks to destroy the power of the defense, and in order to do so, naturally must possess greater power—whether in cannon, maneuverability or leadership.

The great masters of war have invariably applied correct principles in their successful operations, and these principles are the same whether applied by Hannibal, Alexander or Napoleon. An analysis of Napoleonic campaigns will reveal frequently recurring patterns that laid the cornerstone to success. First, there was usually a rapid and secret concentration. This almost invariable preliminary was often followed by the favorite Napoleonic maneuver from a central position designed to defeat opponents in detail. On the other hand, by means of rapid, secret marches, Napoleon would at times reverse the front by placing the bulk of his forces astride the enemy line of communication. He would then follow these strategic maneuvers by launching the tactical battle.

In either of these maneuvers, rapidity or mobility was the essence or key to success. Napoleon's first objective was to place his armies in a strategically advantageous position from which he could apply his superiority in leadership, weapons and morale in the tactical battle or battles to follow. The strategic stage set, the tactical battle was considered merely as a means to accomplish the final strategic victory. The speed or mobility which was so essential to Napoleonic maneuver was made possible by highly seasoned infantry and the mass employment of cavalry.

The Role of the Tank in the War of Today

BRIG. GEN. EDWIN E. SCHWIEN

A TANKER'S APPROACH TO AN INFANTRY PROBLEM

GROUND MOUNTED LIGHT MACHINE GUNS

by CAPTAIN NORMAN F. PRIEST

SINCE the day Colonel S. L. A. Marshall's book, *Men Against Fire*, was put on sale, there has been a constant struggle to strike a happy medium on the issue of accurate, aimed, small arms fire versus a volume of area fire. Both sides of the issue are equally important and it is not the intent of the writer to say or imply that one outweighs the other. However, the writer does intend to show that the accuracy of the ground mounted light machine gun can be greatly improved. Considering the fact that infantry defense lines are built around its machine guns, it then becomes imperative that we receive the utmost in accuracy as well as good area fire from these weapons.

Area fire can be achieved by employing sound tactics with proper command and discipline, but accurate fire depends on know-how and perfected mechanics—it cannot be commanded.

Before going any further with this article it might be well to explain that the mass training of replacements, as presently conducted, causes one to stop and scrutinize very closely, small

details that are quite often overlooked in a regular tactical unit. When the same small problems are faced day in and day out, they soon reach a stature out of proportion to their actual importance. Such is the case of the light machine gun. It is a superior, versatile weapon that has spoken well for itself in three wars. However, we cannot always rest on our laurels, but must constantly be seeking improvement, not only in ourselves, but in our weapons and all the tools of our profession. This is the story of one of those small training problems and a recommended solution.

The problem of light machine gun accuracy first came to this tanker's attention when it was noted that very few of the trainees were shooting a qualifying score on the light machine gun transition course. Why? The instruction was sound; the range was run according to the book; and the desire to do a good job was uppermost in the mind of each individual concerned.

Finally, on a routine walk down the firing line it was discovered that about 50% of the front sights had vibrated loose, which meant that these guns were no longer zeroed. That's simple. Tell the assistant instructors each to carry a screw driver and keep the front sights tight. No, that isn't the answer because they only vibrate loose again. What provisions are you going

to make on a transition range to zero every gun each time this mechanical failure occurs? There seems to be no ready, practical solution to this problem except to watch every tracer carefully and hope the proper amount of "Kentucky Windage" is applied to move the succeeding ball rounds into the target.

Let us analyze the front sight and see what brings on all of this trouble. Right away we see that its engineering is not as mechanically sound as possible because its vertical adjustment depends on a friction screw through a slot type hole. The lateral adjustment depends on a friction wedge held in place by another screw. With further study we note that the heads of both screws are susceptible to damage by any improper tool.

Why is it necessary to put up with a sight that is not as superior as the gun it aims? There must be a better way to manufacture a front sight. This problem does not exist on the tank machine gun because the gunner has two simple little click-type adjusting knobs with which he adjusts the telescopic sight when he zeroes. He does not have to depend on an assistant with a screw driver and can easily adjust his sight any time he feels that it needs attention.

For years the American small arms have had excellent, sturdy, well-engineered, click-type rear sights. The

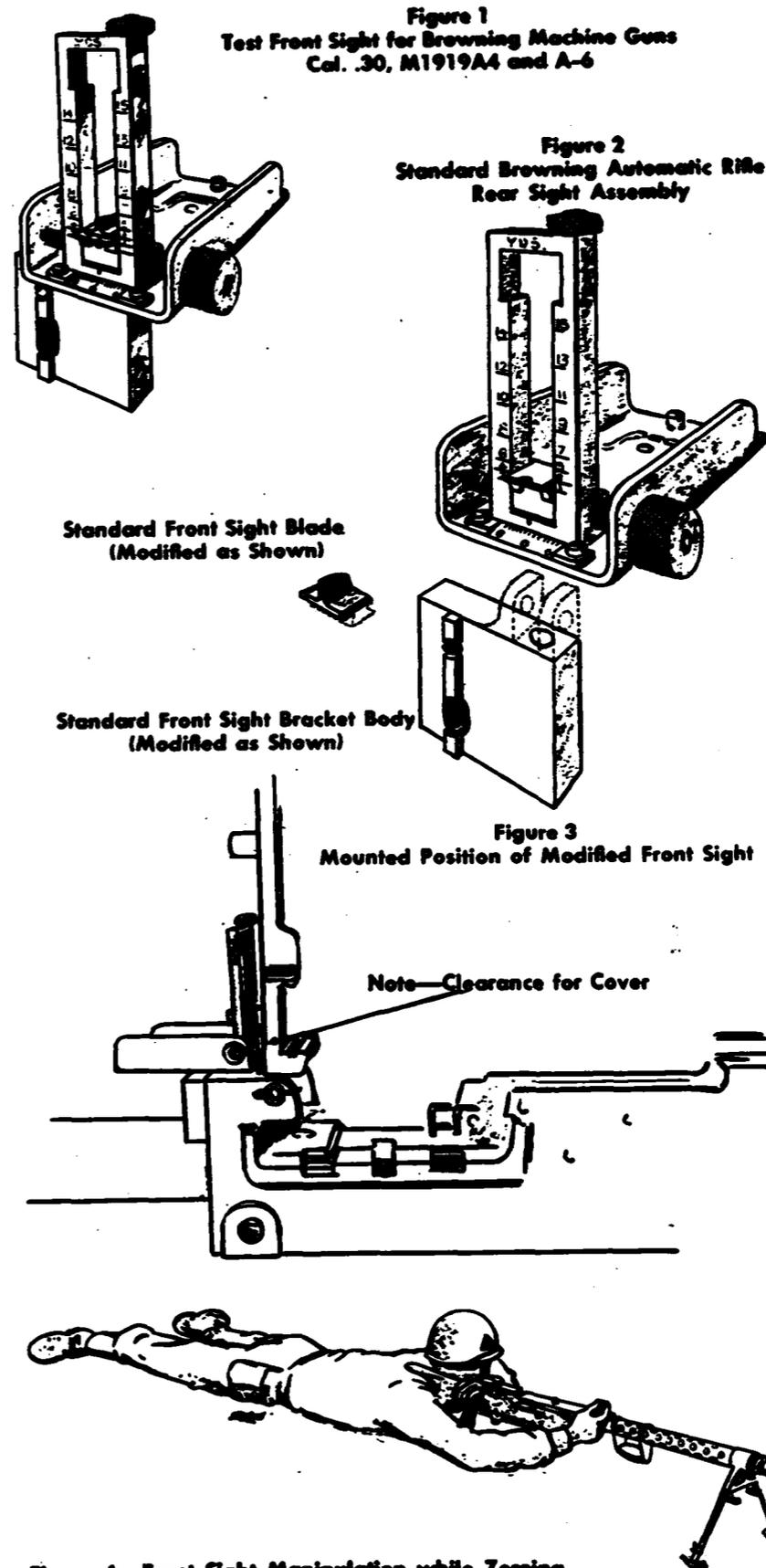


Figure 4—Front Sight Manipulation while Zeroing
ARMOR—November-December, 1953

ballistics of our ammunition have been worked out to the Nth degree and incorporated into the range scales of our small arms rear sights. However, what good is all of this if the front sight is not compatible?

So much for the theoretical side. A simple workable answer has been made, tested, and proven here in Combat Command "B" of the 1st Armored Division. The idea is to combine the Browning Automatic Rifle rear sight and mount with the light machine gun front sight (See Figures 1, 2, and 3). This combination makes a modified front sight that needs no screw driver to adjust it once it has been firmly mounted. The vibrating problem no longer exists. Better still, the gunner can adjust his front sight without the help of any assistant (See Figure 4) and know his zero to be accurate.

Now the range scale on the rear sight begins to take meaning and gives the gunner reasonable confidence that when he sets a given range on his rear sight, he is going to actually shoot that range.

But, alas, you say this clumsy modification is too big and bulky to be practical and juts out in front of the receiver just as though it had a sign on it—"Please knock me off." This is all true, but the idea is there, and it does work. There is no reason why this idea cannot be built into a front sight that is no larger than the present one, and then we will have something.

Very recently, Ordnance has made a start in the right direction by coming out with a sight that has a screw type elevation adjustment, but no lateral adjustment. This is not the answer because it still requires a second man with a screw driver and further requires lateral zero adjustments to be made on the windage knob of the rear sight. There is a difference between lateral adjustment for zero and windage adjustment for wind. One belongs on the front sight and the other on the rear sight.

If the title of this article has led the Infantry readers to believe that the writer, being a tanker, is out of order, please remember that we too sometimes fight dismounted. But the main point is that in this day of combined arms teams, our problems are mutual.

CAPTAIN NORMAN F. PRIEST served as a mechanized cavalry unit commander in the European and Pacific theaters during World War II. He is presently assigned to the G3 section, First Armored Division, Fort Hood, Texas.

ARMOR ASSOCIATION NOTES

Council Meeting

On the second of October, 1953, a meeting of the Executive Council of the United States Armor Association was called by the President, Lieutenant General Willis D. Crittenberger. The purpose of this meeting was to firm up plans for the annual meeting to be held in January, 1954.

Annual Meeting

The annual meeting is scheduled to be held at The Armored Center, Fort Knox, Kentucky, on Friday, January 29, 1954. General Matthew B. Ridgway, Chief of Staff of the Army, has been invited to be the principal speaker. It is sincerely hoped that a maximum number of our membership

PROGRAM OF EVENTS FOR THE ANNUAL MEETING

The program of events for the annual meeting to be held at Fort Knox on the 29th of January is arranged tentatively as follows:

Time	Place	Event
0600	Headquarters Building, The Armored Center	Honors for all visiting general officers
0620	Theater No. 1	Address of welcome by Maj. Gen. J. H. Collier, CG, The Armored Center
0630	Theater No. 1	Address by Lt. Gen. F. L. Parks, CG, Second Army
0845	Theater No. 1	Official opening of Conference by Lt. Gen. W. D. Crittenberger
0850	Theater No. 1	Initial address by Maj. Gen. E. N. Harmon
0910	Theater No. 1	Association business meeting conducted by Lt. Gen. Crittenberger, assisted by the Secretary
1000	Main Lounge, Brick Club	Break
1030	Theater No. 1	Continuation of meeting
1215	Country Club	Luncheon
1345	Dorret's Run	Demonstration: Armor in the Attack
1515	Sadowski Field House	Principal address by the Army Chief of Staff, Gen. M. B. Ridgway
1615	Theater No. 1	Official closing of the conference by Lt. Gen. Crittenberger
1645	Theater No. 1	Meeting of the newly elected council
1900	Brick Club	Reception and Dinner

will be able to participate in this gala affair. This will be the third consecutive year that the annual meeting will have been held at Knox. Two years ago we were privileged to have Army Chief of Staff, General J. Lawton Collins, present the major address. In 1953, General Jacob L. Devers was the feature speaker. Due to the probable attendance of our new Chief of Staff, and he has expressed his hopes that he will be able to be present, increased membership, and the central location for the meeting, it is anticipated that this year's attendance will be greater than ever. Notices of the meeting have been mailed to all members.

Nominating Committee

The President appointed three members of the Council on the nominating committee. This committee is comprised of a member from each component, Regular Army, National Guard, and Reserve. They were directed to prepare a slate of proposed candidates for the governing body for 1954 to be presented to the membership at the annual meeting.

Proposed Constitutional Amendments

There being ten or more active members of the Association present at this called meeting, the Secretary-Treasurer was directed to poll the membership in view of amending the constitution. The proposed changes were covered in the notices forwarded to all members wherein they were asked to vote upon the changes if they were not attending the forthcoming annual meeting. The reasons for these changes are covered editorially elsewhere in these pages.

The first change involves broadening of the membership provisions to include all present or former officers and warrant officers of all services (i.e., Army, Navy, Air Force, Marine Corps) as active members, and all present or former enlisted men as associate members. This includes officers and warrant officers and enlisted men of either regular or civilian components. To accomplish this change, the following paragraphs of the con-

stitution have to be amended accordingly. Amend paragraphs 2a and 2b of Article IV from:

2. The qualifications for membership are as follows:

a. Active members: All general officers of the Regular Army or Army of the United States; and all officers and warrant officers assigned to, detailed in, or serving with Armor shall be eligible. Excepting general officers, any change in official status from any one of the above described conditions will serve to terminate Active membership on the last day of the calendar month within which the change has occurred, and the individual concerned shall assume the status of Associate member.

b. Associate members: Those transferred from Active membership and all other present and former commissioned officers, warrant officers and non-commissioned officers of honorable record in the military, naval or air service, shall be eligible.

to:

2. The qualifications for membership are as follows:

a. Active Members: All present and former commissioned and warrant officers of honorable record in the Army, Navy, Marine Corps and Air Force of the United States shall be eligible. This includes officers of either regular or civilian components.

b. Associate Members: All present and former enlisted personnel of honorable record in the Army, Navy, Marine Corps and Air Force of the United States shall be eligible. This includes members of either regular or civilian components.

It should be noted that this does not alter the other two classifications of members which are: Honorary and Junior members.

The second amendment to the constitution increases the number of elected members of the Executive Council from twelve (12) to eighteen (18) persons. To accomplish this, the following amendments must be made to the constitution:

Change paragraphs 1, 2, and 3 of

Article V from twelve (12) elected members to eighteen (18). The necessary changes are italicized:

1. The officers of the Association shall be as follows: President, First, Second and Third Vice-President, Secretary-Treasurer, Editor and *eighteen (18)* elected members of the Executive Council.

2. The President, the three Vice-Presidents, and the *eighteen (18)* elected members of the Executive Council shall be elected by secret written ballot at the annual meeting of the Association. A plurality of the votes

cast shall be requisite for election.

3. The Executive Council which initially shall consist of the President, the three Vice-Presidents and *eighteen (18)* elected members shall appoint the Secretary-Treasurer and the Editor before the close of the month in which the annual meeting is held. Upon appointment, the Secretary-Treasurer and the Editor shall become members of the Executive Council.

Both of these proposed changes will be acted upon at the annual meeting in January.

MEMBERSHIP DRIVE

As we approach the end of the year and the annual meeting, we believe that it is time to institute a sustained membership drive. Letters have already been dispatched to the chairmen of the overseas advisory boards. One Armored Unit, a National Guard organization, has initiated an intensive drive to apprise all armor officers of the professional benefit to be derived from their membership in this Association. Letters have gone to most stateside Armor commanders asking their support in this effort.

We believe that commencing with this issue all Armor officers will not want to miss any of the articles by Brigadier General Hamilton H. Howze on the training of an Armored Division. This series of articles as a supplement to official publications should prove most helpful to any commander more especially armored unit commanders.

It is also suggested that you check the status of your own membership in order that you might be eligible to attend the annual meeting.

Memberships have shown a steady increase all year but the gap between the number of Armored officers on active duty and the number who are members of the Association is still too large.

This does not take into account the National Guardsman or Reservist, but we feel that their interest in the art of mobile warfare can be increased through membership.

As stated many times before, all profits are returned to the magazine: hence the larger the membership the better the end product—a larger and better magazine. During the past year we achieved a goal of a minimum of 64 pages per issue, and on one occasion published 80 pages. We would like to move up to a minimum of 80 pages, but this would require a larger circulation than we have at present.

ROTATION of ASSIGNMENTS

WHAT is the peacetime mission of the Army? To prepare for war. All things being equal, it is the commanders and officers on the battlefield who win or lose the battle. It is imperative that during peacetime the Army train and develop an officer corps that is qualified and prepared to serve effectively in any emergency under any conditions. The best and most effective means of doing this is by rotation of assignments.

Generally speaking, rotation of assignments is the responsibility of the Career Management Division, The Adjutant General's Office, and the commanders in the field. This Division assigns officers and provides opportunity for schooling; however, Career Management cannot alone develop a proficient officer corps. The overall degree of success attained in developing the abilities of the officer corps of the Army, depends primarily on the initiative, willingness and ability of commanders to effect rotation of duties for their officers.

The complex Army of today has many fields open for an officer who desires to specialize; however, it must be remembered that any officer of the Combat Arms is basically and fundamentally a fighting man. For this

reason, branch material assignments should continue until an officer has completed the branch advanced course and is fully branch qualified. However, in certain individual cases upon completion of three years service, officers may enter certain specialization programs. After an officer indicates a desire to specialize, he may expect at least one full tour in the selected field in order that the Army may extract full value from its investment. Additional tours may be dictated by requirements. Where possible, assignments to specialized duties are interspaced with branch assignments so that the officer will remain fully branch qualified.

The molding of the future high level commander and staff officer begins the day an officer is commissioned. Career Management assigns the newly commissioned lieutenant to the appropriate branch school for basic training in his branch. Upon graduation, he is assigned to troop duty for the first few years of his service: it is during this period that the commander has great responsibility for indoctrination in the duties attendant to troops, command, supply, vehicular maintenance, teaching and the many other additional duties that go with troop assignments.

Career Management controls the assignment of officers upon their graduation from the branch advanced course. Consistent with military needs, an officer upon graduation can expect to be assigned to one of four broad fields, additional troop duty, staff, civilian components or specialization.

The Directed and Recommended MOS, one of the most effective tools of Career Management, was suspended shortly after the outbreak of the Korean conflict. If either or both are reinstated the net result will be more officers qualified to serve in more fields.

Career Management, following closely the officer's development, determines the type of assignment that will meet requirements of the Army and will be most beneficial to the officer.

An officer who has not attained full benefit from his previous troop duty, either due to poor local assignments or unfortunate circumstances may be re-assigned for additional troop duty in order to become fully branch qualified. Then again there may be an urgent requirement for experienced troop officers in some particular unit.

Generally, an officer upon completion of the branch advanced course

*"The rotation of officers for their individual development is possible under almost all conditions. In general, the rotation improves the organization to which officers are assigned, for the work performed is by men with greater perspective. * * * Career Management with cooperation of the commanders can prepare an officer in peacetime for his wartime mission."*

—MAJ. GEN. J. C. FRY, Chief, CMD.

has obtained the necessary schooling and experience to qualify him for staff or civilian component duty. To the staff, the officer brings his knowledge of troops, their problems and their viewpoint. From the staff he learns the planning, coordination, and the operations necessary in a higher command for the successful employment of troops on the battlefield. To the civilian component he brings his background and knowledge of the professional soldier and imparts this knowledge in the training of our citizen soldiers.

The ensuing years to the grade of lieutenant colonel are served in any combination of the foregoing fields. Successive tours on the staff should not be in the same staff activity. Commanders at all echelons should feel the responsibility for developing versatile officers. Continuous effort should be made to assign officers to allied duties such as placing the officer with a supply background in G3 and the personnel man in G4. It is the duty of all of us who are responsible for assignments to avoid too frequent repetition of a type of staff duty.

Command positions are relatively few at the battalion level and an officer may have to wait several years for

the opportunity to lead troops. He should have this opportunity, and the earlier the better. It is here again that the divisional and large installation commanders can do much in assisting Career Management Division in giv-

IN THE NEXT ISSUE:

SELECTION
FOR
FOREIGN
SERVICE

ing an officer the type duty necessary in his career.

The importance of rotative assignments lessens considerably for an officer who has attained the grade of colonel, provided his earlier years have been monitored properly. At this stage of his career, the able officer will be qualified to perform well in many

different fields. There are, however, a few young colonels who due to the world situation have not had the proper rotation of assignments in the past. Take Colonel "A" for example. Colonel "A" is an outstanding officer. During his earlier years he had many various duties up to the grade of captain. At the outbreak of World War II Colonel "A" was on staff duty. Because he was an outstanding officer and commanders desired his experience, he remained on the staff. Although Colonel "A" has had a well rounded career as a staff officer, he needs command duty as soon as possible. Career Management, with the assistance of the commanders in the field, will give Colonel "A" the duty he needs to round out his career.

The principles of rotative assignment applied with common sense will avoid the two major pitfalls which confront us, the production of the professional staff man and the perennial commander.

Career Management strives daily to build a background for each officer which will permit him in time of war to overcome any emergency or obstacle that confronts him. It is the responsibility of each commander to assist in the task of building a highly trained officer corps.

The Revolution: American Military Policy Emerges from the Crucible of War*

by C. J. BERNARDO, Ph.D. and EUGENE H. BACON, Ph.D.

The Navy Solves Some Problems

Early in the war, it was generally recognized that a navy, regardless of size, was an indispensable item in the conduct of successful operations. In fact, during the first three years, most of the powder, ammunition, and guns that were used against the British were captured from them by the unorthodox navy that sprang into existence almost from the very first shot.³⁵ And, while it was not a strong fleet, the faulty administration of the British Admiralty occasioned by a corrupt officialdom, seriously crippled the efficiency of the Royal Navy.³⁶ Even more than this, perhaps, Americans were favored with the advantage of an intimate knowledge of their coast line, harbors, and navigable rivers where light craft could easily put in to lie hidden. These neglected lessons in geography were to prove costly for Britain

throughout the course of the War.

In these circumstances, British admirals moved only with the greatest of caution, allowing the Americans plentiful opportunities to exploit their advantages. Unhindered by the enemy, and unfettered by official corruption, the American Navy depicted a vivid contrast by the vigor of its leaders and by June, 1775, could boast of a superiority on Lake Champlain.³⁷

By the summer of 1775, every State had legalized its own navy.³⁸ On September 2, Washington, acting on his own initiative, created the American Navy by placing a section of the Army on shipboard with the commission to cruise and seize ships of the Ministerial Navy, to or from Boston, laden with soldiers, arms, ammunition, or provisions.³⁹ The success which attended this experiment pointed the way for additional commissions from Congress to private individuals as well as State authorities thereby placing upon the sea lanes a formidable fleet of privateers.⁴⁰

But the difficulties which beset the Army also posed great problems for

the Navy. Each State entered into a spirited competition to fit out ships of every description from square-rigged brigantines to topsail schooners and small boats carrying armament as varied as the number of men who manned them. Privateering, like service in the militia, had a great appeal because of the allurements of increased pay and prizes; but unlike the militia, term of service was not limited to short periods. But while men were plentiful for this service, the Navy went begging for recruits to fill the ships' complements.⁴¹

The stimulus for a stronger Navy, like that for a strong Army in 1775, came from New England. After several petitions from that section, Congress on November 2, 1775 Resolved to build, at Continental expense, a fleet of four armed vessels "for the protection of these colonies. . . ."⁴² This was followed on November 28 by the publication of a set of regulations⁴³ to govern the new Navy in the same manner as the Articles of War, laid down by Congress in June, governed the Army.⁴⁴

If the patriots could not build a

fleet strong enough to check the Royal Navy, they could bring to bear what little they had with telling effect; and if George III and his ministers needed proof of this they had not very long to wait. The value of the small but dauntless American Navy and its contribution to the final outcome would be difficult to determine. But certain it is that without its services vital supplies would not have been obtained; and, the British inability or incapacity to cope with these wasps and hornets of the sea, paved the way for the French and Spanish intervention. From the former, America received direct and tangible aid in men, arms, and ships; from the latter, the utility of dispersing British sea power from the Mediterranean to the Caribbean.⁴⁵ From 1780 on, the pressing need for a strong navy ceased to be a major problem for the Congress. The counterpoise to British maritime supremacy had been established with the Franco-American Alliance.⁴⁶ Unfortunately the same happy circumstance did not visit the Army and Washington's difficulties multiplied as time wore on.

Enlisting and Training the Army

The story of remodeling and re-enlisting the Army is a drama depicting the almost superhuman efforts of Washington to cope with the multitude of difficulties which beset him from every quarter in and out of Congress and in and out of the Army.⁴⁷ In a letter to the President of Congress on November 11, 1775, while complaining of the selfish motives exhibited by some of his officers, he described the situation. The personal motive, he was sure, added to the problem of fixing the organization of regiments, especially when manifested even by soldiers who would not "enlist until they know their colonel, lieutenant-colonel, Major, and Captain, so that it was necessary to fix the officers the first thing. . . ."⁴⁸ Eight days later it had become crystal clear that the men as well as the officers would not reenlist for patriotic reasons alone; and, if the Army was to be kept at some respectable strength, it was necessary to provide a stimulus "besides love of Country, to make men fond of the service."⁴⁹ The wisdom of these recommendations was borne

out by the returns that came in, which, by December 16, were computed at less than 6,000 men, or some 4,000 less than Washington estimated would be needed for defensive purposes.⁵⁰

But added inducements to enlist were viewed with mixed feelings in New England and in the Southern colonies. Although Washington now inclined to the side of a bounty for the men as well as officers, sharp differences of opinion were voiced throughout the country. General Nathanael Greene was sure the payment of a bounty would make it possible to pick the best men, fill up the Army, and keep "a proper discipline . . . and good order and Government in the camp. . . ."⁵¹ John Adams argued just as strongly against the payment of a bonus which he thought would only impose new hardships upon the New England colonies;⁵² and Congress were in no mood to grant any bounty, going so far as to voice disapproval of those already provided by Rhode Island.⁵³ But this was December 6, 1775: the Army had not yet disintegrated.

Toward the end of that month, when the men began to quit their posts, Congress veered toward the viewpoint expressed by General Greene, and by January 19, 1776, each State was advised to encourage enlistments by the grant of a bounty of \$6½ to any man who appeared properly clothed and armed for service; and \$4 to those men enlisting without such arms and accoutrements.⁵⁴ By the 26th of June, Congress had resolved to offer a bounty of \$10 to each man who would enlist to serve for three years; and on September 16, in reorganizing the Army, the bounty was raised to \$20 for short term enlistees. To those who agreed to serve for the duration of the war (and there were few) an additional gift of 100 acres of land was offered;⁵⁵ and one month later an annual bounty of \$20 was promised to every non-commissioned officer and private enlisting for the duration.⁵⁶

Left to itself, the operation of the bounty system by Congress alone, might have produced the desired effect. But with each State engaging to fill their quotas by the grant of similar bounties, and in some cases increasing the amount, it was diffi-

cult to secure men for the Continental Army not only for the duration but also for shorter periods. In many instances this competition rendered it impossible to enlist men for longer than three months at a time. In 1777, Maryland offered a bounty of \$40 above that of the continental bounty "to each able bodied recruit who shall enlist for three years, unless sooner discharged, also a pair of shoes and stockings to be furnished them and each at a reasonable rate."⁵⁷ Bounties were also offered to recruiting officers and any others "who may take up and secure deserters from the continental army in this state [Maryland], agreeable to the resolves of Congress."⁵⁸ This method of recruiting was inevitable in a system dependent upon volunteer enlistments, and it placed the Government in the position of suppliant. For when patriotism and popular enthusiasm no longer suffice to fill the ranks, resort must be had to the practice of financial grants.

All the best intentions of Congress and the States notwithstanding, the bounty system failed to bring much relief to the advocates of a long term army, and induced men rather to seek shorter service with the same promise of a bonus which could be repeated over and over again. And, in spite of these experiences, this practice was followed in succeeding wars with little regard for the enormous cost of such procedure. But what else could be done when National Defense was looked upon with suspicion by lawmakers who felt it to be their peculiar calling to safeguard American liberties by beating down the recommendations made by the Army even for defensive purposes? It may not even be amiss to conclude that Congress, during the 19th Century, would provide for the National Defense in time of War by the payment of tribute, for in essence the bounty constituted a tribute. It was accepted as a necessary evil because the Government failed to take adequate measures to define a proper military posture dictated by the needs of the nation in peace as well as war.

It was under these auspices that the Army was recruited during the winter of 1775, and kept together by the indomitable will of George Washington. It was this Army that drove General Howe out of Boston

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in March, 1776, and when the account books were balanced out, the British "could not claim possession of an acre of ground in the provinces that had joined the revolt. To establish a bridgehead and conquer a hostile continent, this was now the task of the British army and navy."⁵⁹ It was a formidable task and the success which met the warriors of Empire attests not to their invincibility and prowess, but rather to the weakness of the American military system which suffered the torments of provincial jealousies, impotence, and lack of efficiently centralized control. But, during the first year, Americans still nourished the hope of eventual conciliation with England. After the dismissal of Howe from Boston this became an impossibility, for His Majesty's Government could ill afford to give her other dependencies a vivid object lesson in the proper procedure for achieving independence. Not only national honor, but also respect for recognized law and order were now at stake in the dangerous game of Empire which Britain was playing all over the world. This was the picture in the Spring of 1776, and Americans were clear-visioned enough to perceive the signs. It was independence or annihilation, and the patriots chose freedom. But independence was the goal not the method for a successful prosecution of the war. What was needed was one fountain head, not thirteen different spouts.

Independence Divided Thirteen Ways Spells New Weakness

Among the warmest advocates of American independence were the staunch supporters of the rights and sovereignty of the individual States. Samuel Adams refused to "subvert" the Revolution by creating a nation. This was a struggle, he thought, for liberty in which individual patriots shared equally, but patriotism "must always be partial to the particular States": it was an ideal which began at home and never strayed far from one's immediate environment.⁶⁰ As a result, Independence was proclaimed on July 4, 1776, and almost a year later, a central governing body was created which followed closely the recommendations of Sam Adams. It was a Government which recognized the power of the sovereign

States and functioned only as a sort of league of nations. It could make war and peace, but it could not provide the sinews for carrying out the national policy.⁶¹ Without the authority to tax, no policy could be implemented; and what was executed was done so only with the benign affirmation of the States conducting their affairs as they pleased throughout the war with little regard for the problems which faced the Government.⁶²

Instead of uniting and pooling their resources against a common enemy, the States undertook to conduct their own private war with Great Britain and entered into a spirited competition among themselves and against Congress for war material and supplies of all kinds. They engaged in a struggle for survival. To them a strong army and navy at home gave strong assurances at least, that come what may, they could defend themselves without depending upon the others for aid. Each State, except one, boasted of its own navy, with its own admiralty board acting in accord with sovereignty. Whatever aid was rendered to the Continental Army was done in such a niggardly fashion that was both dangerous and unwise.

Under these circumstances, the Continental Army came to take on the appearance of separate armies or "lines," notwithstanding the fact that all were under the command of general officers appointed by the Congress. All vestiges of nationalism or national unity began to wear away. In time, even the controlling influence of the officers was dissipated by the appointments made by the States of all line officers below the grade of Brigadier General. In 1778, Congress itself struck a blow for the States by directing them to provide ammunition, arms, and clothing to their own line in the Continental Army, thereby yielding to the States the very powers which made the Army truly national.

But this was not all. While the Government sought financial and material aid in the Courts of Europe (without which success could be discounted at a low premium), the States entered into separate negotiations for this aid through their special agents. At the Court of France, Vergennes preferred to strengthen the hand of

the Central Government of the United States in playing his game of *Realpolitik*, and in this regard at least, the States ran second best.⁶³

The Martial Spirit Needs a Little Coaxing

The anxiety displayed in 1775 by the States to call upon a central authority to supervise the military operations, had, by early 1776, sharply subsided. The British were driven out of American territory and the prospect of defeat was not seriously contemplated by the patriot leaders. But when this feeling of complacency was suddenly displaced by the re-appearance of British troops in the United States, Americans were constrained to readjust their thinking. The Declaration of Independence had rendered it necessary to erect a system of government embracing the thirteen States. But this Government was at best a nominal entity exercising those functions designed by the separate States. Lacking the necessary power vital even to a nation at peace, the Congress struggled to conduct a first class war against a first class power. Powerless to do anything more, this body tried to solve the problem of a perennial dissolution of the Army by the adoption of temporary expedients to meet each emergency.

Not long after the Declaration of Independence, which in itself was an avowal of free men to fight or die for the preservation of liberty, it became apparent that if the Continental Army was to increase at all, some measure of encouragement was necessary for inducing men to accept the call of service beyond that which was expected of the militia. In a dual system of military service where the option of lesser periods of enlistment is offered, men instinctively prefer the option, especially when the term of the other is extended from one to two and three years. How then induce men to serve for long periods?

By the Summer of 1776, despite the frank protestations of independence and glib avowals of patriotism, this dual system showed only a small increase in the Continental Army, and Washington was forced to call the attention of Congress to the inevitable release of the greater part of his army by the 31st of December. Decrying the reliability of militia

troops when pitted against superior numbers of veteran troops, he made an eloquent plea for a standing army which could be relied upon for the duration. The defense of American liberties at this critical period, he was sure, "must of necessity be greatly hazarded, if not entirely lost, if their defence is left to any but a permanent standing Army; I mean one to exist during the War."⁶⁴ To accomplish this, he went on, would be difficult if attempted merely by an inducement of a bounty, but the addition of land "might have a considerable influence on a permanent establishment."⁶⁵

An army such as this, comprising from 50,000 to 100,000 men, would not only assure victory, but also would be less expensive to maintain in terms of bounties and land grants. Washington would solve this problem by offering good pay or equivalent pay to that tendered British officers, for the execution of similar responsibilities. This would "induce Gentlemen and Men of Character to engage"; men who "are actuated by principles of honor and a spirit of enterprise," and, with more regard for the character of such men than for "the Number of Men they can enlist, we should in a little time have an Army able to cope" with any that could be opposed to it.⁶⁶

Moreover, a sizeable standing force would put an end to the horrifying experience of witnessing the dissolution of the Army in the face of the enemy, and would also settle the problem of training created by the appearance of raw recruits at frequent intervals. To acquaint men with their military duties and to bring them to an understanding of discipline and subordination was not only time consuming, but a work of great difficulty. In the Army of 1775, these problems were compounded by an almost complete absence of distinction between officers and enlisted men. This could only be corrected for the future, observed Washington, by engaging men for the duration even at the expense of a bounty of \$30 or more. Not that this was a reasonable assurance of securing the services of the men needed, but something had to be done immediately, for "it will never do to let the matter alone as it was last year, till the time of service was near expiring."⁶⁷

But Congress reacted slowly to Washington's repeated warnings, and on June 26, 1776, voted a bounty of \$10 for every non-commissioned officer and soldier who would enlist, not for the war, but for three years. Two weeks earlier, a Board of War and Ordnance was created to carry out the responsibilities of a War Department;⁶⁸ a necessary reform but of small relief to Washington who required more men. The question was not what shall Congress do, but what can Congress do?

Acting within the limited authority ascribed to them, the Congress tried desperately to follow Washington's recommendations for an adequate force. After many weeks of study and debate, they brought themselves to face the reality of the situation and on September 16, provided for an army of 88 battalions to be prorated among the States.⁶⁹ The term of service was left to the discretion of the States but was fixed at three years or the duration of the war. Those who chose the former received a bounty of \$20 and for the latter an additional 100 acres of land.⁷⁰ Within three weeks Washington again warned Congress that the Army was "on the eve of its political dissolution" notwithstanding this legislation. Furthermore, there was a vast difference between voting battalions and raising men, and unless the pay of officers, especially the field officers, was increased, even those worth retaining "will leave the Service at the expiration of the present term. . . ."⁷¹

Meanwhile Congress sought to fill the 88 battalions by authorizing the States to enlist men for three years while softly hinting that enlistments for the duration would be preferable. But the season was getting late, and it was apparent that the full quota of men for the new establishment would not be reached by the end of the year. Fully aware of this condition, Washington urged Congress to increase the number of battalions to 110. This would provide a larger number of officers and although he admitted the impossibility of recruiting a full complement for the original number, the officers of 110 battalions could recruit more men than those of the 88.⁷² What was important at this late date was not the size of the establishment, but rather the number of men that could be brought

in to fill the void soon to be created by departing soldiers.

In spite of all the entreaties and sundry schemes for enlisting larger numbers for the duration of the war, comparatively few men succumbed to the increased inducements offered by the Congress. Not that the men were wanting in patriotism, but left to their own devices, and with the individual States offering to "up the ante" for shorter periods of service, the men naturally leaned away from federal service. The decision of Congress to accept three year enlistments with the offer of a bounty of \$20 minus land was prompted by the policy of the States which offered higher bounties for shorter periods of service. In the competition which ensued, Congress ran second best.

The Menacing Shadow of a Weak Executive

Among the many trials and tribulations that were in evidence during the year 1776, none was more serious or more evident than the inability of Congress to cope with the new and urgent executive questions which daily came to their attention. This was more embarrassing to Washington who had to refer constantly to them for authority only to find that their power to grant it was reduced almost to a cipher because of the serious differences of opinion which had arisen on every important question. Nothing but a catastrophe, it seemed, would bring the delegates to a proper appreciation of the dangers confronting the country.

However, Congress merely reflected the general attitude of the country at large. When it became evident that this war was to be waged in earnest, and under some authority where the effort was to be shared by all, the patriotic fever of '75 approached normal in '76, and for the remainder of the war, suspicions of executive power ran high in and out of Congress.

For this reason the later Congresses were less able than the earlier ones. Coupled with this feeling was the degeneracy of the position of delegate into something like a purgatory. Election to that body often meant much labor and great inconvenience which brought little honor or profit. Service in the State governments, on the other hand, afforded

special opportunities for usefulness and distinction together with profit. The time was to come when even the position of President of Congress went begging. Complaining of the low regard in which the positions in Congress were held, President Laurens warned: "A most shameful deficiency in this branch is the greatest evil, and is indeed the source of almost all our evils. If there is not speedily a resurrection of able men, and of that virtue which I thought to be genuine in seventy five, we are gone. We shall undo ourselves."⁷³

Prompted by the personal motive and provincial jealousies, Congress threw in their lot with private interests to prevent the adoption of measures to create sufficient executive authority to give some substance and efficiency to the management of Army affairs. A War Department with extensive powers should have been immediately established. Instead, Congress retained the military administration in their hands, merely appointing committees for special purposes but granting them no authority to act. This meant they could only study the problems, and make reports, after which the Congress donned "heavy gloves" and engaged in long-winded debates while the Army stood in urgent need of men and supplies.

On January 24, 1776, a Committee was appointed to consider the subject of war office. After spending five precious months in study and debate, they adopted the plan for a Board of War and Ordnance to consist of five of their own number with a paid secretary.⁷⁴ In 1777, this was superseded by a new Board consisting of men who were not members of Congress, allowing membership to military men whose experience was necessary to bring some efficiency to the administration of military affairs. But still there remained the question of divided authority over these questions and finally, in 1781, when Congress became convinced of the advantage of a single headed Department, the Board was abolished and General Benjamin Lincoln was appointed Secretary at War.⁷⁵ If this belated decision had been made in 1776, there is a strong possibility that many of the problems encountered in raising, equipping, and training the troops for an energetic prosecution of the war might have been

eliminated, and Washington might have been spared many trying moments in keeping his army together.

By December, 1776, the Army was almost completely dissolved, legislation notwithstanding; and to make matters worse, British troops had swept through New Jersey on their way to Philadelphia, the capital of the United Colonies. Inspired by these tidings, Congress not only made

sary . . . to displace and appoint all officers under the rank of brigadier general, and to fill up the vacancies in every other department in the American armies; to take, wherever he may be, whatever he may want for the use of the army; and if the inhabitants will not sell it, allowing reasonable price for the same; to arrest and confine persons who refuse to take the continental currency. . . .⁷⁶

Fearful that such a sweeping grant of authority might be misinterpreted by the individual States, Congress on the same day named a Committee to prepare a paper explaining "the reasons which induced Congress to enlarge the Powers" of the Commander-in-chief.⁷⁷

Washington was not altogether unprepared for this extension of power, for on December 20th he argued that a commander situated at such a great distance from the seat of government⁷⁸ must have some measure of discretion; and perhaps also he was somewhat aware of General Greene's letter of the 21st to Congress along these lines.⁷⁹ However grateful he might have been at this sudden windfall, Washington never let himself forget that he was the servant of a civil authority and the army under him an instrument for safeguarding civil liberties. Instead of thinking himself freed from all civil obligations by this mark of confidence, he assured his friends: "I shall constantly bear in mind, that as the Sword was the last Resort for the preservation of our Liberties, so it ought to be the first thing laid aside when those Liberties are firmly established."⁸⁰

⁷³Freeman, *op. cit.*, Vol. 4, p. 70. See also Samuel E. Morison, *The Maritime History of Massachusetts, 1783-1860*. Boston, Houghton, Mifflin Co., 1941, p. 29.

⁷⁴French, *op. cit.*, p. 346.
⁷⁵Alfred Thayer Mahan, *The Major Operations of the Navies in the War of Independence*, London, Sampson Low, Marston & Co., Ltd., 1913, p. 16. American naval superiority in the Northern theater was even admitted a year later by a London newspaper in an article dated September 26, 1776. Quoted in *ibid.* This domination of Lake Champlain was an important factor in the failure of the British to capture Ticonderoga in 1775, which if in enemy hands in 1776 might have paved the way for a quick and disastrous end of the war. For a vivid description of Washington's ability in naval affairs see Dudley W. Knox, *The Naval Genius of George Washington*, Boston, Houghton Mifflin Co., 1932.



a vigorous effort to increase the size of the Army, but also vested Washington with extraordinary powers to bring this about. Compelled by that stern and retributive General Necessity, they had been forced to approve that which in any other circumstance they would have shunned as the plague. Placing reliance upon the wisdom and character of the Commanding General, they Resolved to grant him full and complete power

to raise and collect together, in the most speedy and effectual manner, from any or all of these United States, sixteen battalions of infantry, in addition to those already voted by Congress . . . to apply to any of the states for such aid of the militia as he shall judge neces-

⁷⁶See Rhode Island, *Minutes and Proceedings Upper House*, August Session 1775, August 26, 1775, Nos. 38, 46; Massachusetts Records of the General Court or Assembly, July Session 1775, January 11, 1776, p. 449; February 4, 1776, p. 539; April 23, 1776, p. 152.

⁷⁷Miller, *Triumph*, p. 79. Washington himself directed the operations of the land and sea forces of the United States. For a vivid description of Washington's ability in naval affairs see Dudley W. Knox, *The Naval Genius of George Washington*, Boston, Houghton, Mifflin Co., 1932.

⁷⁸French, *op. cit.*, p. 370. See also Lynn Montross, *Rag Tag and Bobtail*, New York, Harper & Bros., 1952, p. 85.

⁷⁹Matthews and Wexler, *op. cit.*, pp. 27-38. For the exploits of the New England privateers in harassing the British, see Freeman, *op. cit.*, p. 70; Montross, *op. cit.*, p. 85.

⁸⁰Chauncey W. Ford (ed), *The Journals of the Continental Congress, 1774-1789*, Washington, Government Printing Office, 1906, Vol. 3, pp. 274, 316, 374-376. Hereafter cited as JCC. In effect these Resolves legalized privateering. On March 23, 1776, the clauses referring to legal prizes were redefined. See 4 JCC, 230-232.

⁸¹JCC, 378-387.
⁸²JCC, 111. The rules for the Army were adopted on June 30, and enlarged on November 7, 1775. See also 3 JCC, 331-334.

⁸³Nicholas J. Spykman, *America's Strategy in World Politics*, New York, Harcourt Brace & Co., 1942, p. 66. See also Mahan, *op. cit.*, pp. 6-7.

⁸⁴The interjection of the French Fleet left American sea captains free to openly flout the maritime might of Britain even as close as the coast of Scotland. John Paul Jones in 1779, intercepted the Baltic fleet off that coast and captured two ships of the line. See Miller, *Triumph*, p. 172.

⁸⁵French, *op. cit.*, p. 303.
⁸⁶4 W/W, 81-84.

⁸⁷Washington to President of Congress, November 19, 1775, *ibid.*, p. 101.

⁸⁸French, *op. cit.*, p. 523. This state of affairs was not contemplated by a Committee of Congress appointed to confer with Washington on September 29. After a brief study of the steps to be taken to provide an adequate military policy, they agreed that an army of 20,372 men could be raised with little difficulty, if not, Washington was to be given the power to call upon the militia of the neighboring States to fill the quotas.

But the Commander-in-chief was reluctant to call upon the local militia organizations which, he was sure, would provide more than 32,000 men by March, 1776. In order to eliminate the provincial variety of the regiments, the Committee fixed the number for each at 728 men, including officers.

⁸⁹*ibid.*, p. 517.
⁹⁰3 JCC, 393.

⁹¹Emory Upton, *The Military Policy of the United States*, Washington, Government Printing Office, 1907, p. 7.

⁹²*ibid.*, p. 21.
⁹³*ibid.*, p. 22.

⁹⁴Maryland, House of Delegates, *Votes and Proceedings*, 1777, October Session, November 13, 1777, p. 12.

⁹⁵*ibid.* However undesirable it may have been to induce men to serve by these methods, they were not as distasteful as the attempt to grant bounties to manufacturers for increasing the production of clothing. *ibid.*

⁹⁶Miller, *op. cit.*, p. 87. See also Freeman, *op. cit.*, p. 64.
⁹⁷Miller, *Triumph*, p. 426.

⁹⁸This was the Government under the Articles of Confederation. Although this plan of Government was not finally ratified by all the States until 1781, the only authority wielded by the Continental Congress was that permitted under this instrument.

⁹⁹Some idea of the limited authority of Congress may be gleaned from the correspondence between that body and the various States. Instead of making firm demands, the Congress, in apologetic vein, informed the States that it would be necessary to rely upon the militia. "The Militia of the United Colonies are a body of troops that may be depended upon. To their virtue the Delegates in Congress now make the most solemn appeal." See Ltr Pres. of Congress to the Governments of New Hampshire, Massachusetts, Connecticut, New York, New Jersey, Delaware, and Maryland, June 4, 1776, in Peter Force (ed), *American Archives*, 4th Series, Washington, 1846, Vol. 6, pp. 707-708.

¹⁰⁰For a clear picture of these episodes see Samuel F. Bemis, *The Diplomacy of the American Revolution*, New York, D. Appleton-Century Co., Inc., 1935, Chapters 3 and 4 *passim*.

¹⁰¹Washington to President of Congress, September 2, 1776, 6 W/W, 5. It is significant to note that men like Emory Upton have interpreted Washington's critical attitude as showing an abhorrence of the militia. To be sure he made no excuse for

their behavior in such battles as Long Island; but it would be to misinterpret Washington to say that he had no faith in the militia system, especially when it is remembered that he expressed high words of praise for those who fought at Bunker Hill. Moreover, he never discounted the use of the militia to augment the regular force.

¹⁰²*ibid.*, p. 6.

¹⁰³Ltr Washington to President of Congress, September 24, 1776, *ibid.*, pp. 108-110. Cf. Nathaniel Greene to Governor Cooke, October 11, 1776, quoted in George Washington Greene, *The Life of Nathaniel Greene*, New York, Hurd & Houghton, 1871, Vol. 1, pp. 222-223. Greene blamed Congress for this condition, and blamed the officers for the actions of the militia.

¹⁰⁴Washington to President of Congress, February 9, 1776, 4 W/W, 318.

¹⁰⁵This was created on June 12, 1776, and made up entirely of civilians, 5 JCC, 434-435. By the following year representation included military men, 9 JCC, 818-819.

¹⁰⁶It should be noted that at this time the term battalion was used synonymously with the term regiment.
¹⁰⁷JCC, 762.

¹⁰⁸Washington to President of Congress, October 4, 1776, 6 W/W, 152-153. See also Greene, *op. cit.*, p. 222. On the 19th of September, 1776, General Greene warned that calling out large bodies of militia would be "destructive in the end," because the "resources of the country cannot support it."

¹⁰⁹Washington to President of Congress, December 20, 1776, 6 W/W, 403.

¹¹⁰Louis C. Hatch, *The Administration of the American Revolutionary Army*, New York, Longmans Green & Co., 1904, pp. 20-21.

¹¹¹This secretary was Richard Peters who remained either in that capacity or as a member during the five years of its existence.

¹¹²JCC, 216.
¹¹³Resolve of December 27, 1776, 6 JCC, 1045-1046. See also Freeman, *op. cit.*, pp. 336-337. This discretionary power was limited to a period of six months.

¹¹⁴6 JCC, 1047, 1053.

¹¹⁵Washington to President of Congress, December 20, 1776, 6 W/W, 402.

¹¹⁶Greene, *op. cit.*, pp. 290-291.
¹¹⁷Washington to Robert Morris, George Clyman & George Walton, January 1, 1777, 6 W/W, 464.

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NEWS NOTES

National Guard Units Get Latest Type Tanks

Latest type light tanks are being shipped to National Guard tank-equipped units in 32 States, the Department of the Army announced recently.

Shipments should be completed prior to summer field training next year. The new tanks will meet current requirements for this type weapon in the National Guard's Infantry divisions, armored cavalry regiments, and heavy tank battalions.

The M41 Walker Bulldog tanks, equipped with 76 millimeter guns, are of the same type now being delivered to active Army units. They will replace the National Guard's M24 tanks of World War II vintage.

"These tanks throw a heavier punch than the old M24's," said Major General Edgar C. Erickson, Chief of the National Guard Bureau. "Their delivery is part of the program to equip the National Guard with the latest possible type weapons as a first-line component of the nation's defense team."

The National Guard's two armored divisions—the 49th of Texas and the 50th of New Jersey—also are due to receive new 45-ton M47 tanks, equipped with 90 millimeter guns to replace World War II type tanks.

30,000 Tanks Built by Chrysler

Employment of approximately 2,400 people at the Chrysler Detroit Tank Plant is expected to continue during 1954.

R. T. Keller made this announcement during a press conference marking completion of the 30,000th tank built by Chrysler since the start of World War II.

At the same time, he said that the Armed Forces have formally authorized the production of the new tank retriever vehicle, called the T51, at the Chrysler Detroit Tank Plant, and set a target date for start of production of midsummer of 1954. The present contract for

the new vehicle amounts to approximately 48 million dollars.

Mr. Keller said, "We are now employing 3,400 people at the Detroit Tank Plant, approximately 1,000 of whom are completing Chrysler's M47 medium tank contract. We expect to continue to employ right along approximately 2,400 people, principally on our job shop work while we are tooling up for the T51. This number may be increased when actual production of the tank retriever gets under way."

He said, "Chrysler is going to attempt to put the retriever into production with only eight months' lead time—the shortest ever allotted for a vehicle of this sort."

During the last twelve years Chrysler Corporation has made 30,000 tanks of 16 different models both medium and heavy, starting with the General Grant in 1941. At present Chrysler Corporation is producing M47's here in Detroit and M43's and M48's in its Newark, Delaware tank plant.

"Chrysler Corporation's Ordnance Development Section which is a part of its Central Engineering Division," Mr. Keller said, "has participated in the engineering and design work on most of the tanks built by the Company. Under the new Government-Ordnance plans, this Section continues as the design agency for the M48 and the M43."

"This group is a large organization devoting constant and continuing attention to development and engineering work on many kinds of military vehicles," he stated, "and is working closely with Ordnance on future vehicles as well as current defense products."

Stretch-out at Delaware Tank Plant

Plans for a stretch-out of tank production at the Chrysler Delaware Tank Plant, assuring continued operation of the plant through 1954, were announced recently by Robert T. Keller, Chrysler Corporation vice president and general manager of tank manufacturing operations.

The plans drawn up by Chrysler officials were approved by Army Ordnance in Detroit.

Under the new program, a tank modification depot now under construction in Newark by Chrysler for the Army will be completed and used for storage of suppliers' machine tools. Processing and modification of tanks, previously planned for the depot, will be carried on in the tank plant in conjunction with the stretch-out of tank production.

Earlier plans had called for a complete close-out of tank production at the plant by April, 1954.

Redesignated

The 17th Armored Cavalry Group, which has been attached to the 1st Armored Division since the spring of 1952, has been redesignated by the Department of the Army as the 17th Armor Group.

The 17th Armor Group, commanded by Col. J. I. King, consists of the Group Headquarters and Headquarters Company, the 317th Tank Battalion (120mm Gun) and the 509th Tank Battalion (120mm Gun).

New Centurion Tank Factory Opened

LONDON—When General Alfred Gruenther, Supreme Allied Commander in Europe, flew from his Paris headquarters to Leyland, Lancashire, for the opening of the Ministry of Supply's great new Centurion factory, it was because the Centurion is, as Minister of Supply Duncan Sandys told him, "the only tank in service which can fire with accuracy on the move." It is a most potent weapon for the N.A.T.O. forces.

Mr. Sandys reminded General Gruenther that Britain has on the secret list a still heavier tank with still thicker armor—not a general purpose tank but a heavy support tank. This will be supplied to armored units as well as—and not in place of—the Centurion. And

Mr. Sandys revealed that British establishments are "at work on some quite new revolutionary developments" in tank production, details of which are still secret.

The Centurion remains the standard tank of the British Army. In the opinion of the British, the fifty-ton Centurion is as big and heavy as is practicable for a general purpose tank.

The fact that the ceiling in overall weight is now being neared restricts the amount of extra armor-protection which can be added to counteract the steadily improving performance of guns and ammunition. Consequently, in the field of armored warfare the power of attack is likely for some time to be more effective than the power to defend.

While at medium and longer ranges the thick frontal armor of modern tanks provides a high degree of protection, there is no tank in the world with sufficient armor to provide complete immunity from all angles and all ranges. However good the armor, it is better not to be hit—so that a tank which is able to fire at the enemy before the enemy fires has an enormous advantage.

The new factory at Leyland is part of a long-term policy to mass-produce these weapons. As a result of action taken by successive governments, a British tank-making industry such as never existed before the war has been brought into being, and tanks are being manufactured in the Government's ordnance factories and at two private firms at Newcastle and Leyland.

The present rate of production of these plants represents only a small fraction of their capacity. But so long as they are maintained as going concerns, tooled up with modern machinery and staffed with a nucleus of experienced technicians and work people, their output can be very rapidly expanded.

In addition to those being manufactured for the British Army, tanks are being made in substantial numbers for Britain's allies in N.A.T.O. Such over-



Maj. Gen. Arthur G. Trudeau
Assistant Chief of Staff
G2, Department of the Army

seas orders form an essential part of the production program.

These factories in the U.K. constitute the principal tank arsenal in Western Europe—a vitally important element in the war potential of N.A.T.O.

Mine Warfare Training Increased

The Chief of Army Field Forces has directed that the time devoted to mine warfare training be increased from eight hours to twelve hours.

The eight-hour period was set up during the Korean emergency and it is now possible to increase the training time devoted to this subject. Experience in Korea showed the need for additional instruction in marking mine fields to avoid losses from our own mines.

The use of anti-personnel mines was possible in the semi-stabilized conditions prevailing in the latter stages of the Korean fighting. Extensive mine fields were a great help in slowing the rush of Communist "wave" attacks. Should these conditions ever prevail again, American personnel will be well trained

in the use of all types of mines.

Communist troops made extensive use of "booby traps" in Korea, and the additional time devoted to mine training will enable the soldier to recognize and avoid such innocent-appearing devices.

The new mine warfare program includes functioning, arming and disarming American, allied and enemy mines, the employment of land mines, the types of mine fields, the use of anti-personnel and anti-tank mines, and familiarization with booby traps.

Washington Chapter Growing

At the September meeting of the Washington Chapter of the Armor Association a maximum number of people attended. One hundred forty-seven persons interested in mobile warfare were present.

Lieutenant General Geoffrey Keyes and Lt. Colonel Charles B. Hazeltine, Jr. were the two speakers for the evening. General Keyes spoke on "Armor in the Balanced Force" and Colonel Hazeltine's subject was "Armor in Atomic Warfare."

Plans for the next meeting were tentatively made at that time. Colonel Paul A. Disney was elected to head up the steering committee for planning for future meetings.

The next meeting is planned for early February. It is contemplated that Major General George W. Read, Jr., Chief of Staff, OCAFF, will be the principal speaker at that time. The reason for not holding the meeting earlier in the year, as originally planned, is that the steering committee decided to await the completion of the annual meeting of the national association, reported elsewhere in this issue, in order that those members of the local chapter unable to attend the meeting could receive a firsthand report.

Anybody interested in attending the next get-together can get up-to-the-minute details from either Colonel Disney or Major Donald B. Pollock. Both officers are stationed in the Pentagon and are listed in the phone book.

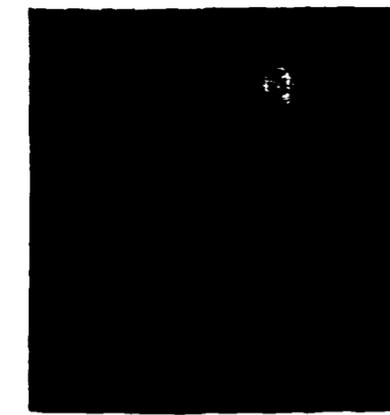
TOP COMMAND CHANGES



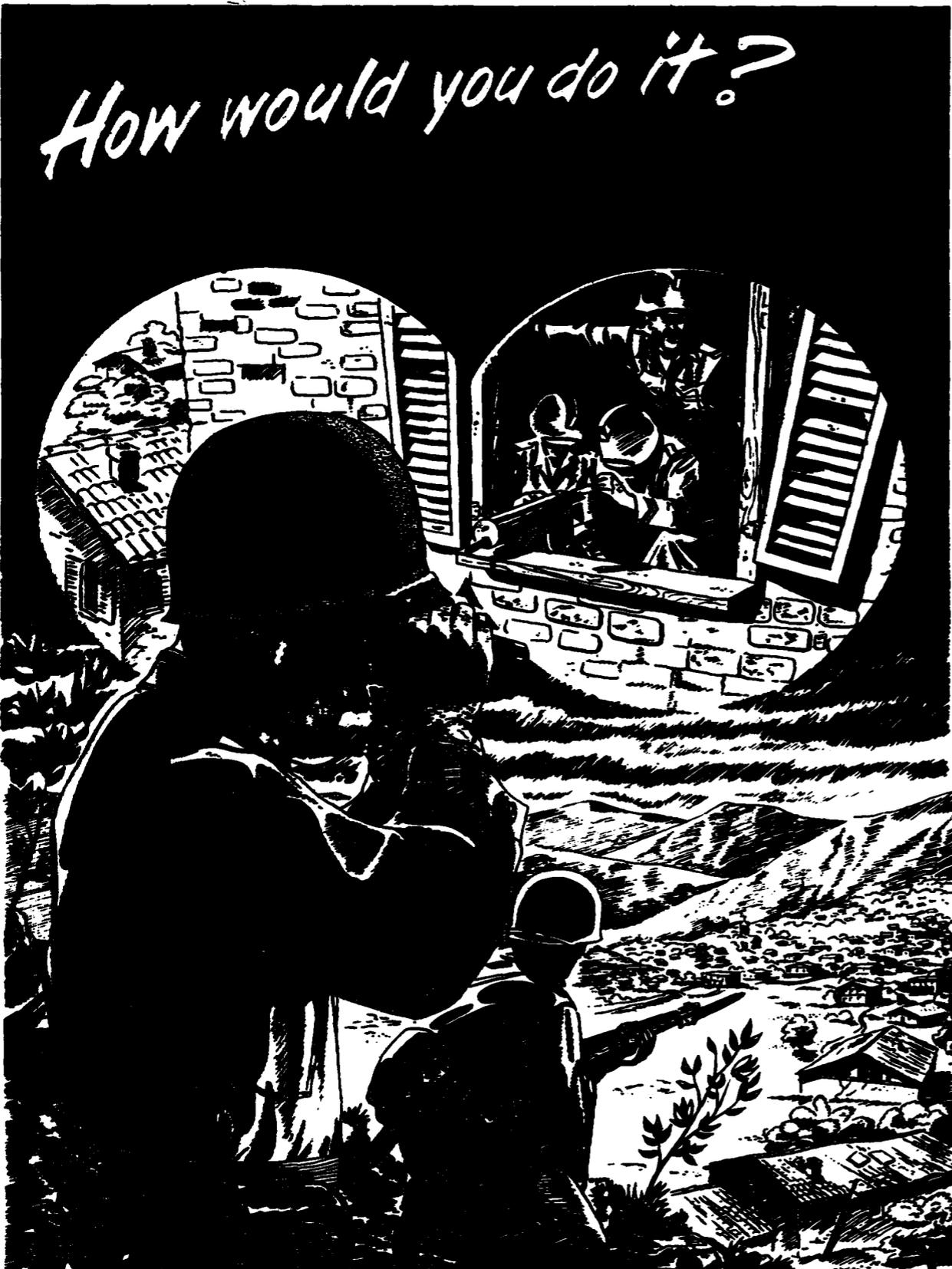
Gen. Mark W. Clark
To Retirement



Gen. John E. Hill
Commander in Chief, Far East



Gen. Charles L. Bolte
Vice Chief of Staff, U. S. Army



AN ARMORED SCHOOL PRESENTATION

AUTHOR: CAPT W E HONEYCUTT

ILLUSTRATED BY PFC A P ZOLBICK

SITUATION NO. 2

Your company is part of a tank battalion in an infantry division. The division has been engaged in a position defense for almost a year.

A lieutenant reports to you for assignment. As company commander, you place him in command of the second platoon, which will probably remain in reserve for ten days. He replaces a lieutenant who has been rotated to the United States.

From reports and observation, you have noted these facts about this platoon:

1. It has a history of incomplete missions.
2. The men boast of the way they "lay out."
3. The platoon lacks the usual aggressive spirit of a good tank platoon.
4. Maintenance is poor.
5. Men of the platoon have consistently failed to comply with regulations regarding wearing of the uniform.

In discussing his assignment, you outline these deficiencies to the new platoon leader. What advice would you give him to help him revitalize this platoon?

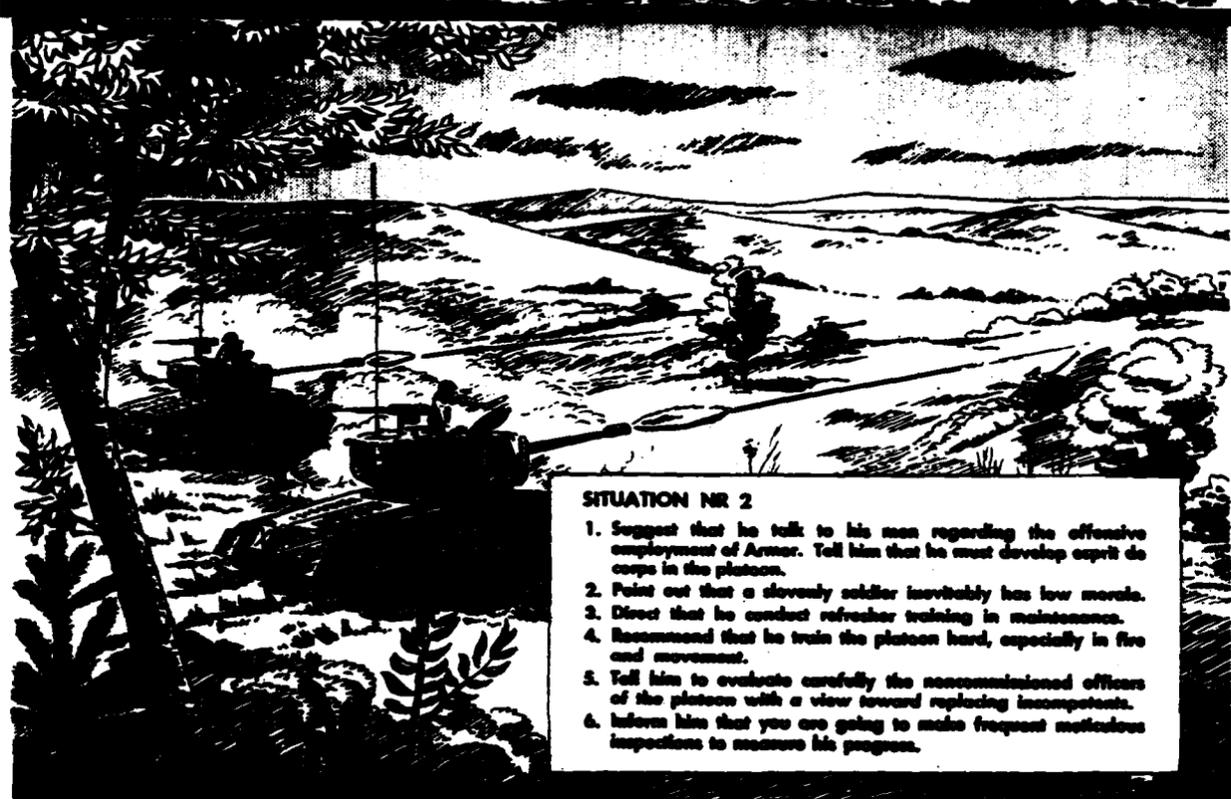


"How would you do it?" solutions



SITUATION NR 1

You realize that 2½-ton cargo trucks are extremely vulnerable to all types of fire. The risk of using ammunition trucks from the combat zone to effect resupply in this situation is too great. Therefore, you would designate two or three of your organic armored personnel carriers as mobile ammunition supply points. These armored personnel carriers would effect resupply to the combat elements of the company as required. Upon completion of each supply effort the armored personnel carriers would return to the combat zone area for refilling. Then, the carriers would return to the company where they would again be available for resupply.



SITUATION NR 2

1. Suggest that he talk to his men regarding the offensive employment of Armor. Tell him that he must develop esprit de corps in the platoon.
2. Point out that a slovenly soldier inevitably has low morale.
3. Direct that he conduct refresher training in maintenance.
4. Recommend that he train the platoon hard, especially in fire and movement.
5. Tell him to evaluate carefully the noncommissioned officers of the platoon with a view toward replacing incompetents.
6. Inform him that you are going to make frequent meticulous inspections to measure his progress.

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ATOMIC WEAPONS IN LAND COMBAT

ATOMIC WEAPONS IN LAND COMBAT. By Col. G. C. Reinhardt and Lt. Col. W. R. Kinmer. 182 pp. Military Service Publishing Company, Harrisburg, Pa. \$3.95.

Reviewed by
BRIG. GEN. R. W. PORTER, JR.

This provocative little book of 182 pages is well organized and easy to read. Also it is couched in non-technical language. It deals primarily with the problem of the tactical employment of the atomic bomb. I found it extremely interesting. It will prove of interest to all Army officers, particularly armor officers and others interested in mobile warfare.

In the introduction the authors deal in general terms with the impact of the atomic bomb on strategy. They point out that eight years of progress have made atomic material, initially very scarce, now relatively plentiful to the U. S., and it is essential to examine concepts to be used in employing the atomic bomb on the tactical battlefield.

The authors are very outspoken in their statements that atomic weapons require close unification of the Services. They indicate that "surface action, whether on land or sea, is as important to the air campaign as mastery of the air is vital to Army or Navy success. Both Air and Naval Forces are based on land. Hence, the

ground effort required to seize or retain base areas, from which the whole array of American power can operate, is the most influential factor in shaping our strategy."

Having disposed of strategic considerations in the introduction, the authors give background material and weapons characteristics in a section entitled "Placing Atomic Weapons in Tactical Focus." Based upon a quotation from the Chairman of the Atomic Energy Commission they develop the interesting thesis that the tactical employment of atomic weapons offers the chance of gaining the decision in battle without destroying the world. Their view is that in 1945 the lack of knowledge as to the capabilities of

The Reviewer



Brigadier General Robert W. Porter, Jr., a 1930 graduate of the Military Academy, served in Europe during World War II. He recently returned from Korea where he was assigned as Chief of Staff of the X Corps. He is presently assigned as Military Advisor to Director, Foreign Operations Administration.

The Authors



Colonel George C. Reinhardt, Corps of Engineers, is a 1924 graduate of Massachusetts Institute of Technology. Following a tour of duty as an instructor in Atomic Weapons at Fort Leavenworth he attended the Industrial College. He is presently the Director of Military Art, The Engineer School, Fort Belvoir.



Lieutenant Colonel William R. Kinmer, Infantry, is a 1940 graduate of the Military Academy. He served with Colonel Reinhardt as an instructor in Atomic Weapons at the Command and General Staff School. He is presently en route to the United States from the Far East and will be assigned to G3, D/A.

the bomb, the need for great secrecy in its development and initial employment and the lack of good battlefield targets at the time the first bombs were available for use, made Nagasaki and Hiroshima logical targets. Without discounting the importance in the future of the delivery of the A-bomb by the Strategic Air Command, they point out that in the age of atomic plenty many decisive targets for atomic weapons will appear on the battlefield. They believe that population centers are no longer the primary targets. The authors then explain and compare various means of delivery of the weapons, discuss possible tactical atomic targets for atomic weapons.

Having outlined the capabilities and characteristics of tactical atomic weapons and having considered the advantages and disadvantages of their employment, the authors devote a chapter to offensive tactics. They emphasize that the classic concept of fire and movement for seeking a tactical decision on the battlefield remains a basic concept for the development of battle plans. They point out, however, that the point of application of the maneuvering element may be altered. The classic wide, deep development possibly will be abandoned. Instead, a violent frontal attack to pierce the defensive shell of the enemy's position will be employed and the mobile reserve element of the command will then be passed through this rupture in the enemy position to take advantage of the shock and disruptive effects of atomic weapons which have been placed

upon enemy artillery and reserve elements. They coin a new slogan for atomic tactics which paraphrases Napoleon: "Exploitation is to Destruction as three to one!"

They believe when both sides have atomic weapons, exploitation of a breakthrough becomes much more complicated. The commander must so time his movement of troops as to permit application of maximum pressure at the designated point without offering a mass target for enemy atomic weapons. Careful target selection and an accurate timing of supporting operations will permit the maximum exploitation of the characteristics and capabilities of atomic weapons. The need for streamlining staff operations and reducing the "reaction time" required to prepare all elements of the command for the atomic explosion are explained. "Accurate, timely information of the enemy can scarcely be overrated by the commander planning an atomic attack. Not only its significance to higher command echelons, but also its bearing upon the actions and orders of the division commander call for greatly improved intelligence procedures and techniques."

Other matters which will assist in the exploitation of the shock, blast and radiation effect are touched upon. Among these are the initial positioning of the exploiting force as close to the atomic target area as possible; inclusion of engineers in the exploiting force and the importance of the exploiting force quickly by-passing obstacles and closing with the enemy while he is still shaken, confused and

unable to deliver effective defensive fires.

The authors ask if tactical A-bombs can plug holes developing in a defensive position. They then develop problems which affect the organization of a defensive position, assuming the enemy possesses infantry, artillery, armor and strong supporting tactical air forces, and conclude that the atomic weapon can be of great assistance to the defender.

"The use of atomic weapons against land forces is militarily sound. Aggressor armies threatening Western security stress the employment of massed artillery, tanks and infantry against an objective." Our forces can be made superior in quality and in battlefield mobility. With the skillful handling of atomic weapons, on or near the battlefield, our qualitatively superior forces should be able to smother the enemy's human-wave mass attacks.

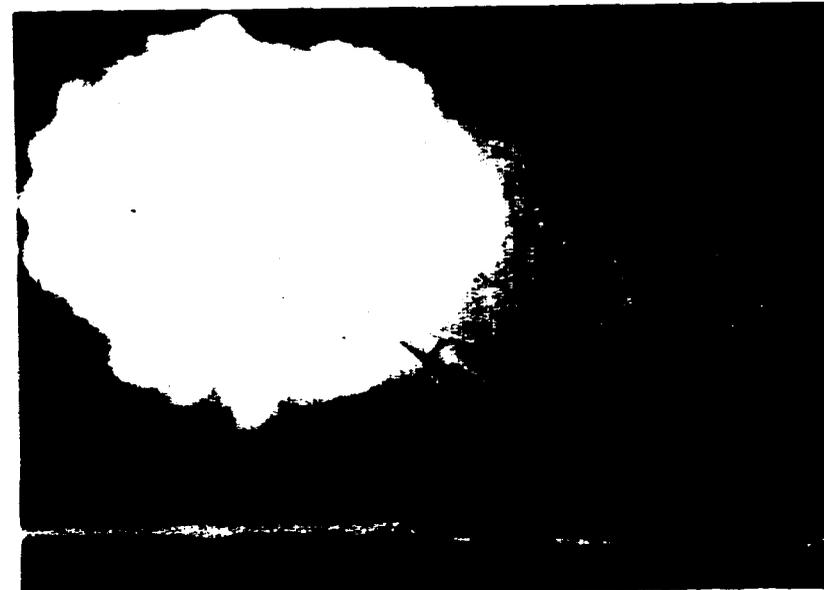
The authors caution that "the tactical employment of atomic weapons is no simple, cheap, easy solution to our vital security responsibility. The United States and its Allies will still need many divisions, backed by adequate tactical airpower. The power of nuclear fission, used tactically, can make it unhealthy for an aggressor to mass his armies, but it cannot by itself win decisive victories. The West must possess sufficient ground divisions to counter hostile land forces operating in open formations."

The commander must so plan his defense that by strength of forces, by strategem or by maneuver, or by these in combination, he will cause the

enemy to concentrate his forces in such a way that suitable atomic targets are presented. These considerations give the commander a difficult problem. He must so dispose his forces that he can compel the attacker to mass if he is to advance. However, he must keep his forces dispersed to such an extent that they do not offer suitable targets for atomic weapons or, if they are subjected to an atomic bombardment as a prelude to a general enemy attack, they do not lose their fighting capabilities.

In discussing the intelligence estimate, which is an essential prelude to the preparation of sound defensive plans, it is emphasized that an accurate appreciation of the enemy's atomic capabilities and his probable mission must be considered carefully. It is pointed out that the terrific power of atomic weapons gives the defense a considerable advantage because they will be dug in and will not be as vulnerable to attack as will the attacker. However, against the increased protection of the defensive forces must be weighed the advantages accruing to the attacker from surprise and shock followed by a rapid exploitation by enemy forces. To cope with this will call for skillful employment of reserves. The counterattack is still an essential part of defensive operations and it is a part of the counterattack that the defender very probably will employ atomic weapons. Also, atomic weapons can be used by defending forces to destroy enemy reserves. Reserves massing for exploitation of a breakthrough by front line elements or vital communications lines, the destruction of which will prevent a successful attack, make profitable targets. In desperation atomic bombs may be used to attempt to overcome superior enemy strength applying unbearable pressure on the defensive front. This employment will require very precise target selection and skillful timing. While not recommended, this use of atomic weapons may be expected in a crisis.

Psychological conditioning of troops to permit exploitation in defense of atomic weapons is essential. To achieve this, false notions as to radiation and other dangerous characteristics of atomic weapons must be dispelled. "In a word, all grades must be imbued with confidence in our



The 280mm cannon, recently deployed to Europe, adds strength to NATO forces.

newest weapon and an eagerness to participate in its use against the enemy."

The authors discuss airborne, amphibious, special operations and logistics in general terms. "Airborne missions, in the exploitation of atomic strikes, will normally be short range—10 to 50 miles from the front lines."

In discussing future amphibious operations, the authors believe the principles of amphibious operations need not be changed but procedures must be revised. They explain how present amphibious tactics can be revised employing atomic weapons and conclude that small amphibious forces utilizing the efficiency of atomic weapons, improved communications and new landing techniques will be required and can secure a beachhead, providing they have effective sea support and air cover which prevent overwhelming concentrations of the enemy from moving against them.

In discussing atomic age logistics it is shown to be vitally important that accurate estimates of requirements are made. The authors warn "against the Allied, particularly American, habit of overstocking supplies all the way from front line battalions to base ports." They ask that logistical doctrine be revised to set up more flexible supply procedures and that supply levels be kept to the minimum.

The method of delivery of atomic munitions is discussed in a chapter

entitled "Tac-Air on the Atomic Battlefield." This portion of the book opens with the statement that "even the most experienced veteran of land warfare, insisting that battles on the ground decide wars, never denies the immense influence of airpower in winning these battles. Superweapons have not diminished the importance, to the ground commander, of air superiority over his particular battlefields. They have made command of the air more important than ever." Atomic munitions which can be delivered by missiles and artillery as well as by the airplane and other means will certainly be available in the future. The authors point out the present greater range of the airplane over artillery and missiles and then discuss the advantages of employing each of them to deliver atomic munitions. They take up the airfield problem, fixed or floating, and then look at the future in which the race between new weapons and new means of defense against these weapons will decide what the best means of delivery will be in each situation. The feasibility of withdrawing forward elements to a safe distance before atomic missiles are exploded is questioned. "Success of this maneuver depends upon such perfect security on our part, and such nit-wittedness on the part of the enemy, as to approach absurdity. . . . It is not recommended for beginners, nor is it practical



Inspecting an M24 for radiation after a Nevada test blast.



Troops moving into blast area, checking equipment damage.

SOVIET MILITARY DOCTRINE

by

Raymond L. Garthoff

Soviet Military Doctrine is an analytical study of Soviet "principles of war." It inquires into the guiding doctrine of Soviet armed forces, the foundation of their strategy, and their employment in war. It is neither a popular treatment of the Soviet Army nor an anecdotal history of that army in World War II. Prepared as part of the research program undertaken for the United States Air Force by The Rand Corporation, it is the only serious study we have of the basic military science of the USSR.

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against alert opposition."

The problem of training troops for atomic warfare is covered in considerable detail. Sections are devoted to protective measures, decontamination, medical aspects, effects on equipment, effects on food and water and effects on military installations. It is then stated that "Like the principles of war, training principles are still the bedrock foundation of our efforts. Only their application need be expanded and in some fields altered. The time-honored categories still hold good: specialist, individual, and unit training." While adequate texts do not exist and because of progress in the atomic field, those prepared may become partially obsolete by the time they are received. However, "common sense application of atomic indoctrination to the unaltered principles of tactics will develop the changes in techniques for small units and, progressively, for the division."

As far as specialist training is concerned, the obvious goal is that every general staff officer should be a well qualified atomic tactician. In addition, radiological defense officers and noncommissioned officers should be trained to assist division lower unit commanders. Pointers on individual training and unit training are covered as are possible types of division atomic training exercises. In all training, aggressive action must be demanded of all units. Reliance must be placed on radio communications. Planning is not enough; atomic maneuvers are required to prepare the soldier to act calmly regardless of confusion around him.

The final chapter deals with command in atomic warfare. The commander now has a concentrated power at his disposal which demands newer and more exacting skill and handling. His problems are briefly outlined. Leadership must be instilled in all troops, those in rear areas as well as those in forward combat positions. "The lesson for atomic weapons is plain if extremely difficult. American troops must look upon atomic weapons as *their safeguard and the enemy's terror*, not the reverse." The atomic casualty problem will probably be one of increased concentration in time and space rather than of increased totals. "From a numerical standpoint, a division is most unlikely

to be wiped out, but whether its thousands of scattered shaken survivors remain an effective military organization will depend, in a great measure, upon the leadership it actually receives." This puts a premium on training based upon wise, experienced leadership. "All of discipline and much of mobility is directly the result of leadership."

Success in the exploitation of an atomic attack will only be possible when good battlefield intelligence is available to the commander. He must know the location of divisional "centers of mass." Delivering an atomic missile swiftly enough to destroy the effectiveness of mass before it can move and completing the destruction with ground troops will bring tactical success. The authors believe that while divisions will not be acting alone in exploitation, except in rare instances, flank and rear contact will be vague or nonexistent. "Prompt, ruthless destruction of the shell of resistance, better obtained by instant penetration rather than by maneuver, must be the immediate objective of the exploiting divisions." All the elements of a hard hitting war of maneuver will be involved. Calculated audacity will count for more than mass. Reconnaissance in force will be the rule. "Enemy reserves will probably be hastily assembled, and therefore less prepared for contact than our own formations. Friendly intelligence, forewarned of the need, must serve commanders effectively to retain the advantage of surprise as the exploitation continues." Logistics must be based upon the slogan: "Know what you really need." "Coldly planned audacity will reap vast rewards in logistics no less than in tactics."

In considering the problem of command in an atomic defense, the authors believe that only in dire emergency should atomic munitions be used for the destructive effect alone. "Enemy units shattered or shocked by the explosion must be destroyed before they can recover an appreciable measure of their combat effectiveness." Austerity must govern or disaster will follow and this applies to the rear areas as well as to the tactical battlefield. The real meaning of dispersion is to prevent concentrations of personnel or equipment from offering the enemy destructive targets which can

be subjected to destruction. There must be no more supplies than actually are needed at the time and place of receipt. This implies a risk-taking in combat. Also all staff functions must be streamlined. "For there are clearly new tasks for the staff. Every tactical situation must be studied for its relationship to atomic weapons, ours and the enemy's. Alternate plans and orders must anticipate emergencies, whether favorable or otherwise." Atomic warfare puts a premium on swift, unified staff action and upon all troops living more like front line troops live. "Position warfare has become an anachronism. It is mobility that counts now. Mobility does not depend entirely upon transportation and fuel supply. There is a limit beyond which additional means of transportation become 'impedimenta.'" We must have better communications with fewer operators; we must rely on radio; we must have alternate command posts, skeleton staffed and radio equipped for command echelons down to a regiment.

In tomorrow's troop organization the authors believe the trend will be to smaller self-sufficient combat formations and they suggest that the present armored division organization has advantages over the infantry division organization. They believe that a commander must be prepared to divide his command among more than three or four subordinates. Orders must not pass through unnecessary successive layers of command. Speed in staff action and in communications must be the order of the day.

The book closes with a brief statement of the importance of remodeling our military doctrine now that both the NATO Allies and the Soviets have atomic weapons. The authors are confident that the free world is alert to the problems posed by tactical atomic munitions and can devise better tactical doctrine for their deployment than possible opponents who embrace communism.

Colonel Reinhardt and Colonel Kintner have made a real contribution by this direct, brief work on the use of tactical atomic munitions. They have posed problems skillfully and have suggested solutions to most of the problems presented.

Any experienced military reader will at once think of other problems

which need to be solved. Among these are the need for increased emphasis upon making the Infantry division more mobile by improved radio communications and simplification of its battle equipment. Emphasis should also be placed on increasing the number of our major armored units.

The sound concepts of the authors point up the need for a reexamination of the actual mobility of the U. S. Infantry and Armored Division. World War II experiences, while helpful, will not be conclusive. It is often forgotten that the German commanders were not free to employ their best military judgment in the handling of their forces. Hitler had directed them to stand and fight. They were forbidden to make strategic and often tactical withdrawals. They were not able to reconstitute reserves by fighting delaying actions on strong terrain until they could launch sound, strong counterattacks. Furthermore, they were short of artillery and they lacked air support. The Allies possessed overwhelming air superiority. Based upon my service during the past few years, I believe that the U. S. Infantry Division does not place primary reliance upon radio for communications. At present they do not possess the equipment or follow the tactical doctrine which will permit this. Consequently, they are not well adapted for employment in a mobile role. Further Armored units, capable of independent, deep, bold, exploitation operations in conjunction with airborne units, are woefully inadequate. It would appear then that we lack the mobile elements to exploit our great technological developments in the atomic field.

Much attention will have to be given to problems of command-control with skeleton staffs divided between alternate command posts. Intelligence operations at all echelons must be vitalized. Streamlined aerial photography techniques which give the using intelligence agencies aerial photographs a few minutes after photographs are taken must become a reality.

I hope this book will be widely read and discussed by professional soldier and citizen soldier alike. It provides a good nontechnical point of departure for those who must be prepared to win tomorrow's tactical atomic land battles.

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Edited by

Bernard de Voto

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Armor Magazine Index—Vol. LXII, 1953

TITLES		No.	Page	No.		Page
American Military Policy, C. J. Bernardo and E. H. Bacon	No. 5, p. 42	6	44	How Would You Do It? (An Armored School Presentation), No. 1, p. 52; No. 2, p. 62; No. 3, p. 50; No. 4, p. 54; No. 5, p. 50	6	52
Antitank Defense, Hermann Burkhardt Mueller-Hillebrand		2	65	Interview, Olin C. Harrison	6	30
Armor and Airborne, John C. Burney, Jr.		4	16	Joint Chiefs of Staff	4	42
Armor Association:				Kasserine In Reverse, Maurice E. Kaiser	4	34
64th Annual Meeting		2	12	Korea's Ridge Running Tankers, Willard A. Colton	3	11
Award to Armor ROTC Cadets		3	14	Letter From The Chief, CMD, J. C. Fry	4	27
News Notes		5	56	Letters to the Editor: No. 1, p. 2; No. 2, p. 2; No. 3, p. 2; No. 4, p. 2; No. 5, p. 2	6	2
News Notes		6	40	Military History, Paul M. Robinett	4	43
Armor at the Crossroads, Robert B. Rigg		4	25	Military Schooling	5	54
Armor Holds the Hills, Clark C. Munroe		1	10	Mobile Defense of Western Europe, George W. Read, Jr.	2	30
Armor Soldier Retires		1	22	New Civilian Top Command	1	4
Armored Command Control, Edward G. Edwards		6	16	News Notes: No. 1, p. 50; No. 2, p. 58; No. 3, p. 54; No. 4, p. 52; No. 5, p. 48	6	50
Armored Corps and Armored Armies, Harold H. Dyke, Jr.		5	34	Notes on the Training of an Armored Division, Hamilton H. Howze	6	6
Armored Division: New Battlefield Potential, Robert Loth		2	31	Offense is a Word, John D. Byrne	1	44
Armored Infantry Battalion Organization, Charles P. Nixon		2	61	Offensive By Fire, Robert S. Harper	1	34
Armor's Engineer Problem, Paul M. Robinett		6	34	One Picture Is Worth 10,000 Words, Richard T. O'Brien	3	45
Army's New Chief of Staff		5	4	One Way To Lose A War, Robert W. Grow	1	6
Background For Deliberate Planning, George B. Pickett, Jr.		5	37	Pictorial Features:		
Book Reviews:				ROK Army Builds Armor Backbone	1	32
Three Battles: Arnville, Altuzzo and Schmidt, Ned Calmer		1	59	Core of the Matter	2	40
Hitler: A Study in Tyranny, Michael A. Musmanno		2	71	Tank Driving Training	3	32
River and the Gauntlet, Marguerite Higgins		3	57	Training Tankers in Korea	4	32
Rommel Papers, Orlando Ward		4	57	New British Combat and Service Vehicles	5	32
Stilwell's Mission To China, Theodore H. White		5	57	Recent Armor Developments	6	32
Atomic Weapons in Land Combat, R. W. Porter, Jr.		6	55	Planning and Umpiring the Tank Battalion Test, Dan S. McMillin	6	28
Centurion		3	56	Potential Corps Armored Officer	1	41
Coming War—A Concept—The Answer—Armor, Rothwell H. Brown		4	6	Range Finder Trainer	2	70
Command Responsibility For PM—How?, John H. Collier		3	26	Recoilless Guns and Tanks, Richard M. Ogorkiewicz	5	26
Commemorative Stamp Ceremony—General George S. Patton, Jr.		6	14	Reconnoitering:		
Editorials: No. 1, p. 20; No. 2, p. 28; No. 3, p. 30; No. 4, p. 30; No. 5, p. 25		6	18	The Editorial Chair	2	4
Firepower Pay-Off, Clark C. Munroe		5	10	In Appreciation	3	4
Fordability, Richard D. True	No. 2, p. 52	3	46	On Contributing Material	4	4
From These Pages: No. 1, p. 31; No. 2, p. 39; No. 3, p. 53; No. 4, p. 47; No. 5, p. 53		6	37	In Support of Associations and Journals	6	4
Ground Force Mobility, Paul M. Robinett		2	6	Red Army and Atomic Warfare, Louis B. Ely	2	24
Guderian: Father of Armor, Melvin C. Helfers		6	25	Rotation of Assignments	6	42
Hitler, Versailles and St. Germain, Roger Shaw		3	41	Russian Threat, Giffard Martel	3	6
Holy Roman Empire, Roger Shaw		1	55	Skysweeper	2	68
How Red Arms Stack Up		3	36	Somewhere Between Yesterday and Tomorrow, Lamar M. Prosser	4	48
				Story of Soviet Armor (The Big SU's), Garrett Underhill	1	24
				Sum & Substance:		
				Amphibious Operations	2	32
				AAA AW Battalion (SP)	3	20
				Airborne-Tank Teamwork	4	20
				Armored Cavalry Group	5	20
				Ordnance Support	6	20

No.		Page	No.		Page
T74 Recovery Vehicle	3	38	Ingram, Lt. H. C.	5	20
Tanker's Approach To An Infantry Problem, Norman F. Priest	6	38	Kaiser, Col. M. E.	4	34
Tank Gunnery In Korea, Seth Wiard, Jr.	2	50	Kaplan, Capt. H. L.	4	20
Tanks of the Middle Ages, Lynn Montross	1	15	Kunz, Capt. K. S.	2	32
Thoughts On Armor, Lothar Christian	3	16	Lewis, Capt. J. D.	6	20
Top Command In Europe	4	28	Loth, Brig. Gen. R.	2	31
Top Command in the Far East	5	40	Magill, Capt. W. B.	3	20
Trials and Tribulations of the NCO's, James D. Merrill	3	34	Martel, Lt. Gen. G.	3	6
United States Military Academy: Class of 1953 Armor Graduates	3	40	Mattas, Capt. J. A.	3	20
Waco Disaster, William L. Starnes, Jr.	5	16	McMillin, Lt. Col. D. S.	6	28
Warfare and the Future, J. F. C. Fuller	2	42	Merrill, M. Sgt. J. D.	3	34
Warmaking Powers of the United Nations, Edward J. Roxbury, Jr.	2	48	Montross, L.	1	15
What Can An Armor Officer Learn In Korea?, John K. Brier	1	47	Moomaw, Lt. Col. O.	3	20
			Mueller-Hillebrand, H. B.	2	65
			Munroe, Lt. C. C.	No. 1, p. 10	5
			Musmanno, M. A.	2	71
			Nixon, Lt. C. P.	2	61
			O'Brien, Lt. R. T.	3	45
			Ogorkiewicz, R. M.	5	26
			O'Rourke, Lt. J. M.	3	20
			Pickett, Lt. Col. G. B., Jr.	5	37
			Piersol, Capt. W. S.	2	32
			Pitts, Lt. Col. G. T., Jr.	2	32
			Porter, Brig. Gen. R. W., Jr.	6	55
			Priest, Capt. N. F.	6	38
			Prosser, Maj. L. M.	4	48
			Ralph, Lt. C. C.	6	20
			Read, Maj. Gen. G. W., Jr.	2	30
			Rigg, Lt. Col. R. B.	4	25
			Robinett, Brig. Gen. P. M., No. 2, p. 6, No. 4, p. 43	6	34
			Roxbury, Capt. E. J., Jr.	2	48
			Shaw, Dr. R.	No. 1, p. 55	3
			Shuford, Lt. R. H., Jr.	4	20
			Spirup, Lt. J. G.	2	32
			Starnes, Lt. Col. W. L., Jr.	5	16
			Sterrett, Maj. J. D.	5	20
			Swan, Capt. E. H.	4	20
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